

T.C.
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Bakanlığı



I. INTERNATIONAL CONGRESS ON MEDICINAL AND AROMATIC PLANTS "NATURAL AND HEALTHY LIFE"

TABKON' 17



BOOK OF ABSTRACTS



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SAĞLIK BAKANLIĞI'NCA DÜNDEN BUGÜNE TAB ÇALIŞMALARI

ASLI CAN AĞCA¹

ABSTRACT

Sağlık Bakanlığı'nca Dünden Bugüne TAB Çalışmaları

KEYWORDS

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¹TÜRKİYE İLAÇ VE TIBBİ CİHAZ KURUMU

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**ORMAN VE SU İŐLERİ BAKANLIđI'NCA DÜNDEN BUGÜNE TAB
ÇALIŐMALARI**

EMİN ŐİMDİ¹

ABSTRACT

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GIDA, TARIM VE HAYVANCILIK BAKANLIĞI'NCA DÜNDEN BUGÜNE TAB ÇALIŞMALARI

MEHMET HASDEMİR¹

ABSTRACT

Gıda ve sağlık sektöründe yaşanan gelişmeler, tıbbi ve aromatik bitkilere olan talebin hızla arttığını göstermektedir. Sentetik ilaçların kullanımı sonucu meydana gelen ciddi yan etkiler ve bunların yol açtığı medikal ve ekonomik sorunlar doğal ürünlere olan talebi artırmakta, bitkisel kökenli ilaç ve kozmetik sanayinin hızla gelişmesine neden olmaktadır. Küresel bazda yaşanan bu gelişmeler yanında, mevcut doğal kaynakları ile potansiyel pazarlara yakınlığın verdiği stratejik konum, Türkiye'ye tıbbi ve aromatik bitkiler sektöründe büyük avantajlar sağlamaktadır. Türkiye doğal bitki örtüsünde belirlenen 11.707 bitki çeşidi ile küresel ölçekte büyük zenginliğe sahiptir. Bu bitkilerin 3.649'u yöreye özgü iklim ve toprak şartlarında yetişen endemik tür ve çeşitlerden oluşmaktadır. İç piyasada ticarete konu olan bitki sayısı ise 350 olup bu bitkilerden yaklaşık 100 bitkinin yurt dışına ihracatı yapılmaktadır. İhracatta en önemli bitkiler; kekik, haşhaş, defne, çay, anason, kimyon, adaçayı, mahlep ve kırmızıbiberdir. Bu güne kadar geliştirilerek tescil ettirilmiş tıbbi ve aromatik bitki çeşidi sayısı ise 63 olup bunun 24 adedi Gıda Tarım ve Hayvancılık Bakanlığı'na bağlı araştırma enstitüleri tarafından geliştirilmiştir. Ayrıca Sideritis, Thymus, Origanum ve Salvia türlerinde birçok bitki kültüre alınmış olup halen Bakanlığa bağlı 12 araştırma enstitüsünde toplam 36 AR-GE projesi yürütülmektedir. Türkiye'nin mevcut toprak ve su kaynakları ile biyoçeşitlilik durumu dikkate alınarak, küresel rekabet gücünü artırmak, uluslararası piyasaların talep ettiği miktar ve kalitede tıbbi-aromatik bitki üretimini sağlamak üzere, 2015 yılında Gıda Tarım ve Hayvancılık Bakanlığı'nca "İtrî ve Tıbbî Bitkiler ile Boya Bitkileri Üretimini Geliştirilmesi Projesi" başlatılmıştır. 2016 yılı itibariyle projenin uygulandığı 35 ilde, tıbbi ve aromatik bitkiler teknik ekibi oluşturularak 4.690 çiftçiye yönelik eğitim ve yayım faaliyetleri ile 26 ayrı türde demonstrasyon çalışması yürütülmüştür. AR-GE çalışmaları tamamlanan tür ve çeşitlerin yaygınlaştırılması için yapılan yayım faaliyetleri yanında, destekleme politikalarıyla da tıbbi ve aromatik bitkiler üretiminin geliştirilmesi hedeflenmektedir. Bu amaçla ilk kez 2015 yılında özel bir destekleme programı başlatılarak, iyi tarım uygulamaları kapsamında tıbbi ve aromatik bitkiler yetiştiren çiftçilere 100 TL/da destekleme ödemesi yapılmaktadır. Ayrıca küçük aile işletmeciliği, mazot-gübre, organik tarım, kırsal kalkınma ve genç çiftçi hibe programı ile sektör desteklenmekle birlikte, Milli Tarım Projesi ve Havza Bazlı Destekleme Modeli kapsamında tıbbi ve aromatik bitkilerinin üretim planlamasına yönelik çalışmalar yürütülmektedir.

KEYWORDS

Türkiye, Bakanlık, tıbbi ve aromatik bitkiler.

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TÜRKİYE’NİN TEHLİKE ALTINDAKİ ENDEMİK BITKİLERİN EKOLOJİSİ VE İKLİM DEĞİŞİKLİĞİ İLE İLİŞKİSİ

MUNİR OZTURK¹

ABSTRACT

Türkiye'nin endemik bitkilerinin neredeyse tamamı 50.000 km²'den daha az alanda görülür. Bunların % 68'i 500 km²'nin altındaki alanlarda görülmektedir ve bunların büyük bir kısmı ilk (tehdit altındaki türler) kriterini de tetikler. Ülkemize ait endemik ve sınırlandırılmış alanda yayılış gösteren bitkilerinin % 70'inden fazlası tehdit altındaki tür kriterleri tarafından karşılanmaktadır. Ülkemizde endemik iletim demetli bitki taksonlarının sayısı 3035 (% 31.12) dir, toplam iletim demetli taksonun sayısı 11.707, cins sayısı 1320 ve familya sayısı 167 dir. En çok göze çarpan familyalar is asteraceae, fabaceae, brassicaceae, lamiaceae ve caryophyllaceae olup bunlar sırası ile 1311, 1059, 602, 586 ve 559 tür içermektedir. Bunlar içerisinde endemik türlerin sayıları sırası ile 485, 322, 228, 239 ve 230 dir. En çok temsil edilen cinler ise; Astragalus, Verbascum, Allium, Cantareua ve Silene olup bunlar sırası ile 440, 341, 179, 158 ve 144 tür içermektedir ve endemik tür sayısı is yine sırası ile 194, 165, 67, 94 ve 57 dir. Tehlike altında olan tür sayısı is 777. En çok endemikler Iran-Turan (1229), Doğu Akdeniz (1098) ve Öksin (207) fitocoğrafik bölgelerde yer almaktadır. 1985-2015 yıllar arasında, Türkiye’de toplam 102 endemik bitki taksonun yalnızca toprak analizi yapılmıştır : Alchemilla paracompactilis, A. rivularis, Allium flavum ssp. flavum var. minus, A. kurtzianum, A. sibthorpiatum, Alyssum pinifolium, A. trapeziforme, Ankyropetalum arsusianum, A. reuteri, Asperula daphneola, Asphodeline prismatocarpa, Astragalus flavescens, A. stenosemioides, A. stridii, A. tmoleus var. tmoleus, Campanula bornmuelleri, C. saxonorum, C. tomentosa, Centaurea amaena, C. chrysantha, C. derderiifolia, C. kurdica, C. odyssei, C. polyclada, C. ptosimopappoides, C. saligna, C. scleropis, Chamaecytisus drepanolobus, Cirsium sipyleum, Consolida staminosa, Corydalis oppositifolia ssp. oppositifolia, C. wendelboi ssp. wendelboi, Cousinia birandiana, C. caesarea, C. cirsioides, C. davisiana, C. decolorans, C. eleonora, C. ermenekensis, C. halysensis, C. humilis, C. iconica, C. sivasica, C. stapfiana, C. vanensis, Crocus baytopiorum, C. biflorus ssp. isauricus, C. biflorus ssp. pseudonubigena, C. candidus, C. flavus ssp. dissectus, C. gargaricus ssp. gargaricus, C. olivieri ssp. istanbulensis, C. pestalozzae, Cyanus woronowii, Delphinium nydeggeri, Dianthus goerkii, D. ingoldbyi, Digitalis trojana, Erodium somanum, Galium aladaghense, G. nigdeensis, Gentiana boissieri, G. brachyphylla ssp. favratii, Gentianella holosteoides, Gypsophila bitliensis, Hyacinthella lineata, Hypericum crenulatum, Iris danfordiae, I. pamphylica, Linum empetrifolium, Liquidambar orientalis, Marrubium rotundifolium, Medicago rhytidocarpa, Minuartia nifensis, Muscari bourgaei, M. latifolium, Noccaea sintenisii ssp. crassum, Ononis sessilifolia, Origanum hypericifolium, O. leptocladum, O. saccatum, Papaver virchowii, Pastinaca zozimoides, Potentilla aladaghensis, P. pulvinaris ssp. argentea, P. pulvinaris ssp. pulvinaris, Prenanthes glareosa, Psephellus pecho, Ranunculus reuterianus, Rosa dumalis var. antalyensis, Salsola grandis, Salvia kronenburgii, Scrophulariascopoli var. parryi, Sideritis phlomoides, S. trojana, Silene anatolica, S. lycanica, Tripleurospermum baytopianum, Verbascum tauri, Veronica kotschyana, V. surculosa and V. tauricola. 1998-2016 yıllar arasında 49 endemik bitki taksonu üzerinde nispeten kapsamlı ekolojik (bitki + toprak özellikler) çalışmalar gerçekleştirilmiştir : Alkana haussknechtii, Centaurea antiochia, C. arifolia, C. consanguinea, C. foliosa, C. haradjianii, C. hermannii, C. kilaea, C. lycopifolia, C. ptosimopampa, Cephalaria taurica, Colchicum micranthum, Cirsium cassium, Cyclamen alpinum, Erysimum amasianum, Glycyrrhiza flavescens ssp. flavescens, Iris histrioides, I. sari, I. taochia, Isoetes anatolica, Lathyrus tukhtensis, Onosma bornmuelleri, O. bracteosa, O. propontica, Origanum bilgeri, O. husnucan-baseri, O. minutiflorum, O. sipyleum, O. solymicum, Polygonum istanbulicum, Psephellus bornmuelleri, P. brevifimbriatus, P. gracillimus, P. hadimensis, P. huber-morathii, P. mucronifer, P. oltensis, P. pergamaceus, P. pyrrhoblepharus, P. schischkinii, Salvia longipedicellata, S. rosifolia, S. wiedemannii, Stachys annua ssp. cilicica, S. cretica ssp. anatolica, S. iberica ssp. iberica var. densipilosa, S. setifera ssp. lycia, S. sosnowskyi, ve S. tmolea.

İklim değişikliği uzun süredir devam ediyor ve bazı yönlerin yakın ya da orta vadede büyük etkileri olmayacak ancak iklim değişikliğinin bazı yerlerde zaten bir etkisi olduğu gerçeğini göz önüne almak çok önemlidir. Kısa vadeli iklim projeksiyonlarıyla ilişkili büyük belirsizlik göz önüne alındığında anlamlı bir sonuç çıkarmak elbette zordur; bu tahminler daha uzun vadeli tahminlerle azalır. İnsan tepkileri, sinerjik ve geribildirim etkileşimleri açısından, yerel (insan odaklı değişim) sürücü ile küresel (iklim değişikliği) sürücüler arasındaki ayırım ve bunları yönetmek için alınan seçenekler, eylemlerin uygun ölçekte çalışmasını sağlamak için kritik önem taşır. Bir yönetim kararı vermeden önce ekolojik belirsizliğin azaltılmasının yararlarını inceleyebilir. Yönetim eylemlerini uygulamadan önce tür ekofizyolojisi veya yaşam öyküleri özelliklerinin rafine edilmesinin faydalarını değerlendirmek için bilgi değeri analizinin yeni uygulanması için önemli bir kapsam mevcuttur. Uyarlamalı yönetim, koruma yöneticilerinin belirsizliğe yaklaşımının başka bir yoludur: koruma eylemleri bir tekrarlama sistemi içinde uygulanabilir; böylece izleme, değerlendirmeyi bilgilendirir ve koruma eyleminin ayarlanmasına yol açar.

KEYWORDS

Endemikler, Ekoloji, Türkiye

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GIDANIZ ILACINIZ, ILACINIZ GIDANIZ OLSUN

AHMET ÜNVER¹

ABSTRACT

Bu sözü Hipokrat'ın söylediğine inanılır. Hipokrat'tan bu zamana kadar ona olan saygı sabit kalmışken, çok şey değişmiştir. Mesela, günümüzde gıda ve ilaç kelimeleri farklılıkları vurgulanması gereken ve birbirine karıştırılmaması gereken kelimeler haline gelmiştir.

Günümüzde 'Fonksiyonel Gıdalar' kavramı terminolojiye girmiştir. Bu kavramın kullanımı ile gıdalara ilaç yakıştırması yapmak da bilimsel etik olarak yasaklanmış durumdadır. Günümüzde gelişen ve bilinir hale gelen diğer terimler de 'Özel Beslenme Amaçlı Gıdalar' ve 'Takviye Edici Gıdalar'dır. Bunlar da ilaç kavramı dışında anılması gereken kavramlardır.

Son yıllarda bu konuda en büyük sorun ilaç olma iddiasını perdeleyip, Gıda Tarım ve Hayvancılık Bakanlığı'ndan kısa sürede ruhsat alınması ve rant elde edilmesi çabalarıdır. Bu çabalar 'Milli İlaç' hedefine balta vurmaktadır. Bu konudaki müeyyidelerin yükseltilerek yeniden ele alınması önemlidir. Baharatçıların veya aktarların da bu kapsamda ciddi sertifikasyon ve denetimler ile işlevlerinin ıslah edilmesi de önemlidir.

Bu açıdan 'Geleneksel bitkisel tıbbi ürünler yönetmeliği' ile 'Takviye edici gıdalar yönetmeliği' ne ülkemiz şartlarına göre bir bakış yapılarak, bu konuda aksaklıkların giderilmesi ile 'Milli İlaç' hedefine doğru hızlıca yol alınmalıdır.

KEYWORDS

Gıdanız ilacınız, ilacınız gıdanız olsun

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Session 0 - Keynote Speakers

Submission ID: 2

ENDEMIC MEDICINAL AND AROMATIC PLANTS OF TURKIYE - CONSERVATION AND SUSTAINABLE USE

MUNİR OZTURK¹, VOLKAN ALTAY²

ABSTRACT

Turkiye has more or less continental characteristics regarding its plant diversity with nearly 3500 taxa of endemics distributed in seven different geographical divisions of the country. These taxa comprise more than 30 percent of the total flora, majority being confined to narrow and restricted ecological niches. In this study the use of approximately 250 endemic medicinal and aromatic plant taxa in the traditional medicine in Turkiye is presented. These belong to 37 families and 98 genera. The families with the highest number of taxa are; Lamiaceae (68 taxa), Asteraceae (54 taxa), Scrophulariaceae (24 taxa), Apiaceae (12 taxa), and Fabaceae (12 taxa). These five families constitute 65.89 percent of the endemic medicinal and aromatic plant taxa distributed in Turkiye. The genera with highest number of taxa are; Sideritis (23 taxa), Verbascum (21 taxa), Salvia (11 taxa), Achillea (10 taxa), and Astragalus (10 taxa). Local people in different regions of Turkiye generally use endemic herbal remedies as follows; respiratory diseases (24.27%), digestive disorders (20.17%), urogenital diseases (12.41%), dermal diseases (10.79%), and other ailments (32.36%). The endemic medicinal and aromatic plants are used mostly against major diseases like; cold and flu, wound healing, stomachache, asthma, and as expectorants. In all 18 taxa are widely used for different applications in different regions of Turkiye. We have tried to catalogue these genetic resources, together with their need for conservation and for an enrichment of seed bank of the country. This will help in the establishment of database for a sustainable use and conservation of the endemics within different ecosystems.

KEYWORDS

Turkiye, Endemic Plants, Medicinal and Aromatics, Sustainability, Conservation.

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Session 0 - Keynote Speakers

Submission ID: 1310

ST.JOHN'S WORT; IS IT A PANACEA?

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ABSTRACT

The flowering aerial parts of *Hypericum perforatum* L. (Hypericaceae), or with its popular name St.John's wort, has been recognized as a universal remedy to treat the nervous system disorders, particularly for the treatment of mild to moderate depressions and related nervous symptoms such as hysteria, neurosis, neuralgia etc. In Turkish traditional medicine, however, use of the plant against mood disorders is unknown. Among the wide range of utilizations which had been recorded during the ethnobotanical surveys, the olive oil extract is used for wound healing, burns and eczema, and for treatment of peptic ulcer, while the aqueous extract (infusion) is used for treatment or to alleviate the liver disorders (jaundice, hepatoprotective, choleric), urinary problems (kidney stone, enuresis, infection), infectious diseases (fungal, bacterial, tuberculosis), cardiac disorders (atherosclerosis, hypertension), earache, haemorrhoids, diabetes and endometriosis. The present study aims to report the results of ethnopharmacological investigations to evidence this latter group of traditional uses.

KEYWORDS

Hypericum perforatum, St.John's wort, ethnopharmacology

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¹YEDİTEPE ÜNİVERSİTESİ, ECZACILIK FAKÜLTESİ

Session 0 - Keynote Speakers

Submission ID: 1466

THE ROLE OF MEDICINAL PLANTS IN DRUG DISCOVERY AND THE POTENTIAL OF TURKISH MEDICINAL PLANTS FOR BIOACTIVE METABOLITES

HASAN KIRMIZIBEKMEZ¹

ABSTRACT

The use of plants for the treatment and prevention of diseases date back to ancient times. World Health Organization estimates that around 80% of world population, particularly in developing countries, rely on medicinal plants for the prevention and treatment of diseases [1]. Of the taxonomically classified around 300.000 territory plants, over 10.000 are said to be utilized in different traditional systems of medicine [2]. From the beginning of 19th century, with achievements in the area of chromatography and spectroscopy, isolation of compounds that are responsible for the bioactivities of plants was launched. Drugs such as morphine, digoxin, quinine and atropine were introduced into clinic use after purification from several plants. The compounds obtained from plants can either be used directly as a drug or their semi-synthetic derivatives can also be prepared based on structure-activity relationship studies. Plants, besides their rich chemical composition, also inspired scientist with their constituents having interesting skeleton. It seems that around half of the currently prescribed conventional drugs are derived from natural products (plant, microorganism and marine organism) [3]. One of the most rational approach to discover new drug candidates from traditionally used plants is to isolate the compounds that are responsible for the bioactivities of the extracts through bioassay-guided fractionation technique. It is wort to say that the number of drugs derived from medicinal plants that are recently introduced into clinical use is increasing. Additionally, several standardized herbal extracts were approved by the authorities to be used in therapy. Drug discovery from medicinal plants is a very long, laboring and expensive task that requires the multidisciplinary approach. Turkey with its rich flora and high biodiversity constitutes a tremendous source for the discovery of new drug molecules. In this talk, it is aimed to present the recently approved plant derived new drugs that are introduced into clinic. Further, the potential of Turkish plants in the discovery of new drug entities will be mentioned by referring to recent studies carried out in our laboratory. References: 1. Fridlender, M., Kapulnik, Y., Koltai, H. 2015. Front Plant Sci, 1, 799. 2. Kinghorn, A.D., Pan, L., Fletcher, J.N., Chai, H. 2011. J Nat Prod, 74, 1539. 3. Chen, J., Li, W., Yao, H., Xu, J. 2015. Fitoterapia, 103, 231.

KEYWORDS

Medicinal plants, bioactive compounds, drug discovery, Turkish plants

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Session 0 - Keynote Speakers

Submission ID: 1917

MANAGEMENT OF CANCER: ARE POLYPHENOL-RICH FUNCTIONAL FOOD A NEW AVENUE TO BE PURSUED?

VIDUSHI S NEERGHEEN-BHUNJUN¹

ABSTRACT

Functional food, defined as foods and food components that provide health benefit beyond basic nutrition, is part of the new self-care paradigm since it can co-exist with traditional medical systems for prevention and treatment of diseases. Research using cellular, molecular and experimental systems contributes to identify the biological basis through which food components promote health and wellness. In this vein, the scientific relevance and potentials of Pleurotus mushrooms, pomegranate and noni based on their polyphenolic richness, antioxidant and anti-inflammatory capacities will be discussed. Since the process of carcinogenesis has been linked to oxidative stress by increasing DNA mutations or inducing DNA damage, genome instability, and cell proliferation, it can be speculated that antioxidant agents could interfere with the disease onset and progression. In addition, given that conventional cancer treatments influence tumour outcome through reactive oxygen species modulation and that these treatments have important side effects, the challenge to develop alternative and/or complementary strategies for patients is more than ever pressing. Moreover, the induction of apoptosis in preneoplastic or neoplastic cells through various growth inhibitory mechanisms such as the activation of cytochrome c and caspases, the arrest of cell cycle, and the modulation of signaling pathways by functional food are remarkable. The dietary nature of food plants and edible fungi make them invaluable candidates as inducers of apoptosis in neoplastic cells and against oxidative stress. The data herein presented show that selected functional food fit into a continuum that ranges from health maintenance or promotion to disease treatment.

KEYWORDS

Functional food, polyphenol, cancer

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Session 0 - Keynote Speakers

Submission ID: 1918

DIVERSE BIOLOGICAL FUNCTIONS OF KOREAN MISTLETOE

JONG-BAE KIM¹

ABSTRACT

Mistletoe is a semi-parasitic plant that has been utilized as a traditional medicine in many countries to treat various human illnesses. In particular, Korean mistletoe (*Viscum album* var. *coloratum*) has been widely studied in the last decades since the report that it has an anticancer activity. We have been investigating the various biological activities of Korean Mistletoe such as mainly anti-cancer and immunological activities, and others including anti-diabetes, anti-obesity, enhancement of exercise capacity, inhibition of muscle atrophy and extension of life-span. We demonstrated the prophylactic Korean Mistletoe extract (KME) on tumor metastasis produced by highly metastatic tumor cells. Intravenous administration of KME significantly inhibited lung metastasis of B16-BL6 melanoma and colon 26-M3.1 cells by enhancing macrophages and NK cells activity. We also purified two Korean mistletoe lectins (KML), which is the main component of anti-cancer and immuno-stimulatory activity. KML is a potent immunoadjuvant to enhance cellular and humoral immune responses. Especially, KML B-chain exhibits potent immunomodulatory properties in enhancing dendritic cell maturation and might be considered a potential dendritic cell-based cancer therapy. We identified anti-diabetic effects of KME compared with several controls including AICAR and metformin. KME significantly lowered blood glucose and increased the glucose uptake in alloxan-induced diabetic mice. We also found the activation of AMPK by KME similar to current anti-diabetic drugs. Besides, KME have inhibitory effects on the development of obesity and nonalcoholic fatty liver disease in mice fed high-fat diets. Body and epididymal fat pad weights were reduced in KME-treated mice, and histological examination showed an amelioration of fatty liver in KME-treated mice. In addition, we have recently reported that KME improved the endurance capacity in mice by enhancing PGC-1 α and SIRT1 expression involved in mitochondrial activity. In the treadmill and swimming tests, KME-treated mice showed an increased exercise capacity compared to chow-fed control mice. Interestingly, KME induced the mRNA expression of SREBP-1c and GLUT4, known positive regulators of muscle hypertrophy. On the contrary, KME reduced the expression of Atrogin-1, which is directly involved in the induction of muscle atrophy. In animal models, KME mitigated the decrease of muscle weight in denervated mice. These findings indicate that Korean mistletoe might be a potential candidate as a functional food promoting the restoration from muscle atrophy. Furthermore, we investigated the effects of Korean mistletoe extract (KME) on lifespan in experimental models using *Caenorhabditis elegans* and *Drosophila melanogaster*. Supplementation of KME extended the mean survival time by 9.61 and 19.86 % in worms and flies, respectively. Collectively, our findings on suggest that Korean mistletoe is one of the most powerful candidates with great potentialities to develop the ideal multi-functional anti-cancer drug as well as functional foods.

KEYWORDS

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anti-cancer, Korean Mistletoe



Session 0 - Keynote Speakers

Submission ID: 1924

FUTURE PERSPECTIVES OF FUNCTIONAL FOODS AND HEALTH

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ABSTRACT

Functional foods, nutraceuticals, and natural health products (NHP) still represent one of the fastest growing areas of research. The health food industry is growing by about 7.4% per year in sale. Japan was the first country introduced functional foods in early 1980's and the FOSHU (food for specified health uses) was adapted in 1993. Following the Japanese example, the Food and Drug Administration (FDA) has adapted GRAS (generally recognised as safe) status process as a regulatory venue in the US, while EU introduced a NOVEL FOODS system for approval of functional foods. Diet related chronic diseases including cardiovascular disease (CVD), cancer, type-2 diabetes, and obesity has been on the rise, representing 60% of all deaths. Although there are several ways of combating these diseases, but one of the most important ones is proper diet. With a proper diet, these diseases can be reduced up to 40%. Therefore, consumptions of functional foods, nutraceuticals, and NHP are of great importance for health promotion and disease risk reduction. Hypercholesterolemia is a common condition in which the risk for the development of cardiovascular disease (CVD) is increased. Due to their hypocholesterolemic effects, phytosterols are considered to be effective in the prevention of CVD, particularly coronary heart disease. This presentation will covers future perspectives of functional foods, nutraceuticals, NHP; global regulatory issues of functional foods and nutraceuticals; and cardio-protective effects of phytosterol-enriched functional black tea in mild hyperchoelsterolemic subjects (a case study).

KEYWORDS

Functional foods, nutraceuticals, natural health products

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Session 1-1 - Mushroom

Submission ID: 185

A PRELIMINARY STUDY ON THE SPAWN PRODUCTION OF OYSTER MUSHROOM (PLEUROTUS OSTREATUS)

AHMET ÇAT¹, TURHAN ÇOMAK², MÜRSEL ÇATAL²

ABSTRACT

Currently, few edible mushroom species have been commercially cultivated in Turkey. *Pleurotus ostreatus* (Jacq. ex Fr. P.Kumm.) known as the oyster mushroom or tree oyster is the second most cultivated mushroom species after the white button mushroom *Agaricus bisporus* (Lange) Imbach in the country. The mushroom is preferred over other mushroom species for its taste, nutritional contents as well as medicinal values. Many research revealed that it contains essential amino acids, minerals (potassium, iron and phosphorus) and source of vitamins (B1, B2, B12, C, D and E). As it is still case with *A. bisporus*, the spawn of *P. ostreatus* has also not been produced in Turkey and a significant amount of money were spent every year to import the mushroom spawn. Here, we first time discovered an oyster mushroom strain candidate for spawn production on the stem of a honey locust (*Gleditsia triacanthos* L.) (Fabaceae) tree at the Campus of Akdeniz University and identified based on morphological characters. The mushroom mycelium was isolated from the cap and stem of the fruiting body on Agar media. In addition, the mushroom culture was obtained from the spore prints. Colony and growth characteristics of the mushroom mycelium indicated that the strain might be a good candidate for spawn production. The mushroom mycelium colonized the rye grain spawn media in less than 2 weeks at 24°C comparable to the commercially available strains of the mushroom. Further studies were undertaken to evaluate the mushroom strain on wheat straw compost in mushroom growth facilities of a commercial company. According to literature search, this is one of the first reports of oyster mushroom culturing for spawn and mushroom production from a native isolate of oyster mushroom.

KEYWORDS

Spawn, Pleurotus ostreatus, oyster mushroom, Turkey

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Session 1-1 - Mushroom

Submission ID: 459

PHENOLIC ACIDS DETERMINATION IN SIX WILD MUSHROOM SPECIES BY HPLC-DAD

FATİH ÇAYAN¹, EBRU DEVECİ², GÜLSEN TEL ÇAYAN¹, MEHMET EMİN DURU²

ABSTRACT

Mushrooms have been consumed for many years in oriental culture as tea and nutritional food due to their special flavour and texture. In addition to nutritional properties, mushrooms are therapeutic foods and exhibit antioxidant, anticholinesterase, antimicrobial anti-tumor, antiviral, immunomodulatory activities because of they are rich in bioactive secondary metabolites such as phenolic compounds, terpenes, polysaccharides and sterols [1]. The phenolic compounds are separated into two groups: phenols and phenolic acids such as gallic acid, benzoic acid, syringic acid, chlorogenic acid another associates and polyphenols such as flavonoids, tannins and stilbenes [2]. Phenolic compounds have biological properties which arose from their antioxidant activity. Therefore, phenolic compounds have a vital role in the stability of food products, as well as in the antioxidative defense mechanisms of biological systems. The antioxidative effect of phenolic compounds is caused from a direct free radical scavenging activity, reducing activity and chelating of prooxidant metal ions [3]. Phenolic acids of *Agrocybe cylindracea*, *Coprinus comatus*, *Clathrus ruber*, *Hypholoma fasciculare*, *Lentinus tigrinus* and *Mitrophora semilibera* were identified by HPLC-DAD. The phenolic profile was determined according to the method of Barros et al. [3] with slight modification. The mobile phases were as follows: (A) 0.5% acetic acid in water, (B) 0.5% acetic acid in methanol and gradient system used. Detection was carried out photodiode array detector (PDA) using 280 nm as the preferred wavelength. The phenolic compounds were characterized according to their retention times and UV data were compared with commercial standards. Sixteen phenolic compounds namely, gallic acid, fumaric acid, protocatechuic acid, catechin hydrate, p-hydroxybenzoic acid, 6,7-dihydroxy coumarin, caffeic acid, vanillin, 2,4-dihydroxy benzoic acid, p-coumaric acid, ferulic acid, coumarin, trans-2-hydroxycinnamic acid, ellagic acid, rosmarinic acid and trans-cinnamic acid were analyzed. Protocatechuic acid was (7.39±0.74- 144.4±1.48 µg/g) found as major phenolic compound in *A. cylindracea*, *C. comatus*, *C. ruber*, *H. fasciculare*, *L. tigrinus*. The most abundant phenolic compounds in *M. semilibera* were identified as p-coumaric acid (17.49±0.83 µg/g) followed by p-hydroxybenzoic acid (11.89±0.69 µg/g). References [1] T.H. Wang, T.F. Lin. 2007. Adv. Food Nutr. Res. 53: 123-159. [2] F. Oke, B. Aslim. 2011. Food Chem. 128: 613-619. [3] F. Shahidi. 2000. Nahrung 44: 158-163. [4] L. Barros, M. Duenas, I.C.F.R. Ferreira, P. Baptista, C. Santos-Buelga, C. 2009. Food Chem. Toxicol. 47: 1076-1079.

KEYWORDS

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Phenolic acids, Mushrooms, HPLC-DAD

Session 1-1 - Mushroom

Submission ID: 1126

THE USE OF A DIFFERENT SPECIES BELONGING TO THE GENUS AGARICUS IN THE MUSHROOM CULTIVATION: AGARICUS MACROCARPUS F.H. MOLLER

GIYASETTİN KAŞIK¹, SINAN ALKAN¹, CELALEDDİN ÖZTÜRK¹, HATİCE ESRA AKGÜL¹

ABSTRACT

Agaricus macrocarpus F.H. Moller samples used in this study were collected from the field work Yenice district of Karabük. The mushroom diagnoses were made with the help of diagnostic books and literature. Macroscopic and microscopic features of the fungus are given. In this study, mushroom spawns were firstly developed by tissue culture method. After this, cultivation of Agaricus macrocarpus F.H. Moller in a commercial fungal composts produced in Konya region has been examined. It has been observed that micelle of Agaricus macrocarpus is well developed in laboratory conditions stipulated for Agaricus bisporus. But, it has been determined that Agaricus macrocarpus develops in the soil and compost more slowly than Agaricus bisporus. As a result, Agaricus macrocarpus can be used as culture mushroom, however, it is necessary to create a species-specific environment with a suitable compost.

KEYWORDS

Fungi, Agaricus macrocarpus, Mushroom cultivation, Konya.

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Session 1-1 - Mushroom

Submission ID: 1147

ISOLATION OF NEW STEROIDS FROM *SARCOSPHAERA CRASSA* (SANTI) POUZAR; A POISONOUS EDIBLE MUSHROOM

ZAIN ULLAH¹, MEHMET ÖZTÜRK¹

ABSTRACT

Isolation of New Steroids from *Sarcosphaera crassa* (Santi) Pouzar; A Poisonous Edible Mushroom Zain ULLAH, Mehmet ÖZTÜRK zainullah@posta.mu.edu.tr Department of Chemistry, Faculty of Sciences, Muğla Sıtkı Koçman University, Mentese-48121, Muğla, Turkey *Sarcosphaera crassa* (Santi) Pouzar is known as pink crown or Violet Star Cup mushroom, consumed particularly in south-west Anatolia in Turkey. *S. crassa* is a poisonous mushroom and only edible after cooked, well. Thus, the poisonous compound(s) are discarded using bakery [1]. The current research is focused on activity based mychochemical investigation on *S. crassa*. In this study, the *S. crassa* was purchased from a local market in Muğla-Turkey. It was baked in an oven at 200 °C for 30 minutes, then air-dried under shadow. The dried baked samples were grinded and extracted with petroleum ether, acetone and methanol, successively. The extracts were studied for their cytotoxic activity against Hela (human cervical) and MCF-7 (human breast) cancer cell lines. The extract indicating cytotoxic activity was studied to isolate its steroids as well as other bioactive compounds. 1D-, and 2D-NMR and various spectroscopic techniques were used for structure elucidation. The methanol and acetone extracts exhibited close cytotoxic activity to each other against HeLa cancer cell lines. While the acetone extract exhibited moderate activity against MCF-7 cell lines. From the acetone and methanol extract three new steroidal 3 β fatty acid compounds (1-3) which were in the similar skeleton to following steroid were isolated and elucidated. Acknowledgement: The authors acknowledge TUBITAK-BIDEB-2215 Ph.D fellowship program for foreign citizens and TUBITAK with the project number TUBITAK-MHRS-KBAG-114Z635. Keywords: *Sarcosphaera crassa*, Isolation, Cytotoxic activity, Elucidation References [1] Mat, Afife. (2000). *Türkiyede Mantar Zehirlenmeleri ve Zehirli Mantarlar*, Nobel Tıp Kitabevi Press, 2. Edition, Istanbul Turkey. [2] Li, W., Zhou, W., Song, S.B., Shim, S.H. and Kim, Y.H. (2014). Sterol Fatty Acid Esters from the Mushroom *Herichium erinaceum* and Their PPAR Transactivational Effects, *J. Nat. Prod.*, 77, 2611–2618.

KEYWORDS

Sarcosphaera crassa, Isolation, Cytotoxic activity, Elucidation

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Session 1-1 - Mushroom

Submission ID: 1207

AN ANALYSIS FOR THE USAGE OF KANLICA MUSHROOM ON THE PRACTICE FIELD OF GASTRONOMY AS A TYPE OF HIGH AROMATIC MUSHROOM

OYA ÖZKANLI¹, ÖZKAN SÜZER¹, CEYHUN UÇUK¹

ABSTRACT

It is known that gastronomy is a science researching all phases of food and beverage. In this case indigenous products are also a field of study of gastronomy. These products are developed through gastronomy and can be carried out through new implements. Türkiye is home to many endemic plants and is fertile in terms of indigenous products. Kanlıca Mushroom is a member of the family Russulaceae and is the general name for *Lactarius salmonicolor*, *Lactarius delicious* and *Lactarius deterrimus* mushrooms in our country. In addition to this, it is one of the valuable indigenous products found in our country and it is a high-aroma mushroom. Furthermore, it is also known as Çam, Melki and Çintar mushroom. Kanlıca Mushroom is a type of fungi that has a high aroma value and a high nutrition grows in our country. As a type of mushroom, Kanlıca Mushroom is practicable to use in variable fields of gastronomy and has a potential to make gastronomy of country valuable. The aim of this study is to draw attention to Kanlıca Mushroom, to focus on possible uses in the gastronomy and to shed light on future work on this product. In this study, qualitative research technique was used. As research design, a case study was used. In addition, face-to-face interviews with field experts were used and the data were analyzed in the SPSS 15 package program and the results were evaluated. The development of local products and the processing of similar products have been reviewed in the literature. It is understood that Kanlıca Mushroom is a high aromatic plant, which can be used as a way to revise existing recipes and to produce new ones. Moreover, it is possible that this product converts into various forms. So, this factor can provide practicability about transportation and storage. It is considered that Kanlıca Mushroom has not been used enough in the gastronomy sector and that the usage areas in our country are limited and promotion and product development studies are needed in this subject.

KEYWORDS

Mushroom, Kanlıca Mushroom, Aromatic Plants

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¹GAZİANTEP ÜNİVERSİTESİ, GASTRONOMİ VE MUTFAK SANATLARI

Session 1-1 - Mushroom

Submission ID: 1802

BIOCHEMICAL AND DEMOGRAPHIC EVALUATION OF EMERGENCY DEPARTMENT PATIENTS WITH MUSHROOM POISONING

MUSTAFA FATİH HAYIRLIOđLU¹, CEMİLE TOPCU¹, KÜRŞAT AYRANCI², MEHMET GÜRBİLEK¹

ABSTRACT

Abstract English: Introduction: Mushroom toxicity is a worldwide concern. In the adult population, mushroom toxicity constitutes seven percent of all acute intoxications. The clinical feature may vary from mild nausea and vomiting to hepatic insufficiency according to the type of mushroom. Aim: This study aimed to present demographic and clinical features of patients presenting with suspected mushroom poisoning to emergency department. Method: In this retrospective study, we investigated 61 patients who were seen at the Emergency Department of Necmettin Erbakan University, Meram Medical Faculty from 01.01.2010 to 31.12.2016. We analyzed the data on the seasonal variation, demographic characteristics of the cases. Results: 61 patients were reported to emergency department, where 52% (32) of them were female. The mean age of the patient group was 48.47 ± 15.65 and the mean age of the control group was 50.2 ± 15.20 . Most of the patients recovered without any problems. Most of the poisonings occurred in autumn and spring (72%). 24 of 32 patients have LDH which is above the reference levels (125-220 U/L), 13 of 61 patients have SGOT which is above the r.l (5-34 U/L), 10 of 61 patients have SGPT which is above the r.l (0-55 U/L), 27 of 61 patients have Glucose which is above the r.l (70-105mg/dl), 4 of 33 patients have Amilase which is above the r.l (25-125 U/L), 1 of 33 patients have Lipase which is above the r.l (8-78 U/L), 12 of 42 patient have PT(INR) which is below the r.l (1.00-1.50); 5 of 42 patients have PT(sec) which is above the r.l (11-15); 3 of 42 patient have PT(%) which is below the r.l (70-120); 12 of 42 patient have APTT (sec) which is below the r.l (26.5-40); 30 of 42 patient have WBC which is above the r.l ($4-10 \cdot 10^3/u/l$). Conclusion: Mushroom poisoning still remains as an important public health problem. Mushroom poisoning is a health problem that can be fatal in our country and affects all parts of our homeland. Mushroom poisoning in Konya and around were mostly diagnosed in patients over 30 years and in autumn and spring. As a result, mushroom poisoning is among the causes of preventable morbidity and mortality in adults. It is important for the society to be conscious about mushroom poisoning and for patients to apply to the health facility without delay in the early period.

KEYWORDS

mushroom poisoning, emergency unit, biochemistry

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Session 1-2 - Production of medicinal and aromatic plants

Submission ID: 35

AXILLARY SHOOT REGENERATION OF POGOSTEMON ERECTUS (DALZELL) KUNTZE FROM NODAL EXPLANTS

MUHAMMET DOGAN¹, MEHMET KARATAS², MUHAMMAD AASIM²

ABSTRACT

The present study was designed for an efficient and rapid in vitro propagation from nodal explants of *Pogostemon erectus* (Dalzell) Kuntze. The explants were cultured on Murashige and Skoog (MS) medium containing 0.25 - 1.25 mg/L Thidiazuron (TDZ) and on plant growth regulator-free MS (MS0) medium for the purpose of control for eight weeks. Shoot regeneration frequency ranged between 27.77-100.00 % and the highest shoot regeneration frequency (100%) was recorded on MS medium containing 0.25 mg/L TDZ. Maximum number of shoots per explant (36.62) and maximum of shoot length (2.48 cm) were obtained on MS medium containing 0.25 mg/L TDZ. Regenerated shoots were successfully rooted on MS medium containing 0.25–1.00 mg/L IAA. The acclimatization of the rooted plants to the water environment was achieved successfully. This study provides an alternative method for commercial production of *P. erectus* plant. It can also facilitate as a base for the extraction of medicinally important compounds from this important aquatic plant.

KEYWORDS

In Vitro, Nodal explant, Propagation, P. erectus

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Session 1-2 - Production of medicinal and aromatic plants

Submission ID: 660

PRODUCTION POTENTIAL OF COLCHICINE AS A SECONDARY METABOLITE FROM COLCHICUM AUTUMNALE L. PLANT BY IN VITRO CULTURE

GÜLSEREN EKER¹, AYŞEGÜL YILMAZ¹, SERVET KEFİ¹

ABSTRACT

In recent years, studies on the production of secondary metabolites from plants has accelerated considerably. Secondary metabolites synthesized by plants, which do not affect plant life as much as primer metabolites, are economically important chemical compounds in the fields such as medicine, agriculture, perfumery and food. There are some factors that affect the yield in the production of various secondary metabolites by in vitro techniques. The colchicine of secondary metabolites, which has broad usage field, has production potential from *Colchicum autumnale* L. plant by in vitro techniques. There are total 35 species of *Colchicum* genus, in which 27 of them flower in autumn and 8 in spring, in Anatolia and 15 of them are endemic. In our country the seeds of these plants have been collected and exported abroad at low prices, whereas the colchicine has been imported to our country at high prices. The colchicine alkaloid, obtained as a secondary metabolite, is an important compound that has poison effect used for treatment of various diseases and plant breeding studies. Although techniques for obtaining colchicine have not yet been developed in our country, the mass production of colchicine from *Colchicum autumnale* L. plant by using in vitro techniques and also biotechnological methods will cause our economy to gain added value.

KEYWORDS

Secondary metabolite, in vitro culture, Colchicum autumnale L., colchicine

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Session 1-2 - Production of medicinal and aromatic plants

Submission ID: 1150

EFFECTS OF MAGNETIC FIELD TREATMENTS ON SEED GERMINATION OF MELISSA OFFICINALIS L.

CANAN ÜLGEN¹, ARZU UÇAR TÜRKER¹, ARZU BİRİNCİ YILDIRIM¹

ABSTRACT

Melissa officinalis L., commonly known as lemon balm, is a perennial herb belonging to Lamiaceae family. It has therapeutic properties, such as sedative, carminative, antispasmodic, anti-viral, wound healing, digestive, diuretic, diaphoretic, anti-septic and anti-thyroid. Lemon balm has been used for the treatment of headache, indigestion, colic, nervousness, cardiac problems, depression, rheumatism, indigestion, hypersensitivities, anxiety and depression traditionally. Beneficial effects of lemon balm are ascribed to the phenolic compounds such as rosmarinic acid, tannins and flavonoids. Studies showed that magnetic field applications in agriculture can be used to improve the quality and quantity of the product. Positive effects of the stationary magnetic field on the plant seed germination have been recorded with some plant species. In this study, effects of magnetic field on *M. officinalis* seeds were investigated. Seeds were sterilized in 0.1 % HgCl₂ for 10 min and 70 % Ethanol for 1-2 min. After surface sterilization of the seeds, they were placed in petri dishes containing Murashige and Skoog's medium with sucrose and agar. Neodymium block magnets (100 X 50 X 5 mm) were used to create magnetic fields (50 mT and 100 mT). Ten seeds were placed in each petri plates and 10 petri plates were used for each treatment. Petri dishes containing surface sterilized seeds were placed in 3 different conditions [without magnetic field application (control) and magnetic field applications (low-50 mT and high-100 mT)] and the germination (radicle protrusion) was assessed. Seeds were exposed to magnetic fields for 1, 3, 6, 12, 24, 48, 72, 144 and 240 hours. The number of germinated seeds was recorded for 20 days. Best seed germination was obtained with 100 mT magnetic field application for 1 hour (52 %). Seed germination rate was rather low (28 %) without magnetic field application (control). In consistent with 100 mT magnetic field application, 1 hour exposure to 50 mT magnetic field gave better germination rate (36 %) than control. The lowest seed germination was observed with 240 hours exposure to both magnetic fields (27 % for 100 mT and 16 % for 50 mT). Magnetic field applications also decreased the seed germination time. Although seed germination was observed in 11. day with control, it was obtained in 7. day with both magnetic field applications. Magnetic field application enhanced the percentage of germinated seed and shortened the period of seed germination in *M. officinalis*.

KEYWORDS

Magnetic field, Melissa officinalis, seed germination

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Session 1-2 - Production of medicinal and aromatic plants

Submission ID: 1235

EFFECTS OF OSMOTIC CONDITIONING TREATMENTS OF LAVENDER (*LAVANDULA ANGUSTIFOLIA*) SEEDS ON MEAN GERMINATION TIME AND GERMINATION RATE

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ABSTRACT

Lavender is an important perfume, cosmetic and pharmaceutical plant cultured in the world because of its high content and high quality essential oil. Besides, it is an important ornamental plant with pleasant fragrance and beautiful vegetative pattern in bush form. In seed propagation, there are some problems such as low germination times and germination rate. Relevant studies on seed properties in our country are very limited and there is an external dependency on the seed. The aim of this study was done to facilitate and speed up germination in lavender seeds. Osmotic conditioning was performed in seeds with Methyl Jasmonate (1.0 mM MeJA) and seaweed (*Ascophyllum nodosum*) extract (1:500 seaweed extract) at 20°C for 1 and 2 days. After the application seeds were taken to germination tests at 25°C. Germination indexes of the seeds, germination rates and germination time were determined. Seaweed1 and 2 days and MeJA 2 days treatments increased the germination rates in lavender seeds statistically compared to the control. Seaweed 2 day and methyl jasmonata 2 day treatments increased the germination index, statistically.

KEYWORDS

Lavender, osmotic conditioning, germination time, germination rate

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Session 1-2 - Production of medicinal and aromatic plants

Submission ID: 1258

THE EFFECT OF DIFFERENT SOWING TIMES ON YIELD AND QUALITY OF MARIGOLD (*CALENDULA OFFICINALIS* L.) AT ÇUKUROVA CONDITIONS

SELİN GEDİK¹, LEYLA SEZEN TANSI¹

ABSTRACT

Marigold (*Calendula officinalis* L.), belonging to Asteraceae family, is biennial herbaceous plant and grown as annual, a native of the Mediterranean region. The flowers and seeds of marigold are used in horticulture, landscape, medicine, cosmetics, perfume, pharmaceutical preparation, dye, food and other industries. Especially dried petals of the marigold come in to prominence with uses for treat burns, bruises, cuts and dermatitis in people with breast cancer during radiation therapy. In this study it was detected plant height, number of branch per plant, fresh and dry plant weight, seed weight per plant, oil content of the seeds from internal and external receptacle of different sowing times (8, 15 and 22 December 2015) at Çukurova Conditions. Maximum oil content (% 15.07) obtained from internal receptacle seeds at 3rd sowing time.

KEYWORDS

Calendula officinalis, seed oil, sowing time.

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Session 1-2 - Production of medicinal and aromatic plants

Submission ID: 1561

THE PHYSICOCHEMICAL AND STRUCTURAL CHARACTERISTICS OF CULTIVATED SALEP

ABDULLAH KURT¹, TALIP KAHYAOđLU²

ABSTRACT

Salep is obtained from tubers of orchids which grown in mediterranean countries, especially in Turkey. The main polysaccharide content of salep is glucomannan. As hydrocolloid, it is used for preparing hot drink and ice cream as stabilizer. However, orchid plants are damaged and sold with high priced. Therefore, searching of alternative production methods of salep are in progress. The important and favorable development for salep production was revealed by Aegean Agricultural Research Institute with the project of -the growing possibilities of salep orchids at farm conditions (cultivation)-. Salep tubers was obtained with a high yield with mentioned project. In our studies, the naturally grown salep which belongs to *Serapias vomeracea* and *Orchis sancta* species compared with cultivated products of them. The main constituents glucomannan and starch, protein, cellulose, lignin were determined in the physicochemical analyses part. In addition, molecular weight, fourier infrared spectroscopy (FTIR), XRD, scanning electron microscopy (SEM), particle size and thermal analysis (DSC and TGA) were conducted for the structural characterization. The tubers obtained from *Serapias vomeracea* exhibited higher similarity in physicochemical properties with naturally grown one than *Orchis sancta*. Rheological experiments showed that samples have newtonyen flow. FTIR experiments which provide knowledge about chemicals bonds in structure revealed that cultivation studies did not vary of salep chemical structure. Amorph structure was determined with the XRD experiment for all samples. The variation of surface morphology of salep was observed with the cultivation by SEM. DSC and TGA analysis exhibited that samples had similar termal stabilities. The results obtained in this study showed that salep with the same physicochemical and structural characteristics with naturally grown could be achived by cultivation. The development and widening in this production method provides both protection of wild orchids and cheaper salep production.

KEYWORDS

salep, cultivation, rheoloji, characterization

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Session 1-3 - Herbal teas

Submission ID: 441

THE HEALTH BENEFITS OF Highbush CRANBERRY (VIBURNUM OPULUS L.) TEA

AYŞEN MELDA ÇOLAK¹, FATMA ALAN², VOLKAN OKATAN³

ABSTRACT

Medical plants encompass a large scope in terms of active ingredient. For centuries, natural components extracted from plants have been used in treating various diseases without any scientific base. From ancient times to modern era, human beings have made use of the plants in order to heal the ailments in the field of medicine, pharmacy and biology. Natural products out of medical plants are generally consumed most in terms of human healthy. One of the plants, classified both as berry fruits and as medicinal as well as aromatic plants is highbush cranberry. Highbush cranberry (*Viburnum opulus* L.) is a red fruit with idiosyncratic sour taste and is often consumed and grown generally in central Anatolia, especially in Kayseri province and its neighbourhood. It is believed that highbush cranberry prevents renal calculi and it also has healing properties for high tension, asthma, digestion problems and cold. Highbush cranberry with high vitamin c content and rich in phenolic components, has a strong odor caused by valeric acid found in its structure. Highbush cranberry (*Viburnum opulus* L.) is consumed, however uncommon, as fruit, fruit juice, Turkish delight, dried fruit roll up as well as tea. Highbush cranberry (*Viburnum opulus* L.) tea is believed to consist some components beneficial to human healthy. Future studies may show how beneficial Highbush cranberry tea is to human healthy and for what diseases it may work.

KEYWORDS

Highbush cranberry tea, Medical plants, Healthy

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Session 1-3 - Herbal teas

Submission ID: 464

POSSIBLE USE OF EPIGALLOCATECHIN-3-GALLATE FROM GREEN TEA AS PREVENTION OF PERIODONTAL DISEASE

ARZU BEKLEN¹

ABSTRACT

“Periodontology” is a dental research field addressing the tooth supporting tissues. Teeth are surrounded and supported initially by gum tissue. The periodontal disease is a multifactorial disease that causes the destruction of the supporting soft tissue and if not treated, extends to the underlying bone tissue. Loss of soft and hard support cause the teeth to become loose and eventually fall out. Periodontal disease is initiated by a microbial biofilm called dental plaque, which is a sticky film that constantly forms on the teeth. Dental plaque is made mostly of bacteria that grows on surfaces within the mouth. These bacteria produce toxins or enzymes that can irritate the tissues that support the teeth. In another words, toxins or enzymes can damage the attachment of the gums and bone of the teeth. Among these enzymes, matrix metalloproteinases (MMPs) are produced and released by the immune cells to break soft and hard tissue around teeth. Gelatinases form a subgroup of enzymes within the MMP family and include MMP-2 and MMP-9. Natural compounds are one of the promising molecules for diminishing MMPs to prevent and to treat oral diseases since they act on both bacteria and immune response. In recent years, the health benefits of consuming green tea, like antibacterial effect is under investigation. Green tea polyphenols are mostly catechins, the most predominant being epigallocatechin-3-gallate (EGCG), which presents various beneficial pharmacological properties. The aim of this study is to evaluate the effect of EGCG on the inhibition of MMP-2 and MMP-9 on gingival epithelial cells. For this purpose the released levels of MMP-2 and MMP-9 from gingival epithelial cell cultures following stimulation with tumor necrosis factor alpha alone or with additional EGCG (5 µg/ml) were analyzed by enzyme-linked immunosorbent assays. The results showed that the cultured gingival epithelial cells stimulated with inflammation mimicker tumor necrosis factor alpha produced MMP-2 and MMP-9, whereas addition of EGCG to cell culture significantly decreased the levels of MMPs ($P < 0.05$). The findings of the experiments showed that green tea acts in a way to reduce the secretion of MMPs by a TNF-alpha stimulated oral epithelial cells. Such data show promising result as a possible adjunctive remedy for periodontal inflammation therapy.

KEYWORDS

green tea, periodontal disease

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Session 1-3 - Herbal teas

Submission ID: 1297

THE EFFECT OF ADDING HONEY AT DIFFERENT TEMPERATURES ON ANTIOXIDANT PROPERTIES AND HYDROXYMETHYL FURFURAL FORMATION IN LINDEN TEA PREPARED WITH INFUSION AND DECOCTION

DUYGU BENZER GÜREL¹, ÖZLEM ÇAĞINDI¹

ABSTRACT

Tilia species, known as linden flowers are used to relieve upper respiratory infection, cough and irritation coughs. Linden, which is often consumed among the population, is prepared by different methods as infusion and decoction in the treatment of such diseases, consumed by adults and children. It is also used together with honey and linden tea because of its effective compounds and sweetening. Besides the strong antioxidant activity of honey, the reducing sugars present in the honey with heat treatment lead to maillard reaction's result of formation of hydroxymethyl furfural (HMF) which is known as toxic. In this study, the effect of adding honey in linden tea prepared by infusion and decoction methods, immediately after filtering, at 5, 10 and 15 minutes waiting in different temperature was investigated on total antioxidant capacity, total phenolic compounds, total flavonoid and HMF amount. Total phenolic compounds and total flavonoids of 150 ml linden tea samples, which may be equivalent to a cup, varied between 24,41-36,75 mg / 150 ml tea, 12,09-18,66 mg / 150 ml tea, respectively. Total antioxidants, total phenolic compounds and total flavonoids were found to be higher in the linden tea prepared by the decoction method. There were differences in the amounts of HMF formed by adding honey to linden tea at different temperatures. HMF was not observed in linden tea prepared by infusion method but it changed in the range of 0,31 - 0,38 ppm in tea prepared by the method of decoction. The highest content of HMF was observed of prepared by decoction method after filtering (95 °C) linden tea in adding honey immediately.

KEYWORDS

antioxidant capacity, decoction, hmf, infusion, linden

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Session 1-3 - Herbal teas

Submission ID: 1327

THE EFFECTS OF TOXIC LEVELS OF HEAVY METALS ON ANTIOXIDATIVE CAPACITY IN AERIAL PARTS OF SAGE

ÖZLEM ARSLAN¹

ABSTRACT

Phenolic compounds and flavonoids are among the most effective and widely distributed secondary products in the plant kingdom. Most of them play important physiological role, being involved in tolerance to various types of stress. These metabolites have several defence functions and their biosynthesis in plants is generally induced in response to biotic and abiotic stress such as UV-B radiation, drought, chilling, heavy metals, and attacks by pathogens, wounding, or nutrient deficiency. High environmental concentrations of heavy metals may be accumulated by plants and in certain concentrations will inhibit plant growth and development. Heavy metals including cadmium (Cd), lead (Pb), cobalt (Co), nickel (Ni) stimulate the formation of free radicals and reactive oxygen species leading to oxidative stress. This study was conducted to assess the heavy metal stress responses of sage (*Salvia officinalis* L.). Sage grown in aquatic culture at optimum conditions (at 25°C, 250 µmol m⁻²s⁻¹ light intensity, 16 hour light/8 hour dark, %40-50 humidity) for 20 days with half strength Hoagland solution was subjected to heavy metal stress conditions occurred by 100 ppm Cd, 100 ppm Co, 100 ppm Ni, 100 ppm Pb for 7 days. The aim of this study was to evaluate the heavy metal toxicity in the leaves, to compare toxicity levels of heavy metals and antioxidative capacity of the leaves, to understand the deteriorative effects of heavy metals on phenols, flavonoids and cellular membranes and to find out the Cd, Co, Ni and Pb tolerance levels of sage. Free radical scavenging capacities of leaves increased by different heavy metal treatments but, there was no significant difference of scavenging capacity between heavy metals. Total phenol and flavonoid contents of heavy metal treated leaves were increased and the highest increasement was determined in Ni and Co treated leaves. In conclusion, all heavy metal treatments lead oxidative stress in sage leaves and leaves accumulated all heavy metals at toxic levels. Though the leaves of sage is drunk as tea, higher accumulation of heavy metals in the leaves will also threaten the human health. As medicinal plant, it is very important to grow these plant at healthy environment.

KEYWORDS

Sage, Cadmium, Cobalt, Nickel, Lead, Antioxidative capacity

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Session 1-3 - Herbal teas

Submission ID: 1551

INVESTIGATION OF THE EFFECTS OF ULTRASOUND ON GREEN TEA (CAMELLIA SINENSIS) AQUEOUS EXTRACT

GAMZE ÜÇOK¹, DURMUŞ SERT¹

ABSTRACT

This work investigates the aqueous extraction from green tea (*Camellia sinensis*) assisted by ultrasound irradiations (UI). It aims the identifying differences of the extracts with total phenolic content, DPPH radical scavenging activity, color, turbidity (OD620) and brix. Watered green tea grinding of size max. 500 μm , were treated by shaking (stirring: 100 rpm and treatment duration: 30 min) and ultrasound (intensity: 85 W/cm², frequency: 20 kHz and treatment duration: 30 min). The liquid-to-solid (volume/weight) ratio equal to 20. All tests were carried out at room temperature (20oC) and duplicate. Ultrasonication of green tea solute has been shown to significantly ($p < 0.01$) increase the amount of antioxidant activity (93.268 %), but the total phenolic content remained unchanged. A significant decrease in the L* values of the UI extracts was observed, while the b* values increased. It was also found that the samples had a significant increase in OD620 value (0.446 nm) by UI treatment. No significant ($p > 0.01$) difference was found in Brix values. In this study, ultrasound application to aqueous extracts of green tea was found to more effective than classical extraction.

KEYWORDS

Ultrasonic irradiations, green tea (Camellia sinensis), aqueous extraction.

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Session 1-3 - Herbal teas

Submission ID: 1658

INVESTIGATION ON THE EFFECT OF TEA (CAMELIA SINENSIS (L.) KUNTZE) EXTRACTS ON ORAL BIOFILM

ALP KAYAHAN KIVANÇ¹, MERİH KIVANÇ², GÜLBEN GÜNEY³, ZUHAL KIRZIOĞLU³

ABSTRACT

One of the major causes of tooth decay and gum disease is the adhesion of plaque to the tooth surface. In addition to tooth surface, the plaque adheres to dental restorations, prosthesis and implant surfaces, and this leads to problems. In children, chemical agents and mechanical applications such as tooth brushing are the basic tools used to prevent or limit the formation of plaques. Besides, plants are used for this purpose and support modern medicine nowadays. Tea, effects and activities of which vary depending on characteristics of the area it is cultivated, is one of the important plants used for this purpose. It is considered that the catechin contained in the structure of tea plays an important role in its effect on oral microorganisms. The tea plant should be evaluated as an alternative to many chemical agents which are effective in removing dental plaque in long term use, considering its side effects on children especially. The purpose of this study is to investigate the effect of tea against microorganisms obtained from dental plaque in pediatric patients. **MATERIALS AND METHODS** In the study, methanol, hexane and water extracts were prepared with the tea produced in the Rize region of Turkey. For this purpose, methanol and hexane were added separately to green tea in certain amounts, the mixture was allowed to stand in incubator, the methanol and hexane were evaporated and then the remaining weight was calculated. Distilled water was added to the material and used by being sterilized. For the extract prepared by using sterile distilled water, dry leaves of green tea and tea plant were kept in the Brain Heart Infusion (BHI) liquid medium and used by sterilizing. Microorganisms are *S. anginosus*, *S. dysgalactiae*, *S. mutans* and *E. faecium* which were defined in previous studies by isolating them from the mouths of children. In the prevention of biofilm formation, the effect of tea extracts was confirmed on microtiter plates. The results were evaluated spectrophotometrically. **RESULTS** In the study, it was observed that both tea extracts had an important effect on the oral biofilm and their effectiveness changed according to the bacteria. The low amount of substance may have led to this change. As the concentration of tea extract increased, the amount of biofilm decreased. As a result of the study, it was observed that the hexane extract was more effective while the effect of methanol extract is lower. **CONCLUSION** Tea may prevent tooth decay by affecting oral biofilm. Since it is available, inexpensive and reliable, it can be a herbal extract that is used successfully in children. However, since tea may be harmful directly to oral tissues, there is a need for more in-vivo and in-vitro studies, especially in children.

KEYWORDS

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Oral biofilm, Tea, Oral bacteria, S. mutans

Session 1-4 - Chemotherapeutic Effects

Submission ID: 191

EFFECT OF OCIMUM BASILICUM ON MESENCHYMAL STEM CELL PROLIFERATION AND DIFFERENTIATION: DOES THE EFFECT CHANGE ACCORDING TO NICHES?

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ABSTRACT

It is a big issue that reduced bone density and large fractures in dentistry and orthopedics. Side effects caused by synthetic drugs lead to medical and ethical problems. Thus, plants and medicinal plant research take attention. Aim of this preliminary in vitro study is to investigate the effect of *Ocimum basilicum* extract on dental pulp (DP) and bone marrow (BM) derived mesenchymal stem cell (MSC) proliferation, osteogenic differentiation and immunological response to TNF- α . Human dental pulp tissue was obtained from patients (15-20 years of age) who were undergoing extraction of third molars for orthodontic reasons at the Department of Oral and Maxillofacial Surgery, University of Gazi University*. xCELLigence system was used to determine proliferation of DP- and BM-MSCs. Adipogenic and osteogenic differentiation was shown and calcium concentration, osteocalcin and osteonectin levels were examined. Inflammatory environment was mimicked through TNF- α stimulation and IL-6 and IL-10 levels were defined by ELISA. Doubling time with *O. basilicum* was found in DP- MSCs (38 h) and BM-MSCs (76 h). IC50 value was shown as 148 μ g/mL in DP-MSCs and 178 μ g/mL in BM-MSCs. Calcium concentration of BM-MSCs was found decreased in *O. basilicum* treated groups. Level of osteonectin was reduced in *O. basilicum* treated cells suggesting that the Extract accelerated the osteogenic differentiation. We suggest that *O. basilicum* could be a smart osteoinductive agent where BM-MSCs should be investigated further. Rich flora of Turkey is an opportunity for us and encouragement can easily give inside to medicinal plant investigations. * B.30.2.GÜN.0.20-122 Ethics Committee Report

KEYWORDS

osteogenic differentiation, mesenchymal stem cell, plant extract

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Session 1-4 - Chemotherapeutic Effects

Submission ID: 632

THE CYTOTOXIC AND APOPTOTIC EFFECTS OF ARUM DIOSCORIDIS EXTRACT AND TOZASERTIB COMBINATION ONTO THE CFPAC-1 PANCREATIC ADENOCARCINOMA CELL LINE

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ABSTRACT

Pancreatic cancer is a difficult form of cancer since its silence and progression as well as its resistance to medical treatment. The mechanisms of formation and progression of pancreatic cancer are being tried to be explained and many different methods are being sought to halt the proliferation of cancer cells. For years, people have used some wild plants as "traditional" and "natural medicine" in the treatment of various diseases. Tannins (phenolic compounds) are effective in many pathways in cancer initiation, progression, angiogenesis and metastasis. Arum dioscoridis plant, collected and identified in the village of Tarsus Keşbukü, was dried and subjected to ethanol extraction (1:10 v / v). The HPLC-DAD was used to determine the amount of Vitexin in the extract as 4.1 mM in the extraction. Using the xCELLigence E-Plate 16 system, the Vitexin IC50 value was calculated as 15.4 µM for 48 hours. Tozasertib 10 nM and Vitexin ext 10 µM were applied CFPAC-1 cells for 48 and 72 hours for synergic effect and Annexin V apoptosis test and DNA cell cycle analysis test were performed. The combination of drug and extraction directed apoptosis of cancer cells at a high rate of over 50% for 72 hours. Furthermore, according to the DNA cell cycle analysis of the combination on the CFPAC-1 cells, it was demonstrated that the S phase level dropped significantly at 72 hours. As a result, the vitexin and tozasertib treated cells were arrested in the G1 and G2 phase respectively. This study was supported by the Research Fund of Mersin University with Project Number: BAP-TP3-1414. This study was performed in Mersin University Stem Cell and Regenerative Medicine (MERKÖK) Tissue Culture and Flow Cytometry Laboratory.

KEYWORDS

CFPAC-1, Vitexin, Tozasertib, Apoptosis, Cell cycle

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Session 1-4 - Chemotherapeutic Effects

Submission ID: 640

EVALUATION OF ANTICANCEROGENIC AND ANTIBACTERIAL EFFECT OF MURT (MYRTUS COMMUNIS) PLANT EXTRACTS ON SOME CELL LINES IN VITRO

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ABSTRACT

Cancer is the second leading cause of death worldwide and is predicted to increase by 70% over the next 20 years. Damage to healthy cells and severe side effects limits the use of chemotherapeutic agents and other treatments. Thus, it is of great importance to search for alternative medicinal products obtained from natural sources with the least side effects. In this study, we evaluated antimicrobial activities of ethyl alcohol and water extracts from Murt (*Myrtus communis*) plants stem and leaves using *Staphylococcus aureus* (ATCC 29213), *Candida albicans* (ATCC 8459581 20913) and *Escherichia coli* (ATCC 20913). Various concentrations of the extracts (12.5, 25, 50, 100, 200 $\mu\text{g/ml}$) were evaluated for cell proliferation and cytotoxicity on L929 fibroblast, A549 lung cancer, and DLD-1 colon cancer cell lines. In the test of antimicrobial activity, Murt extract was found to reduce the zone diameter by 50% in *Escherichia coli* (ATCC 20913) compared to the control, but not on other species of bacteria tested. There was also no difference between alcohol and water extracts for antimicrobial effects. In evaluation of cell proliferation and cytotoxicity, no high toxicity was observed on L929 fibroblast and A549 lung cancer cell lines with an IC50 value of 120 $\mu\text{g/ml}$. On the other hand, the extracts caused a decrease in cell proliferation on DLD-1 colon cancer cell lines with an IC50 value of 75 $\mu\text{g/ml}$. In this study, Murt (*Myrtus communis*) plant extract was investigated in terms of antibacterial, cytotoxicity and cell proliferation. It can be said that this plant has anti-cancer activity for colon cancer in the light of data obtained from the present study.

KEYWORDS

Myrtus communis, cancer, antibacterial, anticarcinogen, cytotoxicity

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Session 1-4 - Chemotherapeutic Effects

Submission ID: 880

DIANTHUS CARMELITARUM EXTRACT INDUCES CELL CYCLE ARREST AND APOPTOSIS IN HUMAN COLON CANCER CELLS

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ABSTRACT

Background/Aim: Colon cancer is the third most common type of cancer and leading cause of death throughout the world. Chemotherapy is the most commonly used strategy against colon cancer, although there are a number of disadvantages to this, such as various side effects on healthy cells and its gradual increase of drug resistance in cancer cells. Natural products have represented an important source of drug development studies for many years, and many new generation chemotherapeutic agents are derived from such products. Dianthus which is a medicinal plant, belongs to family of Caryophyllaceae and includes more than 300 species. There have been reported 76 Dianthus species from Turkey and 33 species of them are endemic (including Dianthus carmelitarum). Dianthus species have been used in traditional medicine to treat chronic pains, urinary infections, carbuncles, menostasis, gonorrhea, cough, liver diseases, and some types of cancer. Dianthus species are rich in phenolic (kaempferide, quercetin, kaempferol, apigenin, luteolin, acacetin, naringenin, and their glycosides), and volatile compounds (monoterpene and sesquiterpene hydrocarbons). Also, Dianthus species and their isolated components exhibit antibacterial, antifungal, cytotoxic, antioxidant, and antidiabetic activities due to the above mentioned compounds. Several studies have investigated the cytotoxic effect of different species of the genus Dianthus, however there have been no previous studies of the cytotoxic effect of D. carmelitarum. We therefore investigated the antiproliferative activity of D. carmelitarum extract along with the mechanisms involved, focusing on apoptosis and the cell cycle in human colon cancer (WiDr) cells. Materials and Methods: Samples of Dianthus carmelitarum were collected from Sinop, Turkey. The aerial parts of the plant were air-dried at 25°C for 20 days and powdered using blender and milling into fine powder. The powder then was mixed with dimethyl sulfoxide (DMSO) and extracted by maceration. The cytotoxic activity of extract was determined in human colon cancer and normal colon cells using MTT assay. The mechanisms involved in the cytotoxic effect of extract was then evaluated in terms of apoptosis, and the cell cycle using flow cytometry. Results: D. carmelitarum extract exhibited selective cytotoxicity on colon cancer cells compared with normal colon cells. Extract arrested the cell cycle of colon cancer cells at

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the S phase and induced apoptosis in a concentration-dependent manner. Conclusion: This is study is the first to investigate the effect of proapoptotic and antiproliferative properties of *D. carmelitarum* extract on colon cancer cells. Further studies are now necessary to understand in more detail the exact interaction of the involved signaling pathways. This Project supported by Gumushane University BAP

KEYWORDS

Apoptosis, Cell cycle, Colon cancer, Cytotoxicity, Dianthus carmelitarum

Session 1-4 - Chemotherapeutic Effects

Submission ID: 1893

THE PRODUCTION OF ANTICANCER SECONDARY COMPOUNDS BY PLANT CELL CULTURES.

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ABSTRACT

Medicinal plants and their derived natural products, principally plant secondary metabolites have long been used to treat numerous diseases. Plants are an important source of effective anti-cancer agents: over 60% of the chemotherapeutic agent is currently derived directly from natural sources or based on natural structures . Also most secondary metabolites are present in extremely low amounts in the plant. This inefficacy can make natural harvestation unpractical for bulk production, especially in the case of slow growing species. Plant cell culture is an alternative production technology for complex natural products that cannot be chemically synthesized or extracted in high yields from native sources. Studies on the production of plant metabolites by callus and cell suspension cultures have been carried out on an increasing scale since the end of the 1950's. The aim of using such culturing techniques is for obtaining important secondary metabolites for pharmaceuticals ,cosmetics , food additives and natural pesticides from the harvest of the cultured cells or tissues. Cytotoxic lignans derived from podophyllotoxin are currently used in cancer chemotherapy. Podophyllotoxin is still extracted from rhizomes and roots of Podophyllum hexandrum and P. peltatum plants collected in the wild, because agricultural production of the plant material as well as chemical synthesis of PTOX are not economic. Therefore, there is a great interest in alternative sources of PTOX supply. An alternative source for podophyllotoxin or related lignans may in future be cell cultures derived from different plant species, such as Linum spp. These cell cultures were shown to accumulate considerable amounts of podophyllotoxin or 5-methoxypodophyllotoxin. This work summaries the production of some anticancer compounds (podophyllotoxin, 5-Methoxypodophyllotoxin, justicidin B) from plant cell culture of Linum species.

KEYWORDS

Plant cell culture, podophyllotoxin, 5-Methoxypodophyllotoxin, justicidin B.

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Session 1-5 - Diabetic Studies

Submission ID: 159

THE EFFECTS OF PROPOLIS ON THE QUALITY OF SPERM, REPRODUCTIVE ORGANS AND TESTICULAR ANTIOXIDANT STATUS OF RATS TREATED WITH CYCLOSPORINE-A

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ABSTRACT

This study was designed to determine the effects of propolis on the quality of sperm and reproductive organs in male rats treated with cyclosporine-A (CsA). In this study, 24 male Sprague-Dawley rats (280-300 g, 8-10 weeks) were used. The animals were randomly divided into 4 groups and the administrations were continued for 21 days. Group 1 served as control group. Group 2 was given 15 mg/kg of CsA by subcutaneously. Group 3 was given 100 mg/kg of propolis by gavage. Group 4 was given 15 mg/kg of CsA subcutaneously and 100 mg/kg of propolis by gavage. Administration of CsA to rats decreased sperm motility ($p<0.01$) and sperm concentration ($p<0.01$), and it was increased total abnormal sperm rates ($p<0.05$) as compared with the control group. Significant improvements were observed in the sperm motility ($p<0.01$) and total abnormal sperm rates ($p<0.05$) in CsA plus propolis group. Also, seminal vesicle ($p<0.01$) and prostat glands weights ($p<0.01$) were significantly higher in CsA plus propolis group than CsA group. Administration CsA caused a significant increase in MDA level ($p<0.01$) and significant decreases ($p<0.01$) in GSH level and CAT activity in CsA group compared with the control. In CsA plus of propolis group significantly decreased the MDA level ($p<0.01$), significantly increased the GSH level and CAT activity compared with the CsA group ($p<0.01$). As a result, it was determined that oral supplementation of 100 mg/kg of propolis had amendatory effect on the quality of sperm and reproductive organs treated with CsA administered rats.

KEYWORDS

Cyclosporine-A, propolis, rat, testis

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Session 1-5 - Diabetic Studies

Submission ID: 329

THE THERAPEUTICS EFFECTS AND TOXIC RISK OF HERACLEUM PERSICUM DESF. EXTRACT ON EXPERIMENTALLY STREPTOZOTOCIN-INDUCED DIABETIC RATS

ELIF EBRU ALKAN¹, İSMAIL ÇELİK¹, BEDİA BATI²

ABSTRACT

The aims of this study were the evaluation of the therapeutics effect, antioxidant role and toxic risk of *Heracleum persicum* plant against streptozotocin (STZ)-induced diabetic rats. The study groups was designed as I [Normal Control (NC)], II [Diabetic Control (DC)], III [Diabetes + Acarbose (DAC) (20mg/kg bw)], IV [Diabetes + HP (100mg/kg bw) (DH1)], V [Diabetes + HP (200mg/kg bw) (DH2)] and VI [Diabetes + HP (400mg/kg bw) (DH3)] groups. According to results; the levels of blood glucose (BG), glycosylated hemoglobin (HbA1c) and malondialdehyde (MDA) of DC group were increased significantly compared to NC group, whereas these parameters of the groups treated with the plant extracts were observed significant declines compared to DC. The biochemical analyses showed a considerable decrease in insulin and c-peptide levels and fluctuated antioxidant defence system constituents (ADSC) in the DC group as compared to control group, whereas the extract supplementations diet restored the diabetic complications parameters towards to the NC. On the other hands, hepatocyte damage serum enzymes as serum aspartate aminotransferase (AST) and alanine aminotransferase (ALT) levels increased in the the plant extract supplementations groups as compared to NC and DC groups. It was concluded that while the extracts of *Heracleum persicum* have had therapeutic effects on some complications caused by diabetes, but might be caused hepatocyte damage changes as the transport functions and membrane permeability of these cells, thus causing enzymes to leak.

KEYWORDS

Antidiabetic properties, Antioxidant capacity, Heracleum persicum, Protective role, Toxic risk

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BİYOLOJİ EĞİTİMİ ANABİLİM DALI

Session 1-5 - Diabetic Studies

Submission ID: 339

THE INVESTIGATION OF BIOLOGICAL EFFECTS OF THE IN RATS WITH METABOLIC SYNDROME NIGELLA SATIVA OIL

NACI ÖMER ALAYUNT¹, BİLAL ÜSTÜNDAĞ²

ABSTRACT

It was known that the Nigella sativa oil and its derivatives show numerous pharmacological and biological activities. Nigella sativa oil have strong biological activities such as on cancer, hypertension, kidney stones and diabetes mellitus. In this study, we had the purpose to contribute to the literature with the data to be obtained from investigating of the Nigella sativa oil on VMA and kidney enzymes levels, having a metabolic syndrome formed in rats with a fructose diet. In the study, 21 male Sprague-Dawley rats about weight of 200-240 g have been used. The rats were separated to 3 groups, each of which has 7 rats. Group1; control group (10 weeks), group 2; metabolic syndrome with fructose (10 weeks), group 3; given Nigella sativa oil after metabolic syndrome progress (10+4 week) in created. Rats were decapitated after the study. Blood samples were taken VMA, Urea, Creatine, Uric acid, Inorganic P and ALP, were measured in the serum and the effects of Nigella sativa oil on these parameters were examined. Serum Uric acid levels measuring were compared to the control group found statistically significantly higher and the formation of metabolic syndrome, that we gave the Nigella sativa oil group serum Urea and Uric acid levels compared to the group levels significantly different were lower ($P<0,05$). Formation of metabolic syndrome, that we gave the Nigella sativa oil group Inorganic P and ALP levels were lower, but the decrease did not have a statistical significance ($p>0,05$). Metabolic syndrome group VMA levels were compared to the control group lower, but the decrease did not have a statistical significance ($p>0,05$). According to data obtained as a result of the study, Mann Whitney-U test and Kruskal Wallis the value of $p<0,05$ was used as a level of statistical significance in pair wise comparisons between the groups. In conclusion, nigella sativa oil has a positive effect on Urea, Creatine, Uric acid, Inorganic P and ALP, measured in patients with metabolic syndrome and this is a promising option.

KEYWORDS

Vanil mandelic acid, Metabolic syndrome, Nigella sativa oil.

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Session 1-5 - Diabetic Studies

Submission ID: 395

**THE EFFECTS OF JUNIPERUS COMMUNIS(CUPRESSACEAE)
APPLICATION ON THE SERUM PARAOXONASE ACTIVITIES AND
PANCREATIC ENZYMES ACTIVITY AND LIPOPROTEINS LEVELS
IN EXPERIMENTAL DIABETIC RATS**

TAHIR KAHRAMAN¹, EVAN ABDULKARIM MAHMOOD²

ABSTRACT

This study was designed to evaluate the influence treatment of *J. communis* oil on paraoxonase activity, lipoprotein levels, pancreatic function in streptozotosin induced diabetic rats. Thirty two adult male rats were used in this study and randomly divided into four groups. Group one which contained eight male healthy rats given normal standard diet and determined as control group (C). Animals in group two contained eight rats was exposed to single dose of 45 mg/kg of streptozotosin in citrate buffer and named as diabetes group (D). Group three for the animals in group four, 200 mg/kg of *J. communis* was dissolved in distilled water (0.5% CMC) and was given to rats and it was named by healthy group with *J. communis* (J). Group four also contained eight male rats, during three weeks of the study, 200 mg/kg of *J. communis* was dissolved in distilled water (0.5% CMC) and have given to rats and determined as diabetes and *J. communis* group (DJ). Glycated hemoglobin (HbA1c) in whole blood and glucose, lipoproteins, paraoxonase (PON), amylase and lipase enzyme activities in serum were measured. All of the data analyzed by SPSS 13.00. Glucose, glycated hemoglobine (HbA1c), total cholesterol, triglycerides, HDL, LDL, VLDL, paraoxonase (PON), amylase and lipase enzymes were measured. Glucose and glycated hemoglobin were increased significantly in group of diabetes, and decreased significantly when treated with *J. communis* oil in DJ group. Total cholesterol level was increased significantly and by using *J. communis* oil, the level of cholesterol in diabetes and *J. communis* group (D) was decreased significantly ($p<0.05$). LDL and VLDL level were significantly increased in diabetes group and decrease significantly in DJ group. HDL level elevation was not statically significant ($p>0.05$). Level of amylase and lipase enzymes was considerably increased ($p<0.05$) in D group, and significantly decreases ($p<0.05$) in DJ group. Serum paraoxonase activity was had a significant decrease ($p<0.05$) in D group. Paraoksonase enzyme activity, a significant increase ($p<0.05$) was seen in DJ and J group when compared to D group. The results of this study indicated that *J. communis* plant can treat hyperglycemia, and also has a big effect on increasing paraoxonase enzyme, and lipoproteins.

KEYWORDS

Diabetes, Juniperus communis, Paraoxonase, Lipoproteins

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Session 1-5 - Diabetic Studies

Submission ID: 934

ANTIOXIDANT AND ANTIHYPERLIPIDEMIC EFFECT OF SOLANUM NIGRUM FRUIT EXTRACT ON EXPERIMENTAL DIABETES MODEL

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ABSTRACT

Diabetes mellitus (DM) is a chronic, progressive disease characterized by hyperglycaemia, impaired carbohydrate, protein and lipid metabolism. Diabetes mellitus is also one of the chronic diseases that result in incorrect food balance. experimental diabetes models, studies on tissue and cell lines affected by diabetes play an important role in studies of diabetes mellitus complications and determination of treatment approaches, Solanum nigrum (SN) is an annual herbaceous plant species that grows in India and other dry regions of the World. There is a long history of medical use. It has also been used as a traditional folk medicine in the treatment of various disorders such as pain, fever, inflammation and liver disorders. In this study, it was aimed to investigate the antioxidative and antihyperlipidemic effect of Solanum nigrum fruit extract on diabetic rats In the study, 28 rats weighing 200-250 g were used. The rats divided four groups consisted of seven rats, each one; Control group (K), cerated diabetes mellitus and not given Solanum nigrum (SN) (D), cerated diabetes mellitus and given SN (DSN) and only given SN (SN) group. Pre-test blood glucose values of all animals were measured. D and DSN group rats received a single dose of streptozocin 45 mg / kg intraperitoneally. The same amount of saline was injected into the control group. D and DSN groups, 72 hours after injection of STZ, glucose levels were determined by glucose meter and strips in blood samples taken from the tail of rats. Blood sugar levels of 270 mg / dl and above were included in the study. The rats in the SN and DSN groups were given gavage daily at a dose of 250 mg / kg / 28 days of SN extract dissolved in distilled water. In terms of TAS level; D group was found to be significantly higher when compared with control and SN groups (p <0,05). At TOS level; D group was significantly higher than control, SN and DSN groups (p <0,05). Serum triglyceride level was found to be the highest group D and it was significantly higher than the SN group (p <0,05). There was no difference in cholesterol levels. D group glucose level was significantly higher than controls, SN and DSN groups (p <0,05). In addition, glucose level of DSN group was significantly higher than control and SN group (p <0,05). In conclusion, it was determined that the SN plant extract is statistically significant on shaped diabetes and that reduced the increased diabetes level, but the developing diabetes and rising sugar, can not be reduced at the level of healthy living.

KEYWORDS

Solanum nigrum, diabetes, antioxidant, antihyperlipidemia

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Session 1-5 - Diabetic Studies

Submission ID: 1697

HERBAL PRODUCTS USED IN THE TREATMENT OF DIABETES

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ABSTRACT

As a food supplement, various vitamins and some herbal products are used today. Many patients with diabetes use complementary and alternative medicine in addition to pharmacological treatment to obtain better glycemic control, reduce diabetes complications and / or complement existing diabetes medications. Objective: In this study, it is aimed to investigate herbal products commonly used in diabetes treatment in the world, especially in Turkey. Method: The study investigated herbal products and their effects widely used in diabetes treatment in Turkey and in the world. 45 domestic and 30 foreign sources were screened. It has benefited from Google Academic and Pubmed. Findings: Many natural products have been tested for the purpose of support for treatment. Efforts are continuing to work on the long-term use of these products. Especially Cinnamomum Zeylanicum and Panax Quinquefolium extracts are frequently used according to the results of clinical trials. Procyanidin type A polymers found in Cinnamomum Zeylanicum plant improve insulin receptor autophosphorylation and act by increasing insulin sensitivity. Panax Quinquefolium: Clinical studies have shown that American ginseng (roots directly dusted and used) lowered satiety blood sugar and HbA1c. Both Panax ginseng and American ginseng contain ginsenosides that reduce insulin resistance and are thought to increase insulin sensitivity. It is thought that the hypoglycaemic effect is caused by these substances. Detailed clinical trials on Gymnema Sylvestre, Momordica Charantia and Trigonella Foenum Graecum continue and promising results are achieved. The Momordica Charantia plant is in the forefront of natural products used against diabetes in Southeast Asia and has an insulin-like effect with a compound known as 'p-insulin', plant insulin or 'polypeptide-P'. Trigonella flavum Graecum plant has the effect of reducing the hunger, satiety glucose levels and HbA1C levels of the patients. It also reduces carbohydrate absorption from the gastrointestinal tract. Morus Nigra, Aloe Vera, Coccinia Indica, Allium Cepa, Allium sativum and Vaccinium Myrtillis are the products of our country and in the world. Effect mechanisms of commonly used preparations in the world: Insulinomimetic agents: Alcoptera, Alcoptera, Aloe Barbadensis, Camellia Sinensis, Cynnamomum Zeylanicum, Eucalyptus, Ipomoea Batatas, Juniperus, Olea Europaea, Urtica Dioica, Zingiber Officinalis, Nigella Sustain, Allium Porrum, Glycine Max, Coccinia Indica, Momordica Charantia, Regulators of enzymes involved in glycolysis, gluconeogenesis and cannabishydrate metabolism: Allium sativum, Silybum marianum, Allium sativum, Allium sativum, Allium sativum, Allium sativum, Allium sativum, Mangostica Charantia, Cinnamomum Zeylanicum, Caesalpinia Bonducella, Capparis Desidua, Phyllanthus Amarus, Viscum Album, Cuminum Cyminum, Foeniculum Vulgare, Trigonella Foenum Graecu, Increase in insulin release: Teucrium Polium, Helianthus tuberosus, Curcuma longa Conclusion: Phytotherapy based on the use of plant and plant extracts (herbalism, herbal medicine) is most frequently used in alternative and complementary methods of medicine. However, there is no consensus in the science community about the effectiveness and reliability of these methods. It is very

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important that patients who use or use hypoglycemic drugs with hypoglycaemic drugs should share this with doctors and pharmacists since there is no worldwide standard for the presentation and licensing of products and terms related to herbal medicinal products sold as medicines and food supplements.

KEYWORDS

Diabetes, phytotherapy, herbalism, herbal medicine

Session 1-6 - Invited Speakers

Submission ID: 725

COMPARISON OF ESSENTIAL OILS OF ENDEMIC SALVIA DICHROANTHA STAPF COLLECTED FROM KONYA

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ABSTRACT

In the Anatolia folk medicine, *Salvia* L. (Lamiaceae) species are used by many people in various villages and towns for the therapeutic value of their essential oils. *Salvia dichroantha* Stapf is an endemic plant of the Irano-Turanian phytogeographic region. Plant materials were collected during the flowering period from Konya Cihanbeyli (900 m) and Konya Taşkent (1800 m). In this study, water-distilled essential oil of *Salvia dichroantha* were analyzed. The analysis was performed by using a gas chromatography (GC-FID) and gas chromatography-mass spectrometry (GC-MS) systems, simultaneously. Eight compounds were identified from the oil of Taşkent representing 96.4 % of the total oil and nine compounds were identified from the oil of Cihanbeyli representing 98.3% of the total oil. The major components were found as caryophyllene oxide (38.6%), caryophyllenol I (16.7%), caryophyllenol II (15.6%) and caryophylladienol II (11.1%) for Taşkent; caryophyllene oxide (65.8%), caryophyllenol II (14.3 %) for the oil of Cihanbeyli.

KEYWORDS

Essential oil, GC-FID, GC-MS, Salvia dichroantha

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Session 1-6 - Invited Speakers

Submission ID: 1433

EVALUATION OF TURKISH MEDICINAL PLANTS AS TEA: INDUSTRIAL POTENTIAL

IFFET IREM TATLI ANKAYA¹

ABSTRACT

Plants have been used for centuries to prevent and /or treat a variety of medical illnesses. Today, about 80% of the world's population uses medicinal plants as part of their health care. Many of the uses have come from traditional cultures. Different cultures use herbs grown in their geographical locations for curing common illnesses. Medicinal teas are obtained from medicinal and aromatic plants. Medicinal teas consist exclusively of one or more herbal drugs intended for oral aqueous preparations by means of decoction, infusion or maceration. In order to obtain high value-added products (medicinal teas), it is necessary to identify and collect strategic/priority plants for each locality. Flora of Turkey is the best source for this purpose. Turkey is a transitional region between three phyto-geographical regions, which are Irano-Turanian, Mediterranean and European-Siberian regions and has a rich flora as well as a cultural accumulation. Therefore, traditional medicinal plants play an important role in Turkey. Hence, it will be very important to evaluate the medicinal plants as tea, to make the plants to be used in tea production as a standard plant in terms of quality and to produce them by the Good Agricultural Practices (GAP/GACP) regulation. In addition, geographical, agricultural and environmental factors, applied methods/ processes/methods of handling and storage conditions should be determined so that the desired effect can be ensured and used reliably. Herbal medicinal teas, also determined in European Pharmacopoeia as monographs will be evaluated in terms of our industrial potential1-6. References: 1. Yesilada, E. et al., J Ethnopharmacology, 46, 133-152, 1995. 2. Honda, G. et al., J Ethnopharmacology, 53, 75-87, 1996. 3. Sezik, E. et al., Economic Botany, 51 (3), 195-211, 1997. 4. Yesilada, E. et al., J Ethnopharmacology, 64, 195-210, 1999. 5. Sezik, E. et al., J Ethnopharmacology, 75, 95-115, 2001. 6. Yesilada, E., Health from Nature, Herbal Teas, Zebra Press, İstanbul, 2011.

KEYWORDS

Medicinal teas, European Pharmacopoeia, Folk medicine

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Session 1-6 - Invited Speakers

Submission ID: 1841

PLANATUS ORIENTALIS VERSUS PLANATUS ANATOLIAS

İBRAHİM ADNAN SARAÇOĞLU¹

ABSTRACT

Planatus orientalis (çınar), Anadolu'nun endemik bitkisidir. Geleneksel Çin tıbbında, uzak dođu ÷lkelerinde ve İran'da yüzyıllardır tedavi amaçlı kullanılmaktadır. Özellikle çınar yaprađında bulunan flavonoidler, proantosiyanidin glikositler, penta-aromatik triterpenoidler, tanen ve fitol türevleri ve kafeik asit geleneksel tedavide başarı ile kullanılmasında rol oynayan biyoaktif bileşenleridir.

İbni Sina, çınar yaprađını diř ağrılarında, antiinflamatuar ve dizlerde ağrı kesici (analgesic) olarak önermektedir. İran, çınar yaprađını günümüzde bazı dermatolojik, gastrointestinal ve romatizmal şikayetlerde geleneksel tedavi yöntemleri arasında uygulamaktadır. Dioscorides, çınar yaprađını dizanteride (dysentery) önermiştir. Antikanser gücü yapılan klinik çalışmalarla da ortaya konmuştur. Antiseptic ve antimicrobial özellikleri oldukça güçlüdür. Bu anlamda çınar yaprađından hazırlanan ađız çalkalama suyu hem antiseptic hem de aft şikayetlerinde başarıyla uygulanabilir.

KEYWORDS

Planatus Orientalis versus Planatus Anatolias

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Session 1-6 - Invited Speakers

Submission ID: 1868

GOLDEN SECRET OF WHEAT: GERM

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ABSTRACT

Wheat germ composes 2-3% of the kernel. It is consisted of embryonic axe and scutellum parts. Biologically, it is the living part of wheat kernel together with nutrient store for germination. At the present time wheat germ is obtained as a byproduct at the amount of 3-5 kg/ton wheat kernel in the flour and semolina milling. It has been used as a feed for animal stocks and babies for many years due to its vital nutrients rich enough for the plant to geminate and to move out the ground. Now, in the last times, wheat germ has been raised to the functional food status quickly, and found many sophisticated application areas. Wheat germ has 30% protein in the quality at those of egg, meat and milk. It is very tasteful food and rich in some vital nutrients like unsaturated fatty acids, minerals specially calcium, phosphorus, potassium, magnesium, zinc and ferrum, dietary fiber, sugars, B complex vitamins specially folic acid, and vitamin E. Other than these it contains various minor nutrients and functional compounds. Wheat germ take place in the functional food has some components effective in strengtening the immune system and in increasing the physical and mental activities. These nutrients have important rolls, in satiation for a long time, decreasing cholesterol, delaying aging, arranging digestive and nervous systems, and bring in the man stronger constitution versus chronic illnesses. The functional properties of germ are transferred to whole wheat and flour products too. The whole grain products without germ are not the whole, and don't have these functional properties. Raw wheat germ lose out these favorable properties and deteriorate fast, in regular environmental conditions too when to produce, protect and consume it according to the ways is not well enough. On account of consuming, it may be eat like cereal breakfast first hand and can be used as additives or in seasoning the other foods. The fermentation products of wheat germ carry out considerable distinctions in the point of functional nutrition. A person with has celiac and diabet disturbance and, gluten and egg intolerance could be cautious in wheat germ consumption. To use it over than needed, could be dangerous. Daily intake of wheat germ is not to pass 3% of bread ate by a person a day. As a result germ is a golden secret of wheat with its functional components. However wheat germ is not a medicine, but it must be used like a medicine.

KEYWORDS

wheat, germ, nutrients, functional foods, usage.

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Session 2-1 - Medicinal and Aromatic Plants: Trade and Management

Submission ID: 139

RESEARCHING THE POTENTIAL OF ECONOMICALLY IMPORTANT MEDICINAL AND AROMATIC PLANTS OF TOKAT PROVINCE

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ABSTRACT

Tokat province is located in the Yeşilirmak Basin that is between the Middle Black Sea and the Inner Anatolia regions, and is important in terms of ecosystem and plant biological diversity. Nowadays, researching plant species that are economically important has become a necessity in the province. In this study, the potential of economically important medicinal and aromatic plants of Tokat province was researched by utilizing new Geographic Information Systems (GIS) methodologies and questionnaire techniques. The research was completed three main steps. First, an original GIS database for the flora of Tokat province was created by utilizing geo-referenced data collected from the field between 2008 and 2016. Then, a questionnaire prepared by the economists and plant taxonomists were applied to the target audiences selected among the local people and plant sellers in 2016. Finally, the questionnaire results and the GIS database were evaluated together in order to map important plant species areas. According to the questionnaire results, a total of 40 medicinal aromatic plant species were identified as economically important. These medical aromatic plant species have been evaluated as spice (1 species), spice-cosmetic (2 species), herbal tea-spice (2 species), herbal tea (3 species), herbal tea-spice-cosmetic (7 species), herbal tea-cosmetic (10 species) and herbal tea-cosmetic-perfume (15 species) in the study area. After querying the GIS database, 16 of these species were found in the Tokat flora and their locations were mapped. These species can be summarized as *Allium sativum* L., *Calendula officinalis* L., *Hypericum perforatum* L., *Laurus nobilis* L., *Matricaria chamomilla* L., *Melissa officinalis* L., *Mentha piperita* L., *Mentha pulegium* L., *Mentha spicata* L., *Nigella orientalis* L., *Rosa canina* L., *Thymus leucotrichus* Hal., *Thymus praecox* Opiz, *Tilia rubra*, *Tilia tomentosa*, and *Trigonella foenum graecum* L. These results are important for researchers, plant vendors, farmers and decision-makers.

KEYWORDS

Economy, GIS, medicinal and aromatic plants, Tokat, Yeşilirmak Basin

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Session 2-1 - Medicinal and Aromatic Plants: Trade and Management

Submission ID: 245

RESEARCH OF THE ORCHIDS GROWING IN THE NIGDE CITY AND THEIR HABITAT QUALITIES AND THREAT FACTORS

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ABSTRACT

Niğde province is located at the intersection of Iranian-Turanian and Mediterranean phytogeographical areas and is located within B5 and C5 squares according to Davis' Grid system. This study was carried out in Altınhisar (6 towns, 2 villages), Bor (5 towns, 19 villages), Çamardı (2 towns, 18 villages), Çiftlik (4 towns, 9 villages) , And Ulukışla (4 towns, 34 villages) within the boundaries of Niğde which is in the specified grids. Niğde and its surroundings are composed of rural areas, having very few forest areas, and due to the destruction caused by various reasons, many plant species are destroyed and face the danger of extinction. One of these plant species is the orchid species. In the research, primarily the types of orchids that have been recorded in the research area within the literature studies have been determined. Orchid species were examined on site, during the field works conducted in March-July 2015-2016. Areas of orchid species were identified in the study and was assessed according to Braun Blanquet cover abundance scale method (1964). In the field studies, various data about the habitat of the species (height, view, sunlight condition, plant species which found together) were collected. *Epipactis helleborine*, *E. Persica*, *Orchis stevenii*, *Dactylorhiza saccifera* species stated as endemic in Niğde according to TÜBİVES data and *E. helleborine* have been found in the area of the study. As a result of the field studies in general, orchid species were found only in Çamardı (Pınarbaşı, Çukurbağ, Demirkazık villages) and Ulukışla (Maden Village) districts. Harvesting orchids in the villages of Pınarbaşı and Çukurbağ still continues. As a result of the research, 14 orchid species belonging to the 7 genus which are; *Anacamptis laxiflora*, *Cephalanthera damasonium*, *Dactylorhiza romana*, *Epipactis helleborine*, *E.purpurata*, *Ophrys İsaura*, *O. reinholdii*, *Orchis mascula*, *O.anatolica*, *O.purpurea*, *O. boryi*, *O.palustris*, ve *Serapias vomeracea* were determined to live in the area. Morphological information about each species has been given; some suggestions have been made to provide effective protection according to the existing area usage in the habitats. It has been mentioned that harvesting of orchids around Çamardı still continues and the Directorate of Provincial Food Agriculture and Livestock to work on the orchid cultivation.

KEYWORDS

Nigde, Orchidaceae, Orchids species, Taxonomy, TÜBİVES

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Session 2-1 - Medicinal and Aromatic Plants: Trade and Management

Submission ID: 365

A SOCIO-ECONOMIC VIEW ON MEDICAL AND AROMATIC PLANTS IN OUR COUNTRY

ŞULE TURHAN¹, MOHAMMAD MASOUD MORADI¹

ABSTRACT

Since long time ago, medicinal and aromatic plants have been used for food, flavoring, medicine and healing purposes. In the Ottoman period the medicine requirements of the people were met with herbal mixtures prepared by doctors or herbalists. In the year 1868 at Istanbul there were 2000 herbalists against 45 pharmacies, this was appeared to be a proof of importance of these plants in human health. Turkey is one of the leading countries in the trade of medical and aromatic plants through Its geographical location, climate and plant diversity, agricultural potential and large surface area. This significance of Turkey; Is due to the fact that plants that provide many herbal products, which are the inputs of established herbal medicine, plant chemicals, food and additives, cosmetics and perfumery industries in developed countries, are found in our country. Therefore, these plants are mostly collected from nature and marketed. In order to promote cultivation of medicinal and aromatic plants, the Ministry of Food, Agriculture and Livestock has included supporting medical and aromatic plants for the first time in 2015. Thyme, caraway, anise and poppy are among the first lines in the cultivated plants. For example, Turkey is one of the leading countries in the production of oregano and is in the first place in exports of this plant. Our country makes 80% of the world's thyme production alone. Moreover, 90% of the annual production of 10-12.000 tons of thyme is exported to approximately 70 countries. In order to adequately evaluate the sustainable production and market potential of medicinal and aromatic plants, these products must be of the desired quantity and quality. When evaluated from this point of view, it will provide significant contributions to the economy of our country. In the study, medical and aromatic plants will be evaluated economically and their current problems will be concentrated.

KEYWORDS

Medicinal plant, aromatic plant, economy, socio-economy

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Session 2-1 - Medicinal and Aromatic Plants: Trade and Management

Submission ID: 627

MEDICINAL AND AROMATIC PLANTS EXPORTED FROM GAP REGION

HASAN AKAN¹

ABSTRACT

In this study, medical and aromatic plants in the GAP region were identified and the latest status of their populations was determined. As a result of our research, we have found that Capparis ovata Desf, Capparis spinosa L., Thymbra spicata L (Zahter, thyme), Pistacia terebinthus L. (menengic), Pistacia khinjuk Stocks (Btntim), Rhus coriaria L (sumac), Cerasus mahaleb (L.) Mil. (Mahlep) and Glycyrrhiza glabra L. (liquorice) have been sold to domestic and foreign markets, exports have been made and collected from nature. In addition, some of the most widely consumed plant species in the country have been examined in their natural state and their use patterns.

KEYWORDS

Medicinal plants, Aromatic plants, Plant trade, GAP

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Session 2-1 - Medicinal and Aromatic Plants: Trade and Management

Submission ID: 1173

DEVELOPMENTS IN TURKEY'S THYME PRODUCTION AND FOREIGN TRADE

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ABSTRACT

Turkey is one of the most important countries of the world with thyme plant production and exports, which are collected from natural flora and cultured if necessary. Thyme; production and export figures and the contribution to our national economy and the income provided to the local people, it has an important place among the medical and aromatic plants. Thyme, which has many uses such as spices, medicines, cosmetics and chemistry sector, have an important place in medical and aromatic plants foreign trade of our country. Among the important medicinal and aromatic products demanded in the world are thyme, and Turkey holds about 70-80% of the world's thyme trade. Thanks to the use of alternative medicine, the demand for deafness has increased even more with the widespread usage in recent years. Thus thyme was a product with increasing economic value. In 2016, the production of 14724 tons of thyme was carried out in 121 thousand decares area. Denizli is the most important province in Turkey with 91.8% of the thyme plantation area and 85.7% of the country production in 2016. Manisa, Kütahya and Usak are other important producer cities. Thyme exports of Turkey, which was around 16,7 million dollars in 2004, increased by 263,5% and reached 60,7 million dollars in 2016. Turkey exports thyme to are close to 90 countries its 21.6% was USA. Germany, Netherlands, Poland, Canada and France are other countries had highest imports of thyme form Turkey in 2016. Exports to the Aegean Free Zone are at significant levels. Thyme provided by a company operating in the Aegean Free Zone is subjected to ground with high temperature steam under vacuum sterilization process and then packed and exported to especially Europe and America and around the world. In 2016, imports of 4.6 million dollars were received for 1661 tons of thyme. Albania, Morocco, Poland, Mexico and France are among the important countries we import thyme. It is necessary to support initiatives for increase and sustainability in thyme production and exports, which have the potential to add value and foreign exchange input to the country's economy.

KEYWORDS

Thyme, production, marketing, export, import

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Session 2-1 - Medicinal and Aromatic Plants: Trade and Management

Submission ID: 1849

ESTIMATION OF TURKEY'S MEDICAL AND AROMATIC PLANT IMPORTS WITH ARTIFICIAL NEURAL NETWORKS

MUHAMMET ESAT OZDAG¹, MURAT YESILKAYA¹

ABSTRACT

The consumption of medicinal and aromatic plants is increasing globally in parallel to the use in a wide variety of industrial fields in recent years. Although Turkey's medical and aromatic plants are potentially one of the most important countries in the world, they are not at the desired level of spreading this power to the economic arena. According to TURKSTAT, sector exports in the last few years have been realized as approximately 140 million dollars while imports have been recorded as 20 million dollars. In this case Since the sector can not meet all of domestic consumption and exports, it is important to estimate the import figures of future medical and aromatic plants. Planning that does not reside on demand estimates can not be expected to yield efficient results. In the changing global market, forecasting import figures will provide sectoral economic benefits to keep pace with the competition and to direct investments. This study presents estimates of imports of annual medicinal and aromatic plants from 2017 to 2027 of Turkey and aims to shed light on the future plans of those concerned by minimizing the error rate with the help of real data and kalman filter. Gross national product (GDP) (w1) and Turkey population figures (w2), which are influential on consumption and import as independent factors, were used taking into account correlation dependence in estimation. GDP and population figures for the last 15 years are provided by the Turkish Statistical Institute (TURKSTAT) and import figures for Turkish medicinal and aromatic plants from the International Trade Center (ITC) website. In recent years it has been observed that artificial neural networks are heavily used in estimation and that the estimated data show higher performance than other methods. In this study, the 15- year data set obtained is divided into two sections as verification (between 2012 and 2017) and education (between 2002 and 2011). The data for education is generated by artificial neural networks and import data for the following years. It has been reworked with the Kalman filter to verify with the data and to obtain a more stable result.

KEYWORDS

medical and aromatic plants, kalman filter, artificial neural networks, estimation

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Session 2-2 - Production of medicinal and aromatic plants

Submission ID: 396

DIFFERENT HORMONE CONCENTRATIONS AND MARINE EFFECT EFFECTS OF BLUEBERRY STEEL PRODUCTION

VILDANE GERÇEK¹

ABSTRACT

The aimed to in this study, Blueberry is produced from steel, which is important as a non-wood forest product and naturally grown in the Eastern Black Sea Region. In this context, the effect of IBA and seaweed is examined on the rooting of hard steels, which from the phenotypically superior blueberry. The steels were taken in mid-February. The steel was applied to three different concentrations of doze IBA (2000 ppm, 3000 ppm, 4000 ppm) and marine algae, also to be controlled. In the greenhouse environment, the pure perlite planted steels were allowed to take root for 60 days in the fogging unit. At the end of the evaluation; IBA applications increased rooting compared to control steels. The steels treated with marine algae concentration showed the best growth in terms of height, diameter and root development.

KEYWORDS

Blueberry, Hard steel, Rooting, IBA, Seaweed

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Session 2-2 - Production of medicinal and aromatic plants

Submission ID: 638

ESSENTIAL OIL CHARACTERIZATION OF ANGELICA SYLVESTRIS L. VAR. SYLVESTRIS FROM VARIOUS GEOGRAPHICAL LOCATIONS IN LAKES REGION, TURKEY

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ABSTRACT

The fruits of *Angelica sylvestris* L. var. *sylyestris*, growing wild in Lakes Region in Turkey, were collected at seed maturing stage from different localities to study the essential oil composition. The essential oils of fruits were obtained by hydro distillation and components of the oils were identified by gas chromatography/mass spectrometry. The oil yields on a dry weight basis ranged from 0.45% to 1.50%. The number of essential oil components ranged from 43 to 72 based on locations and a total of 97 compounds were identified. Major qualitative and quantitative variations of some compounds were determined with respect to localities of collection. The major components were β -phellandrene (8.07%-29.55%), 1-Phellandrene (2.27%-16.04%), sabinene (0.36%-14.85%), bicyclogermacrene (1.36%-11.38%), germacrene B (2.11%-9.11), α -bisabolol (0.73%-7.46%) geranyl acetate (1.68%-7.38) and germacrene D (2.57%-6.83%). Considering the major components, the localities were represented by different chemotypes (β -phellandrene / 1-Phellandrene / germacrene B), (β -phellandrene / 1-Phellandrene / bicyclogermacrene), (β -phellandrene /sabinene / bicyclogermacrene / 1-Phellandrene) and (β -phellandrene /geranyl acetate / α -bisabolol / germacrene B).

KEYWORDS

Angelica sylvestris L. var. *sylyestris*, essential oil content and composition, location

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Session 2-2 - Production of medicinal and aromatic plants

Submission ID: 648

DETERMINATION OF PESTICIDE RESIDUE STATUS OF SOME MEDICINAL AND AROMATIC PLANTS

TAMER KUŞAKSIZ¹, HÜSEYİN ÇİMER², ESEN KUTLU KUŞAKSIZ¹, MEHMET ERTÜRK², MUSTAFA KORKMAZ³

ABSTRACT

Dried parts of Lemon Balm-(*Melisa officinalis*-Leaves), St. John's Wort(*Hypericum perforatum*-Herb), Peppermint(*Mentha piperita*-Leaves), Sage(*Salvia officinalis*-Leaves), Jasmine(*Jasminum officinale*-Flowers-imported), Green tea(*Camellia sinensis*-Leaves- imported), Eggplant(*Solanum melongena*-Fruits), Paprika(*Capsicum annum* –Fruits), Pumpkin(*Cucurbita sp.*-Fruits), were analyzed for pesticide residues by LCMSMS and GSMS devices with AOAC 2007.01 method and Quechers procedures in 2017. Among the 9 herbal samples analyzed, pesticide residues were detected in 7 samples except for Melissa and Sage. In the case of dried Jasmine flowers and pumpkin, the results were found to be higher than the values indicated in Turkish Food Codex Pesticide MRL Regulation. As a result, consumption of dried herbal materials with over-limit values as food may cause problems in terms of human health. Pre-sale inspections of these products, especially imported ones, by the Ministry of Food, Agriculture and Livestock should be made not only in terms of diseases and pests but also in terms of pesticide residues. The importance of this issue in this study has been pointed out.

KEYWORDS

Medicinal and Aromatic Plants, Pesticide Residue, Consumer Safety

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Session 2-2 - Production of medicinal and aromatic plants

Submission ID: 1529

STUDIES FOR MEDICINAL PLANTS' ADAPTATION IN ZEYTİNBURNU MEDICINAL PLANTS GARDEN

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ABSTRACT

STUDIES FOR MEDICINAL PLANTS' ADAPTATION IN ZEYTİNBURNU MEDICINAL PLANTS GARDEN Zeytinburnu Medicinal Plants Garden is a pioneer joint project of Merkezefendi Traditional Medicine Society with Zeytinburnu Municipality. Opened in 2005, it is the first medicinal plants garden in Turkey. Besides plantation areas, an education and research center, two greenhouses, herbarium, laboratory, drying room and animal shelter are located in 3.5 acres land wherein no chemical is used. Supporting many projects by seed, seedling or consultancy, the Garden has contributed to development of biodiversity and promoted cultivation and the use of medicinal plants efficiently and safely. With guided tours, courses, workshops, internship and volunteer programs, publications and a yearly festival, it has become a lifelong learning center for all age groups. The Garden is open daytime throughout the year. Total number of taxa in Zeytinburnu Medicinal Plants Garden has reached to 708. Adaptation of 8% of indoor (greenhouse) plants and 52% of outdoor plants has been completed and these are grown extensively in their parcels. 92% of indoor plants and 48% of outdoor plants are still tried to be adapted. The families with highest number of taxa are Cactaceae, Rutaceae, Zingiberaceae and Annonaceae indoors the ratios being 23.3%, 11.6% and 3.2% respectively; and Asteraceae, Lamiaceae, Rosaceae, Fabaceae, Apiaceae and Brassicaceae outdoors the ratios %11.6, %10.1, %6.4, %5.8, %4.0 and %3.2 respectively. The genera with highest number of taxa are Citrus sp., Opuntia sp. and Annona sp. indoors the ratios being %8.1, %5.8 and %3.5; and Allium sp. Prunus sp., Salvia sp. and Mentha sp. outdoors the ratios being %1.6, %1.6, %1.6 and %1.4 respectively.

KEYWORDS

Medicinal plant, aromatic plant, medicinal plant cultivation, aromatic plant cultivation, Zeytinburnu Medicinal Plants Garden

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Session 2-2 - Production of medicinal and aromatic plants

Submission ID: 1530

GROWTH AND PHYSIOLOGICAL RESPONSES OF 'CHRYSANTHEMUM PALUDOSUM' UNDER SALINITY STRESS

SARA YASEMİN¹, NEZİHE KÖKSAL¹, ASLIHAN ÖZKAYA¹, MİTHAT YENER¹

ABSTRACT

Chrysanthemum paludosum, belongs to Asteraceae family, is a perennial medicinal herb and ornamental plant. It has aesthetical values together with several medical effects. Excess of salinity in soils is one of the major problems which reduce plant growth. The purpose of this study was to determine the effects of saline water on *Chrysanthemum paludosum* by assaying plant growth and some physiological traits. In this work, the effects of salinity stress on diameter of flower and disc floret, number of flowers, shoot height, root length, thickness of root collar and, stem, fresh weight of root and, shoot, dry weight of root and, shoot, leaf chlorophyll concentration (SPAD readings), moisture content on wet basis, relative water content and ion leakage were investigated. *Chrysanthemum paludosum* plants were irrigated with five different levels of NaCl concentrations (0, 50, 100, 150, 200 mM) for 30 days with 3 days intervals in pots under greenhouse conditions. According to the results, flower diameters, disc florets, number of flowers, shoot height, root collar thickness, root and shoot fresh weights were negatively affected in 150 and 200 mM NaCl treatments. In parallel ion leakage was also highly increased in 150 and 200 mM NaCl treatments. Leaf chlorophyll concentrations were decreased by increasing salinity stress.

KEYWORDS

plant growth, abiotic stress, membrane injury, SPAD, Chrysanthemum paludosum

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Session 2-2 - Production of medicinal and aromatic plants

Submission ID: 1821

THE EFFECT OF SEAWATER USED FOR HYDRODISTILLATION ON ESSENTIAL OIL YIELD AND COMPOSITION OF OIL-BEARING ROSE (ROSA DAMASCENA MILL.)

NİMET KARA¹, SABRİ ERBAŞ¹, HASAN BAYDAR¹

ABSTRACT

Oil-bearing rose (*Rosa damascena* Mill.) is the most important rose species having a high-value volatile oil, used in the fragrance and cosmetic industries. Epidermal cells of the flower petals are the main essential oil source. During the boiling process of hydrodistillation, the essential oil in the cells diffuses through the cell walls by means of osmosis. The purpose of this research was to find out what happens when seawater or salt water used instead of distilled water for hydrodistillation. Fresh rose flowers collected at full blooming stage in the early hours of morning were distilled with pure water (control) and Mediterranean sea water using Clevenger hydrodistillation apparatus. Constituents of essential oils obtained by hydro distillation were identified with GC-FID/MS apparatus. Essential oil yield were not significantly affected by the distillation practices. However, the hydrodistillation with seawater gave a little higher yield as 0.045% than the hydrodistillation with pure water as 0.042%. A total of 23 essential oil constituents were detected by GC-FID/MS analyses. The main compounds in both rose oils distilled by tap water and seawater were citronellol, geraniol, nerol, and nonadecane. As a results, hydrodistillation of oil-bearing rose with seawater provided a statistically insignificant increase in the essential oil yielded from 0.040 to 0.045%, but caused a significant decrease in citronellol rate from 41.49 to 33.56 %, and significant increases in geraniol rate from 17.58 to 27.44 % and nerol rate from 6.45 to 12.21 %. The results obtained from this research should be examined in more detail at industrial scales.

KEYWORDS

Oil-bearing-rose, essential oil, distillation, seawater treatment

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Session 2-3 - Functional Foods

Submission ID: 111

USE OF EGG WHITE PROTEIN POWDER BASED FILMS FORTIFIED WITH LEMON BALM ESSENTIAL OILS IN THE STORAGE OF KASHAR CHEESE

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ABSTRACT

Edible film was produced by adding 3% sorbitol (w/v) to egg white protein powder (EWPP). kashar cheese samples was coated with film fortified with lemon balm essential oil (LBEO) at various concentrations [1%, 2% (v/v)]. The films were labeled as EWPLBEO1, EWPLBEO2 to indicate the type and concentration of additive. The 2rd batch of the kashar cheese samples was coated exclusively with non-fortified EWPP and the 3th batch was left uncoated (K). All of the cheese samples were artificially contaminated with Escherichia coli O157:H7 (E. coli O157:H7), Listeria monocytogenes(L. monocytogenes) and Staphylococcus aureus (S. auerus) at 10⁶ cfu/g. All the samples were stored at +4±1°C. Their microbiological properties were examined on the 1st, 7th, 15th and 30th days of the storage. It was determined that coating the cheese samples with EWPP based film and edible films obtained with the addition of LBEO at different concentrations to EWPP all had bacteriostatic effects from the 1st day of storage and bactericidal effect in the further days of storage. The antimicrobial effects of all LBEO supplemented films were higher than EWPP based film. E. coli O157:H7 was the most resistant microorganism to the LBEO essential oil while L. monocytogenes was the most sensitive. It was found that the relationships between the increase in the essential oil concentrations and the increase in film thickness, water vapor permeability, inner and outer hardness, decrease in the weight loss, improvement in fat barrier property, and microbial counts during storage were significant (p<0.05). These properties were found to be significantly affected in the 2% (v/v) SEO and BEO samples, while the effects of other additive concentrations were not significant (p>0.05).

KEYWORDS

Lemon Balm Essential Oil , Kashar Cheese, Edible Films

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Session 2-3 - Functional Foods

Submission ID: 143

INVESTIGATION OF CHEMICAL PROPERTIES OF HERBY CHEESES WITH MELENGIC (*PISTACIA TEREBINTHUS*)

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ABSTRACT

Melengic (*Pistacia terebinthus*) is one of the medicinal plants of which fruit, leaves, seeds, gum have been used. Melengic is consumed widely as coffee in Turkey. Additionally, melengic has been used for producing cheese in Southeast and Eastern Anatolia in Turkey. The aim of this study was investigated chemical properties of herbed cheese with melengic traditionally produced in Hakkari city (Turkey). The findings of this study showed that average dry matter, ash, fat, protein, acidity (as lactic acid), salt values of products were 50.86 ± 3.87 , 7.92 ± 0.528 , 26 ± 0.707 , 18.51 ± 3.67 , 3.09 ± 0.02 , 5.55 ± 1.12 respectively. These results were expressed as %. Average pH of herbed cheese with melengic was 4.24 ± 0.20 .

KEYWORDS

Melengic, cheese, Pistacia terebinthus

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Session 2-3 - Functional Foods

Submission ID: 575

USING QUINOA FLOUR IN TARHANA TO IMPROVE NUTRITIONAL AND FUNCTIONAL PROPERTIES

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ABSTRACT

In this study, quinoa flour was used to improve the technological, nutritional and sensorial properties of tarhana. Four different levels of quinoa flour (0, 10, 20, 30 and 40%) were added instead of wheat flour in tarhana production. In the samples of tarhana, the colour, viscosity, chemical (moisture, crude ash, crude protein), nutritional (mineral content, phytic acid content, total phenolic content, antioxidant capacity) and sensorial properties were determined. Highest L* value was determined with 40 % quinoa flour tarhana sample. When the addition of quinoa flour was increased, the L* and b* color values, ash, protein, calcium, iron, potassium, phosphorus contents, total phenolic content of the samples increased, but moisture and magnesium content decreased. Highest viscosity value was found in control tarhana samples and the increasing the amount of quinoa flour showed a decrease of viscosity values. The antioxidant capacity of samples, determined by TEAC and DPPH methods, increased with the enrichment of quinoa flour. According to sensorial analysis, tarhana samples enriched with 20 % quinoa flour got the highest scores as taste, flavor, sourness, color and general likes from the panelists.

KEYWORDS

Tarhana, quinoa, enrichment, nutritional properties, antioxidant capacity

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Session 2-3 - Functional Foods

Submission ID: 616

EFFECT OF LAVENDER POWDER ON MICROBIAL, PHYSICOCHEMICAL, SENSORY AND FUNCTIONAL PROPERTIES OF YOGHURT

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ABSTRACT

Yoghurt is a fermented milk product that is produced by *Streptococcus thermophilus* and *Lactobacillus delbrueckii ssp. bulgaricus* and consumed all around the world. Yoghurt fortification has an important role to develop nutritional, sensorial and health promoting effects of the yoghurt. *Lavandula officinalis* L. is a fragrant herb belonging to Lamiaceae family and called lavender. It is known as having therapeutic and antimicrobial effects. The objective this research was to determine changes in microbial flora and functional properties of A1, A2, A3 and A4 yoghurts containing lavender powder at rates of 0.010, 0.025, 0.050 and 0.075%, respectively. In this context, the antioxidant activities and total phenolic contents of yoghurts were investigated as functional properties. The effect of lavender powder on the potential flora during fermentation was determined, furthermore, alterations in microbiological properties of yoghurts were examined during the storage period (1d, 7d and 14d). Yogurts produced by adding lavender powder at different ratios were subjected to sensory testing to determine consumer acceptance. The highest antioxidant activity according to DPPH and ABTS method was determined in A4 sample. The TEAC value (μM Trolox) of control sample was found as 170.89 ± 0.06 , while the TEAC values of A1, A2, A3 and A4 samples were 190.87 ± 0.13 , 240.47 ± 0.12 , 284.75 ± 6.50 and 311.01 ± 0.91 , respectively. There was an increase in the TEAC values of the samples due to the increase in the amount of lavender powder. The total phenolic contents of control, A1, A2, A3, and A4 samples were determined as 0.05 ± 0.00 , 0.07 ± 0.01 , 0.07 ± 0.01 , 0.08 ± 0.01 , and 0.10 ± 0.01 mg gallic acid/g, respectively. Streptococcal counts were 8.89 ± 0.21 , 8.71 ± 0.09 , 8.77 ± 0.13 , 8.66 ± 0.04 and 8.91 ± 0.13 cfu / mL, respectively, in the control, A1, A2, A3, and A4 samples. No decrease in streptococcal counts was observed during storage in all samples. Lactobacilli counts were 8.58 ± 0.06 , 8.43 ± 0.26 , 8.34 ± 0.26 , 8.02 ± 0.02 and 8.53 ± 0.34 cfu/mL, respectively, in the control, A1, A2, A3, and A4 samples. While the lactobacilli count of the control sample decreased during the storage period, it remained constant in A1, A2, A3 and A4 samples at the end of the storage time. It was determined that the lavender powder supplementation contributed the viability of lactobacilli during storage. No statistically significant difference was found in the total bacterial counts between the samples in 1 d, however the highest total bacteria content was determined in A4 sample (8.31 ± 0.01 cfu/mL) at the end of the storage period (14 d). The best appearance, consistency and taste scores was determined in the A1 sample according to the sensory acceptability test. The odor scores of yogurts added with lavender powder were higher than the control sample. The highest overall acceptability score was determined in the A1 and A2 samples. Considering the scores of sensory properties and functional properties of lavender powder, it can be thought to be a good supplement for yogurt.

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KEYWORDS

antioxidant effect, lavender, microbial potential, yoghurt

Session 2-3 - Functional Foods

Submission ID: 972

BIOLOGICAL ACTIVITIES AND HEAVY METAL POLLUTION OF POLLENS FROM AFYON AND KIRKLARELİ

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ABSTRACT

Pollen is male gametophyte and has plenty of biological activities. Thus, pollen used by human for varied purposes. Many studies carry out on botanic origin, antioxidant activities and heavy metals of honey bee pollen. Pollen analysis, antioxidant activities, total phenol-flavonoid contents and 20 heavy metals of pollen samples from Afyon and Kırklareli cities were studied based on the international received literatures. The antioxidant capacity of pollen extracts was assessed through the hydrogen peroxide scavenging activity (in terms of SC50), ferric reducing antioxidant power capacity (FRAP), DPPH radical scavenging activity (in terms of SC50), metal-chelating activity (%), total phenol content (TPC), and total flavonoid content (TFC). Their values were found as 25.56-30.28 µg/mL, 72.29-72.58%, 52.26-52.39 µg/mL, 54.65-55.93%, 1692.86-1583.35 mg GAE/100 g and 111.69-110.49 mg CAE/100 g, respectively. For comparison of these results, butylated hydroxy anisole (BHA), butylated hydroxy toluene (BHT) and α -tocopherol (TOC) were used as standard antioxidant compounds. The investigated activities of samples could be related with their pollen composition. In this study, bioaccumulation of heavy metals in pollen samples were examined and 20 heavy metal concentrations in pollen samples were detected by using ICP-MS Spectrometer (Model Bruker 820-MS). From the results, the pollen samples were found to be contaminated with most of heavy metals (Al, Cr, Mn, Fe, Ni, Cu, Zn, B, As, Te, U) to a lesser or greater extent while some heavy metals (Ag, Co, Cd, Ga, Mo, Pb, Tl and V) were never encountered. As only a difference, Bi was determined in the pollen sample taken Afyon city, while it was not found in the other sample. Others, except for a few metals, were found in pollen collected from Afyon in high quantities. From results, pollen samples can be used as an important indicator for evaluation of heavy metal contamination in the environment.

KEYWORDS

Antioxidant activity, heavy metals, pollen, total flavonoid, total phenol

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Session 2-3 - Functional Foods

Submission ID: 1148

A COMPARATIVE STUDY ON THE ANTIOXIDANT AND ANTIMICROBIAL ACTIVITIES OF MULTIFLORAL HONEYS AND CASTANEA SATIVA HONEYS

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ABSTRACT

Honey is produced by honeybees from the nectar of various plants and honeydew and consist of mainly sugar types (glucose, fructose and sucrose), proteins, organic and inorganic acids, enzymes, vitamins, hormones, phenol-flavonoids, amino acids and elements. Honey composition depends on floral source. Pollen analysis, antioxidant activities, total phenol-flavonoid contents of honey samples were studied based on the international received literatures. In this study, multifloral and Castanea sativa honeys were compared with using different antioxidant and antimicrobial test methods. The antioxidant capacity of honeys was assessed through the hydrogen peroxide scavenging activity (in terms of SC50), ferric reducing antioxidant power capacity (FRAP), DPPH radical scavenging activity (in terms of SC50), metal-chelating activity (%), total phenol content (TPC), and total flavonoid content (TFC). Also, antimicrobial activities of honey samples were investigated by using disc diffusion assay method (DDM) against *B. subtilis*, *S. aureus*, *L. monocytogenes*, *C. perfringens*, *P. aeruginosa*, *E. coli*, *Salmonella enteritidis*, *K. pneumoniae*, *Candida albicans*. The multifloral honeys were found between 265.23-279.63 µg/mL, 71.85-74.48%, 608.32-632.14 µg/mL, 36.2-36.87%, 26.66-112.8 mg GAE/100 g and 5.39-9.32 mg CAE/100 g, respectively. The *C. sativa* honeys varied between 257.44-269.09 µg/mL, 72.91-73.86%, 572.19-650.54 µg/mL, 36.34-36.85%, 61.22-138.6 mg GAE/100 g and 7.54-10.42mg CAE/100 g, respectively. For comparison of these results, butylated hydroxy anisole (BHA), butylated hydroxy toluene (BHT) and α -tocopherol (TOC) were used as standard antioxidant compounds. The antimicrobial activity of multifloral honeys were found against *B. subtilis*, *S. aureus*, *L. monocytogenes*, *C. perfringens*, *P. aeruginosa*, *E. coli*, *S. enteritidis*, *K. pneumoniae*, *C. albicans* between 11.15-12.60, 10.65-11.23, 6.00-11.11, 10.55-10.89, 6.00-10.98, 9.31-11.42, 10.40-12.78, 10.42-13.43 and 6.00 mm, respectively. The antimicrobial activity of *C. sativa* honeys were found against *B. subtilis*, *S. aureus*, *L. monocytogenes*, *C. perfringens*, *P. aeruginosa*, *E. coli*, *S. enteritidis*, *K. pneumoniae*, *C. albicans* between 6.00-11.39, 6.00, 6.00-11.47, 6.00-10.64, 6.00, 6.00-10.16, 6.00-9.53, 6.00-11.01 and 6.00 mm, respectively. The investigated activities of samples could be related with their botanic origin. According to obtained results, *C. sativa* honeys show higher hydrogen peroxide scavenging activity, DPPH radical scavenging activity, total phenol content (TPC) and total flavonoid content (TFC) than multifloral honeys. On the other hand, each honey samples demonstrate similar metal chelating activity. Both sample species show antimicrobial activity against Gram (+) and Gram (-) bacteria but not fungi.

KEYWORDS

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Antioxidant activity, antimicrobial activity, Castanea sativa honey, multifloral honey, total phenol and flavonoid contents

Session 2-4 - Chemotherapeutic Effects

Submission ID: 719

MELANOMA IS JUST NOT SKIN CANCER

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ABSTRACT

Melanoma is a cancer type that begins in the melanocytes. Although it has been considered uncommon, the incidence of the disease has been increasing dramatically in the past few decades. The high malignancy is based on a pronounced resistance to conventional chemotherapy, related to defects in pro-apoptotic signaling. Thus, targeting melanoma by efficient induction of apoptosis appears as promising. Exposure to solar ultraviolet radiation seems to play a predominant role in the development of skin cancers. The UV-A component of light initiates oxidative stress in human skin, and accordingly initiate the skin cancer, particularly malignant melanoma. As a continuous searching, a cure from natural compounds *S. cedronella* was investigated against Malign Melanoma. For this purpose, firstly, the singlet oxygen production capacity of methanol extract of *S. cedronella* was tested using RNO bleaching method. The Cytotoxic activity of methanol extract producing singlet oxygen was investigated against human malign melanoma cancer cells lines (HT 144) and against mouse fibroblast cell lines (3T3) using MTT assay. In addition, the effect of visible light on the cytotoxic activity was also searched. For this purpose, 150 W halogen lamp and a visible light permeable filter (Plexiglas) were used to be carried out the experiment. The role of methanol extract on apoptosis was analyzed using Annexin V-FITC/PI. Specific stains such as DCFH-DA were used for the enhancement of production of reactive oxygen species (ROS). TNF- α (Tumor necrosis factor-alpha) secretion was investigated using Duo St ELISA Human TNF- α . Treatment of cells with methanol extract at various concentrations inhibited cell viability in a dose-dependent manner. Methanol extract of *S. cedronella* showed a cytotoxic effect against HT 144 at 12.5 $\mu\text{g/ml}$. The highest cytotoxic effect observed at 100 $\mu\text{g/ml}$ concentration. When standard and illuminated cytotoxic activities results compared, higher activity was observed in the illuminated cytotoxic activity at 100 $\mu\text{g/ml}$ concentration. Intracellular ROS was measured in terms of fluorescence by DCFH-DA. The intracellular ROS production increased after the incubation of HT 144 cells with the *S. cedronella* methanol extract, when compared to that of control (H₂O₂). *S. cedronella* induced cell death. To discriminate whether the extract induced apoptosis in malign melanoma cells, the appearance of the early apoptosis biomarker phosphatidylserine at the cell surface was also analyzed by flow cytometry using annexin V-FITC and propidium iodide. In addition, the extract exhibited TNF- α secretion. Reactive oxygen species produced by TNF- α have an important function in cell death. Growth inhibition and ROS generation in HT 144 cells by *S. cedronella* methanol extract indicated that ROS production probably caused apoptotic cell death via TNF- α secretion.

KEYWORDS

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Malign melanoma, Salvia cedronella, singlet oxygen, apoptosis, TNF- α



Session 2-4 - Chemotherapeutic Effects

Submission ID: 882

SELECTIVE CYTOTOXIC EFFECT OF PRIMULA VULGARIS LEAF EXTRACT ON HUMAN BREAST, COLON AND LIVER CANCER CELLS

IBRAHİM TURAN¹, SELİM DEMİR², REZZAN ALIYAZICIOĞLU³, YUKSEL ALIYAZICIOĞLU⁴

ABSTRACT

Background/Aim: Cancer is the most challenging global health problem and leading cause of death throughout the world. The treatment of many cancer patients often involves chemotherapy and radiotherapy, and these treatments over time harm normal cells and cause resistance in targeted cancer cells, reducing the success rate of these therapies. For this reason, current researches focus on new generation drug development studies with fewer side effects. *Primula vulgaris* belongs to the genus *Primula* and this genus is frequently used in traditional medicine. *Primula* species are reported to be rich in saponins, alkaloids, tannins, terpenes, and phenolic compounds. Antioxidant, antimicrobial, antigenotoxic, anti-inflammatory, hypoglycemic, and wound healing properties of *Primula* species have been studied in various studies. Several studies have investigated the cytotoxic effect of different species of the genus *Primula*, however there have been no previous studies of the cytotoxic effect of *P. vulgaris*. The purpose of this study was to determine total phenolic content and the cytotoxic effect of dimethyl sulfoxide (DMSO) extract of *P. vulgaris* leaves in human breast (MCF-7), colon (WiDr), liver (HepG2) cancer cell lines and human normal foreskin fibroblast cells. **Materials and Methods:** The leaves of *P. vulgaris* were collected from Trabzon-Turkey in Spring 2015. These were air-dried at 25°C and powdered using a blender and milling into fine powder. The powder then was mixed with DMSO and extracted by maceration. The total phenolic content was established using the spectrophotometric method adapted to microscale using gallic acid as a standard. The cytotoxic effects of extract on cell proliferation were determined using MTT assay. Cisplatin was used as a positive control. **Results:** Total phenolic content value was 1890.1±11.2 mg gallic acid equivalents per 100 g sample. The extract showed selective cytotoxic effects on all studied cancer cell lines compared to normal fibroblast cells and IC50 values ranged from 133.3-160.8 µg/mL. **Conclusion:** This is the first study to reveal the antioxidant properties of *P. vulgaris* leaf extract and its cytotoxic effect on cancer cell lines. Further studies are now needed to identify the antioxidant and cytotoxic molecules in the extract and their mechanisms.

KEYWORDS

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Cancer Cells, Cytotoxicity, Polyphenols, Primula vulgaris



Session 2-4 - Chemotherapeutic Effects

Submission ID: 1061

DETERMINATION OF APOPTOTIC EFFECTS OF FISETIN ON MALIGNANT GLIAL CELLS

PINAR ÖZTOPCU-VATAN¹, FULYA PAK¹

ABSTRACT

Flavonoids, a group of plant secondary metabolites, show anticancer properties in variety of cancer cells in vivo and in vitro. Fisetin (3,3',4',7-tetrahydroxyflavone), is a polyphenol flavonoid found in many plants and fruits. Previous studies, have shown the anticancer effects of fisetin against on different cancer cells and model animals. Brain and spinal cord tumors develop in glial cells; these tumors are collectively called gliomas. Glioblastoma multiforme (GBM) remains the most aggressive and resistant brain tumor in adults. Besides a limited number of drugs, therapy resistance is the major obstacle for efficient treatment of GBM. For all these reasons, researchers are maintain search the more effective drugs and have fewer side effects on normal cells than today drugs in the treatment of glioma. In this study the apoptotic effects of fisetin on glioma cells were evaluated. The cytotoxic effects of fisetin (1 to 500 μ M) was examined in T98G human glioma cells for by MTT assay 24 and 48 h. After human bronchial epithelium (BEAS-2B) cells were used to determine the toxic effects of fisetin on healthy cells. Carmustine was used as positive control. For the statistical analysis one-way ANOVA test and after Tukey's multiple comparison test were used. Apoptotic alterations on the T98G cells by fisetin treatment were also analyzed by transmission electron microscopy. DNA fragmentation analysis and quantitative real time PCR (QRT-PCR) were used to evaluate the apoptotic effects of the treatment. Fisetin exerted a dose- and time-dependent growth inhibitory effect on both cells. The IC50 values of fisetin were determined as 93 and 75 μ M for T98G, and 270 and 90 μ M for BEAS-2B cells, respectively in 24 and 48 h. After treatment with 50 and 100 μ M doses of fisetin in T98G cells, chromatin condensation, increased vacuolization and organelles swelling were observed. According to DNA fragmentation results apoptosis was found 3,7, 4,4 ve 5,3 fold increased respectively in T98G cells. We observed increased expression of apoptotic genes CASPASE 3, 9, 8, BAX and decreased expression of BCL-2 and SURVIVIN in T98G cells. According to the findings of this study, fisetin was found to have more efficient cytotoxic and apoptotic effects in T98G cells depending on the dose and the time. Furthermore, cytotoxic and apoptotic effects of fisetin were found to be stronger in glioma cells compared to normal cells. Additional in vivo and in vitro studies will show the place of this chemical in the treatment of glioma in the future. Funding: This study was supported by Eskisehir Osmangazi University, Scientific Research Projects Committee (Project number: 201319A112).

KEYWORDS

Apoptosis, Cytotoxicity, Fisetin, Glioma, QRT-PCR

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Session 2-4 - Chemotherapeutic Effects

Submission ID: 1371

ACTIVE PHYTOCHEMICAL DETECTION AND CYTOTOXIC EFFECTS OF THE METHANOL /ACETONE MIXTURE EXTRACT OF PLANTAGO MAJOR L. SUBSP. INTERMEDIA

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ABSTRACT

Plants have been used for centuries to nutrition, spice, health care and cosmetic preparations. There is a growing interest to use of medicinal plant because of their medical effectiveness, low toxicity and the many natural anticancer agents derived from these plants. Medicinal plants are commonly rich in phenolic compounds, which have multiple biological effects. *Plantago major* L. is a perennial plant from Plantaginaceae family and it is almost found all over the world. *Plantago* is an important medicinal plant which has different compounds such as phenolic compounds, flavonoids, alkaloids, terpenoids and vitamin C. The leaf infusion of the plant is taken a drink for its depurative, diuretic febrifuge, bile stimulant and antitumor effects. It is used externally to wash wounds and treat skin infections. The aim of this study was to detecting active phytochemicals in methanol/acetone mixture (1:1 v:v) extract of *Plantago major* L. subsp. *intermedia* leaves and determines in vitro cytotoxic effect of this extract on MCF-7 human breast cancer cells and BJ human normal foreskin fibroblast cells. The phytochemicals present in the plant extract were determined using standard methods. 50, 100, 150 and 200 µg/ml concentrations of methanol /acetone (1:1 v:v) extract was tested for cytotoxic effect on MCF-7 and BJ cells by using MTT assay. As a result of phytochemical screening of *Plantago major* L. subsp. *intermedia* leaves extract, phenols, tannins, alkaloids, anthroquinones and saponins were detected. In cytotoxicity assay (MTT assay), we found that methanol/acetone extract of *P. major* exhibited concentration-dependent cytotoxic effect on MCF-7 and BJ cells. Cytotoxic effect of the extract on BJ cells was found statistically significant at all concentrations in comparison with control ($p < 0.05$). Except of 50 µg/ml extract concentration, cytotoxic effect of the extract on MCF-7 cells was found also statistically significant, compared to control ($p < 0.05$). Interestingly, extract was found more cytotoxic on human normal fibroblast cells (BJ) than on human breast cancer cells (MCF-7). At 50 µg/ml concentration, cytotoxic effect of the extract was found higher two fold on BJ cells than on MCF-7 cells (16.12 % and 8.52 %, respectively). Although, 100 µg/ml extract concentration exhibited slightly more cytotoxic effect on MCF-7 cells than on BJ cells (19.12 % and 16.49 %, respectively), cytotoxic effect of 150 and 200 µg/ml extract concentrations were found slightly higher on BJ cells than on MCF-7 cells. At 200 µg/ml extract concentration, cytotoxic effect of extract reached to 30.66 % on BJ cells and 27.73 % on MCF-7 cells. As a result, *Plantago major* L. subsp. *intermedia* leaves methanol/acetone extract have moderately cytotoxic effect on MCF-7 human breast cancer and BJ human normal fibroblast cells but, this effect is higher on BJ cells than on MCF-7 cells. Results of this study showed that medicinal plant extracts have a potential to be toxic for normal cells due to their active contents.

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KEYWORDS

BJ fibroblast cells; cytotoxicity; MCF-7 cells; phytochemical screening; Plantago major L. subsp. intermedia

Session 2-4 - Chemotherapeutic Effects

Submission ID: 1522

USE OF HERBAL PRODUCTS AND AROMATHERAPY BY PATIENTS WITH CANCER

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ABSTRACT

Patients with cancer apply to supplementary and alternative treatment methods for the purpose of supporting the cancer treatment, preventing the relapse of cancer, increasing their life quality, coping with side effects of treatment and disease, strengthening their immune system and increasing their well-being. They generally apply to methods primarily like; herbal products, relaxation, hypnosis, bio-feedback, acupuncture, acupressure, yoga, meditation, massage, music and reflexology, criotherapy and aromatherapy. Herbal products are generally preferred by patients with cancer primarily for providing a supplementary use to their treatment. Herbal products that are frequently used by patients include dead nettle, garlic, green tea, echinacea, polemonium and tipton's weed. Examining the studies on this subject; the rate of patients to use herbal products as a supplementary and alternative treatment method varies between 44% and 100%. Aromatherapy is the therapeutic use of essential oils that are extracted from herbal sources like leaves, flowers, peels, fruits and roots and then concentrated. Aromatherapy basically aims to control the symptoms rather than curing them. Examining the studies on aromatherapy applied to patients with cancer; it is seen that the method decreases pain, fatigue, constipation, anxiety and depression, and increases well-being and life quality. As a consequence, these methods that are frequently used by patients with cancer without consulting their physicians may change the efficiency of treatment and increase side effects. On the other hand, there is a very limited number of evidence-based studies evaluating the efficiency of these methods. This study aims to draw attention to herbal products and aromatherapy used by patients with cancer.

KEYWORDS

Cancer, herbal product, aromatherapy

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Session 2-5 - Diabetic Studies

Submission ID: 31

SUPPLEMENTATION OF PROPOLIS PROTECTS HUMAN LYMPHOCYTES IN VITRO FROM THE GENOTOXIC DAMAGE BY IMAZALIL

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ABSTRACT

Propolis (PRP) is a sticky material that is collected from plants by honeybees. PRP has many biological functions including antioxidative, anti-carcinogenic and anti-mutagenic properties. PRP also has the ability to reduce the toxic effects of various toxicants when used in a combination. Imazalil (IMA) is one of the most commonly used fungicide in agricultural and clinical purposes, is thought to lead very serious side effects in animals and humans. The aim of the present in vitro study was to investigate the ability of PRP to minimize the genotoxicity of IMA on cultured human peripheral lymphocyte cells. Cells were treated with both agents at different concentrations (PRP 50, 100, 200 microM and IMA 336 microM) and incubated for 72 h. We used the cell proliferation rate index (CPRI) and the sister chromatid exchange (SCE) rates for measuring cytotoxicity and genotoxicity, respectively. Our results showed the protective effect of PRP on cells treated with IMA in in vitro conditions. The greatest protective effect of PRP at 200 microM was determined against IMA in comparison with all other doses of PRP. These observations suggest that PRP may be proved useful in reducing some of the toxic effects associated with chemical mutagens and carcinogens. In conclusion our findings may have an important application for the protection of human lymphocytes from the genotoxic damage and side effects induced by medical and agricultural chemicals hazardous for people.

KEYWORDS

Anti-genotoxic activity, Cell proliferation index, Human lymphocyte culture, Imazalil, Propolis, Sister chromatid exchange

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Session 2-5 - Diabetic Studies

Submission ID: 119

**EFFECTS OF PHYSALIS PERUVIANA AND LUPINUS ALBUS ON
MALONDIALDEHYDE, GLUTATHIONE, CHOLESTEROL,
VITAMINS AND FATTY ACID LEVELS IN KIDNEY AND LIVER
TISSUES OF DIABETIC RATS**

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ABSTRACT

In this study, the effects of goldenberry and lupin on lipid peroxidation and antioxidant system parameters of liver and kidney tissues of streptozotocin-induced diabetic rats were investigated. Type II diabetes was produced in rats by the streptozotocin injection. Albino rats were divided into four groups, each one containing 10 rats: non-diabetic control group, STZ-Diabetes type II group, STZ-Diabetes+goldenberry type II group, and STZ-Diabetes+lupin type II group. After one week from the injection, goldenberry and lupin were injected to rats for 2 months. Malondialdehyde, glutathione, cholesterol, and fatty acid levels, which are signs of lipid peroxidation, were measured in these tissues. At the beginning and end of the study, postprandial blood glucose levels and weights of the rats were measured. In type II diabetes, malondialdehyde increased compared to the control group. Glutathione decreased in the other tissues and all of the streptozotocin-induced diabetic groups. In type II diabetes, liver cholesterol levels increased. Treatment with similar doses of goldenberry and lupin significantly reduced postprandial hyperglycemia, oxidative stress, and augmented antioxidant system. The results of the present study showed that the herb suspensions exerted anti-hyperglycemic effects and consequently may alleviate liver and kidney damage caused by streptozotocin-induced diabetes.

KEYWORDS

Diabetes mellitus, Goldenberry, Lupin, Malondialdehyde, Glutathione, Cholesterol, Fatty acid

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Session 2-5 - Diabetic Studies

Submission ID: 157

**THE EXTRACTS OBTAINED FROM PORTULACA OLERACEA L.
AND THEIR IN VITRO EFFECTS**

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ABSTRACT

Neonicotinoids have been used since 1980. There are new classes of insecticides which are specific only for the targeted organism that does not harm the others. In this study, genotoxic effects of imidacloprid (IMI), a commonly used insecticide, were evaluated in vitro sister chromatid exchange (SCE) test and we attempted to resolve these effects with purslane (Portulaca oleracea L.) methanol (POmet) and water (POwtr) extract. We determined four different IMI application groups (50, 100, 250 and 500 ppm) in this study. The chromosome medium containing 5 bromo-deoxyuridine (BrdU) was used to prepare cell cultures. We added 0.25 ml blood and different doses of IMI into this medium. Then, colchium was added to the tubes after 70,5 hours. After 72 hours of incubation, smears were prepared and stained by Giemsa technique. The preparations were examined by light microscope with 10x100 magnification. The SCE numbers of the application groups were compared with the control groups. For this purpose, two control groups were defined. Distiled water and the solvent of IMI, dimethyl sulphoxide (DMSO), were used as the negative control and ethyl metansulphate (EMS), which is a well known antimutagen, is used as the positive control. The mean SCE frequency was 3.60 ± 0.02 and 3.70 ± 0.01 for distiled water and DMSO, respectively, without any statistically significant difference ($p < 0.05$). This parameter for EMS was found to be 32.61 ± 0.01 and there was a statistically significant difference between EMS and distiled water ($p < 0.05$). The SCEs after application of 50, 100, 250 and 500 ppm IMI were observed to be $4,43 \pm 0,01$; $4,68 \pm 0,01$; $5,92 \pm 0,01$ and $7,12 \pm 0,01$, respectively. The comparison of all of these results with DMSO yielded a statistically significant difference ($p < 0.05$). Additionally, the replication index (RI) was calculated in IMI application groups. The RI was 2.24 ± 0.07 in DMSO and decreased to 1.95 ± 0.04 , 1.88 ± 0.07 , 2.01 ± 0.08 and 1.99 ± 0.03 in IMI treated groups, respectively, the difference of these values with DMSO was insignificant ($p > 0.05$). Antigenotoxicity studies have been conducted based on the results of genotoxicity. POmet and POWtr (1:1 v/v) were added separately to the highest application groups of IMI for SCE. POmet and POWtr was found to have effective antigenotoxicity in vitro studies. The SCEs of IMI+POmet and IMI+POwtr were observed to be $3,88 \pm 0,04$ and $3,86 \pm 0,06$, respectively. According to these results, DNA damage was observed in all IMI application groups. However, DNA repair mechanisms were detected not to be inhibited. The increases in the incidence of SCEs are indicators of damage to the genetic material. Also, removal of such damage by Portulaca oleracea L. extracts showed its strong antigenotoxic agent.

KEYWORDS

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Imidacloprid, SCE, genotoxicity, purslane, Portulaca oleracea L., antigenotoxicity

Session 2-5 - Diabetic Studies

Submission ID: 471

INVESTIGATE FOR THE EFFECT OF THYMUS VULGARIS THERAPY ON CERTAIN ADIPOKINES IN EXPERIMENTAL DIABETIC RATS

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ABSTRACT

Herbs are being used as alternative strategies in the treatment of diabetes in various countries. Nowadays, it is required to have an efficient protection against diabetes mellitus, which is the major health problem of the age, and its harmful effects. Therefore, the medical effects of various herbal extracts have been searched in this regard. In the present study, we aimed to search the effect of *Thymus vulgaris* (thymus) herbal extract (TVE) on diabetic rats. A total of 70 male Wistar Albino rats aged 2-3 months, weighing 250-300 gr, were used in the study. Rats were fed a standard pellet diet under appropriate moisture levels in rooms at 22±2°C of light for 12 hours and dark for 12 hours. STZ (50mg/kg) solution dissolved in sodium citrate buffer (0.1M, pH: 4.5) was administered to rats intraperitoneally, except control group, to induce diabetes. Following 72 hours of STZ infection, blood was drawn from the tails of the rats via insulin infector and blood glucose concentrations were analyzed by glucometer. Rats having the blood glucose concentrations of > 200 mg/dl were accepted as diabetic and rats were divided into 4 groups with 10 rats in each group; group1 (control), group 2 (diabetic), group 3 (diabetic +100mg/kg TVE) and group 4 (diabetic + 200mg/kg TVE). TVE was administered to group 3 and 4 for 30 days. Adipokine and vitamin levels were determined by using ELISA In group 3, plasma levels of adipokine and nesfatin 3 were significantly higher than control and diabetic groups. Leptin levels were significantly higher in control group in comparison to group 3. In the control group, serum betatrophin levels were found to be significantly higher than the levels of group 3 and group 4. According to these findings, it might be concluded that *Thymus vulgaris* extract has antidiabetic effects by affecting adipokines.

KEYWORDS

Diabetes mellitus, Adipocins, streptozotocin, Thymus vulgaris, betatrophin, nesfatin-1

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Session 2-5 - Diabetic Studies

Submission ID: 558

UTILIZATION OF SOME ANTIOXIDANT AND DIETARY FIBRE RICH-SOURCES IN FRESH AND DRY PASTA PRODUCTION

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ABSTRACT

In this study, different sources of antioxidant (black cumin seed, pomegranate seed and flaxseed) and dietary fiber (wheat fiber, oat fiber and barley fiber) were used in fresh and dry pasta formulation to improve functional properties of pasta. Antioxidant (5%) and dietary fiber (15%) sources were used as replaced with wheat semolina in pasta formulation. Nine different formulations for fresh pasta production were performed by using antioxidants and dietary fiber sources individually and in combinations. Control fresh and dry pasta were prepared with wheat semolina. The effect of different additives and drying process on colour values and mineral matter, antioxidant activity, total phenolic and phytic acid contents of pasta samples were determined. L*, a* and b* values of the fresh and dry pasta samples changed between 42.05-70.51, -3.32-9.97 and 7.90-39.12; 31.62-64.28, 0.13-9.09 and 4.70-22.02, respectively. Wheat fiber gave higher L* values in fresh and dry pasta samples compared to other antioxidant and fiber sources. Among the different additives, pomegranate seed resulted in the greatest redness of the fresh and dry pasta. Black cumin seed gave the lowest L* and b* values on fresh pasta surface. Drying process decreased L* and b* values of the pasta samples. In fresh pasta, the greatest increments with respect to Ca, Fe, K, Mg, P and Zn contents were obtained with combined use of dietary fibers and antioxidant sources, followed by the usage of oat and barley fibers. The highest antioxidant activity and total phenolic content values were observed in fresh pasta containing both oat fiber and pomegranate seed. Drying process did not changed significantly mineral matter, antioxidant activity and total phenolic content of the pasta sample. Although the least phytic acid amount was determined in fresh and dry pasta containing wheat fiber, combined use of oat fiber and flaxseed have the greatest phytic acid in pasta. Drying process decreased the phytic acid content of the pasta samples significantly ($p<0.05$). Bu çalışma, TÜBİTAK tarafından 1140389 nolu proje ile desteklenmiştir.

KEYWORDS

Antioxidant, dietary fiber, fresh pasta, dry pasta

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Session 2-5 - Diabetic Studies

Submission ID: 1060

POMEGRANATE (PUNICA GRANATUM L.) FLOWERS THE EFFECTS OF VITAMIN A AND E LEVELS BY EXPERIMENTAL DIABETES MELLITUS IN RATS

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ABSTRACT

Vitamin A and E levels of Punica granatum flowers on the antioxidant effects of experimentally induced diabetic rats with STZ of our study is based on the determination. A total of 60 male Wistar-albino rats weighing 220 g (220 ± 40 gr) were used in the experimental studies. Group 1: Control group (n = 12) fed rat and water. Group 2: Diabetes (STZ) group (n = 12) STZ was administered in a single dose with intraperitoneal injection as 60 mg / kg. After one week, rats passing the end of fasting blood glucose measurement 220 mg / dl on the gauge instrument from the tail vein were considered diabetic. Rats were fed only with rat diet + water daily for 6 weeks. Group 3: STZ + Pomegranate (Punica granatum) flowers I (n = 12) diabetic rats were fed regularly orally with 300 mg / kg / day of pomegranate flowers every day for 6 weeks. Diabetic rats were regularly given 400 mg / kg / day of pomegranate flowers every day for 8 weeks. Group 5: diabetic rats in group STZ + Pomegranate (Punica granatum) flower III (n = 12) 500 mg / kg / day of pomegranate flowers were given. After experimental applications, the blood of the rats decapitated in accordance with the decisions of the ethics committee was taken into biochemical tubes and centrifuged for 5 min at 5000 g, and analyzed for serum samples and analyzed by HPLC (CECIL 1100 series Cambridge England) using methanol: acetonitrile: chloroform . The flow rate of the mobile phase was set to be 1 ml / min in a Supelcosil LC-18 column (25 cm, 4.6 mm ID; 5 μ m particles). Vitamin A (retinol) 326, vitamin E (a-tocopherol) was determined at a wavelength of 296 nm. Vitamin A levels in blood serum of diabetic rats were found to be significantly lower than the other groups (p <0.05). Vitamin A levels were increased in the 3. and 4. groups, but not statistically significant. Vitamin E levels were significantly lower in diabetic rats compared to control (p <0.05). In the 5. group, vitamin E level was increased but statistical significance was not found. The amount of antioxidant vitamins (vitamins A and E), which are antioxidant defense systems, is reduced in the period before the application of pomegranate juice, indicating the metabolic response to oxidative reactions. For this reason, diet is an indispensable part of diabetes treatment and should be carried out in conjunction with medical treatment. Diabetics should be very careful with diet. Taking adequate nonenzymatic antioxidants (vitamins) with the diet will help the enzymatic defense systems and help reduce the complications of diabetes. This is why it is thought that the pomegranate flower increases the level of antioxidant that reduces the oxidative stress caused by diabetes.

KEYWORDS

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Diabetes, Pomegranate flowers, Vitamin

Session 3-1 - Volatile Oils

Submission ID: 52

**ARTEMISIA TAXA REGISTERED IN TURKEY FLORA AND ITS
USAGE AREAS AND BIOLOGICAL ACTIVITY OF A. ANNUA L.
ESSENTIAL OIL**

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ABSTRACT

The Artemisia genus includes more than 400 species spreading in the northern hemisphere of the world, mainly in Asia, Europe and North America, and is represented by 27 taxa, including 21 species, 3 subspecies and 3 varieties in our country. The plants including this genus are known as "Kâbe süpürgesi, pelin otu, yavşan otu, Kâbe kekiđi, peygamber süpürgesi "in our country. Some of the Artemisia species are used in spice and wine making, while some are used as appetizing, anti-fever, tonic and wolf-reducing in folk medicine. Research conducted out has shown that the plant exhibits a wide range of bioactivity (antifungal, anticancer, antioxidant, antimicrobial and insecticidal etc.). As known, artemisin used in the treatment of malaria is an alkaloid derived from annual wormwood plants. The essential oil (0.3-0.7%) obtained from the aerial parts of plant, and this oil is used in perfume and cosmetic industry. In this study we had conducted; the essential oil was obtained from the aerial parts of A. annua L. grown by seed with Clevenger apparatus and chemical composition of this essential oil was analyzed by GC / MS. In addition, antioxidant capacity and antibacterial activity of essential oil were investigated by DPPH (2,2-diphenyl-1-picrylhydrazyl) radical scavenging activity and disk diffusion technique, respectively. While the essential oil in drug herbage of plants harvested during flowering period was average 1.18%, artemisia ketone (32%) and camphor (21%) were recorded as main components. It had been found that the essential oil exhibits free radical scavenging activity. In addition, it was observed that the obtained essential oil showed strong activity against the gram-negative bacteria Escherichia coli, which did not show any activity against gram-positive bacteria (Streptococcus pyogenes and Staphylococcus epidermidis) used in the research.

KEYWORDS

Artemisia, essential oil, GC/MS, DPPH, E. coli

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Session 3-1 - Volatile Oils

Submission ID: 186

**FUMIGANT ACTIVITY OF SOME PLANT ESSENTIAL OILS
AGAINST THE PULSE BEETLE, CALLOSOBRUCHUS CHINENSIS
(L.) (COLEOPTERA: BRUCHIDAE)**

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ABSTRACT

Dry pulses including beans, lentils and peas, are a great source of low-fat protein, fiber, vitamins and minerals. But unfortunately these valuable food-stuffs are prone to insect attacks from different bruchid species. The pulse beetle, *Callosobruchus chinensis* (Coleoptera: Bruchidae), is a common species of bruchids and is known to be a pest to many stored pulses. This serious pest damages chickpeas and cowpeas and causes decreases in the yield and in the nutritional quality. In the present study, fumigant toxicity of two essential oils extracted from anise (*Pimpinella anisum* L.) and fennel (*Foeniculum vulgare* Mill.) (Apiaceae) was evaluated against the 0-48-h-old adults and eggs of *C. chinensis* under controlled conditions. Four different doses (15, 30, 60 and 120 μ l/ l air) of each essential oil and three different exposure periods (24, 48 and 96 h) were used in the bioassays. An untreated control set was also included for each 'dose x time' combination. The results from the study revealed that both oils showed a fumigant toxicity by varying the dose and the exposure period tested. Fumigant activity was generally dose- and exposure time-dependent. Based on the highest dose (120 μ l/ l air) and the longest exposure period (96 h), anise oil caused 100% mortality of both adults and eggs of the pest. Fennel oil showed slightly lower toxicity against adults with a mortality of 96.6%, but it caused 100% mortality of eggs. The test on the seed germination using the highest dose of essential oils and the longest exposure period, showed no damage to the germinating seeds. The germination rate was about 99%. These findings suggest that the tested plant essential oils can be used as a bio-insecticide for control of the *C. chinensis* pest in stored pulses.

KEYWORDS

Essential oil, pulse beetle, Callosobruchus chinensis, fumigant activity

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Session 3-1 - Volatile Oils

Submission ID: 307

COMPOSITION OF ESSENTIAL OIL OF TEUCRIUM SCORDIUM L. SUBSP. SCORDIODES (SCHREB.) ARCANG. SPECIES

İBRAHİM HALİL GEÇİBESLER¹, LÜTFİ BEHÇET², FATİH GÜL³, İBRAHİM DEMİRTAŞ³

ABSTRACT

The Lamiaceae family, including the genus of *Teucrium* L., is the third richest family in Turkey with 45 genera, 846 species, 735 taxa and 44.2% endemism rate. Different *Teucrium* L. species are a kind of medicinal aromatic plant used for therapeutic purposes for thousands of years. *Teucrium* L. species are used in the treatment of diuretic, antispasmodic, antiseptic, antipyretic, antiulcer and diabetes mellitus in folk medicine in Turkey. The physiological activities of these species are due to the terpenoid, flavonoid and phenolic compounds in which they contain. In this context, grown in natural habitats in Bingol and its surroundings, 500 g was collected from species of *Teucrium scordium* L. subsp. *scordioides* (Schreb.) Arcang. Volatile oil of the plant material was obtained in 0.89% yield by water distillation method using Clavenger apparatus. The essential oil components were identified by GC-FID and GC/MS analyzes. In total 47 organic components were identified in the volatile oil of *T. scordium* L. subsp. *scordioides*. Eucalyptol was identified as the main component in this essential oil composition with a ratio of 30.09%. In addition to the main component, borneol (12,40%), α -pinene (10,63%), camphor (9,89%), camphene (7,60%), β -pinene (3,81%) bornyl acetate (3.78%) were analyzed as other dominant components. When considering the major components of the *T. scordium* L. subsp. *scordioides*, its volatile oil may recommended to use in cosmetic, medical and food applications.

KEYWORDS

: *Teucrium scordium*, *eucalyptol*, *aromatic plant*, *essential oil*, *borneol*

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Session 3-1 - Volatile Oils

Submission ID: 322

IDENTIFICATION OF VOLATILE COMPOUNDS (VCS) OF 'GEMLIK', 'HALHALI' AND 'SARI HASEBI' OLIVE LEAVES

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ABSTRACT

There is a considerably interest on some fruits and leaves extracts such as olive leaf, due to their beneficial health effects. Olive leaf has been consumed as tea for many years. Although there are many studies on composition and/or bioactive compounds of olive leaves, the studies on volatile compounds (VCs) of leaves are scarce. Therefore, the objective of this study was to evaluate of VCs in three olive tree cultivars 'Gemlik', 'Halhali' and 'Sari Hasebi' leaves obtained from Hatay province. The VCs were analyzed by gas chromatography-mass spectrometry (GC-MS) using solid phase micro-extraction (SPME). A total of 126 VCs were identified in olive leaves. Among these 97 VCs were found in all olive leaves. Terpenes, aldehydes, alcohols and ketones were identified in olive leaves as major VCs groups, which accounted for about 36-60 %, 20-28 %, 6-14 % and 4-8 % of total VCs identified in leaves, respectively. The relative proportions of these chemical groups were significantly varied from cultivar to cultivar ($p < 0,05$). α -Cubebene was found as major VC, followed by trans-caryophyllene, α -farnesene, trans-2-hexenal, benzeneethanol, nonanal, trans,trans-2,4-heptadienal, cycloisositivene, trans-4,8-dimethyl-1,3,7-nonatriene, 2,4-heptadienal, α -humulene, α -muurolene and benzaldehyde. These compounds accounted for 56-75 % of total VCs identified in olive leaves. While 'Halhali' olive leaf had highest ($p < 0,01$) levels of α -cubebene (31,79 %), cycloisositivene (7,69 %) and α -muurolene (4,05 %), 'Sari hasebi' had trans-caryophyllene (23,16 %), trans-4,8-dimethyl-1,3,7-nonatriene (4,65 %), α -humulene (3,64 %) and 'Gemlik' cultivar had benzeneethanol (6,93 %), nonanal (5,07 %), and benzaldehyde (2,17 %) at the highest levels. Twenty nine VCs were identified sporadically in all the leaves. VCs including β -bourbonene, caryophyllene, α -cubebene, α -amorphene, γ -muurolene, tridecanal, 1-octen-3-ol, D11-dodecene-1-ol, m-cresol, 2-methoxy-4-(2-propenyl)-phenol, heptanoic acid methyl ester, hexanoic acid methyl ester, nonanoic acid methyl ester, 2,5-dimethyl-2,4-hexadiene, 4,8-dimethyl-1,7-nonadiene, 5-methyl-dodecane, 8-hexyl-pentadecane, trans-3-hexenoic acid were routinely identified in 'Gemlik' and 'Sari Hasebi' olive leaves whereas they were not found in 'Halhali' olive leaf. As a result, cultivar significantly affected the profile and proportions of VCs identified in olive leaves.

KEYWORDS

Olive tree leaves, Volatile compounds, Gemlik, Terpenes

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Session 3-1 - Volatile Oils

Submission ID: 574

ANALYSING OF BIOCHEMICAL CONSTITUENTS IN LAVANDULA ANGUSTIFOLIA

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ABSTRACT

Lavandula spp. (Lavander) from Lamiaceae family is used in different areas such as ornamental in landscape and aromatic garden design, aromatic and medicinal in health care systems and on the central nervous system, fragrance and perfume in cosmetic industries, aromatherapy and massage, topical remedy in pharmaceutical industries, effective corrosion inhibitor, plasma polymerised thin films in biomedical and biomaterials industries. Lavandula angustifolia which is grown primarily in Mediterranean and Balkan countries and in many countries around the World is known the one of designated specifically genus for directly or indirectly medicinal use. The stems, leaves, and blossoms of L. angustifolia are known as parts of extract and isolated compounds in many industries. In the present study, L. angustifolia were obtained from Afyonkarahisar region of Turkey at the summer period. The spike, bracteole, stem, leaf of specimen were dried in air before using in all analysis. All of the specimens were analyzed by using X-ray diffraction (XRD), Attenuated Total internal Reflectance- Fourier Transform Infrared Spectroscopy (ATR-FTIR), and Scanning Electro Microscopy- Energy-dispersive X-ray spectroscopy (SEM-EDX). All analysis were performed for providing an accurate detection of the specimens molecular structure, crystalline phase, chemical compositions (organic or inorganic constituent), elemental index, morphology and microstructure. By X-ray diffraction pattern, crystalline phase and chemical compositions of the specimens were identified as ammonium hydrogen oxalate hydrate (C₂H₅NO₄.1/2H₂O), stigmasterol hydrate (C₂₉H₄₈OH₂O), carbolite (C). According to ATR-FTIR analysis results, characteristic peak values of the specimens were detected functional groups as (N-H), (P-O-C), (C-H), (O-C=O), (Ca-C≡O), (P-O), (C-H), (CO-O-C), (N≡H), (C-O), (C=H), (P-OH), (N=O), (P=O), (C=O), (O-H), (C≡H), (C-N), (C=N-OH), (C-Cl), (H-C-N), (H-O-H). SEM-EDX analysis also showed that the present of carbon, nitrogen, oxygen, magnesium, silicon, chloride, potassium, calcium in the specimens. Morphology and microstructure of opened or closed stomas, trichomes on the leaf surface, fiber-like layers and damaged xylem and floem vessels on the stem surface, hair-like spotted trichomes on blossom surface of the specimens were monitored. In conclusion, the chemical compositions, the functional groups and the elements are responsible for various medicinal properties, favourite scent and sweet aromatic properties of L. angustifolia. Nanoparticles obtained from each parts of the L. angustifolia by using developed plant extract process can be used in many different industries as biomaterial, biosynthesis, and nanomedicine.

KEYWORDS

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Lavandula angustifolia; ATR-FTIR; XRD; SEM EDS; nanomolecules



Session 3-1 - Volatile Oils

Submission ID: 1731

OBTAINED OF THE ESSENTIOL OIL, IDENTIFIED OF CHEMICAL COMPOSITIONS AND TESTED BIOLOGICAL ACTIVITIES OF ZIZIPHORA TENUIOR THAT WAS COLLECTED FROM EAGEN SEA REAGION

PROF. DR. İSA KARAMAN¹, NAZAN GÖKŞEN¹

ABSTRACT

Lamiaceae family are represented with about 250 genus and 7000 species in the World. The species of this family extensive illustrate the distribution in Australia, South West Asia South America and especially mediterranean sea countries. Turkey is one of important gene pools of Lamiaceae family. This family is represented with 45 genus and 574 species in our country. It is acknowledged as the most wealthy third family of Turkey. The most of Lamiaceae family's species is rich on account of essential oils, aromatic oils and similar secondary metabolites. Therefore, this family has great importance in the areas like medicine, pharmacy, food, cosmetic and perfumery. On the other hand, the ethnobotanical usage of this family is also rather widespread. The aerial parts of the plant are used as a whole, in folk medicine especially in mountainous villages of Akhisar and Gordes, in the Aegean Sea region, in our country. Also, this plant is used as carminative and analgesic. The aerial parts of this plant were collected from mountainous regions of Akhisar and Demirci district, in Manisa province, in Turkey. The aerial parts of the plant were dried in the shade according to the method and were ground with the help of the grinder and were prepared for obtaining essential oil. Clavenger System was used to obtain essential oil. Essential oil was taken with Hydrodistillation method. The chemical composition of essential oil was analyzed by GC and GC-MS. Antimicrobial activity was determined by Disc diffusion and microdilution assay. The 14 different chemical compositions were described by Perkin-Elmer Clarus 500 Series GC System. In the result of analysis of essential oil, 4 major components were determined as pulegone(77.07%), α -Terpinolene (7.10%), D-isomenthone(3.03%), mentol(3.17%) and Piperitenone(3.42%). In the biological activity tests, standard bacterial strains, hospital bacterial strains and fungal isolate were used. In the results of biological activity test, in the disc diffusion assay 9-22 mm zone and in the microdilution assay 0.40-12.50 μ l/ml effects were observed. At the same time, the results were compared to antibiotics. It was described that the hospital pathogen *Acinetobacter baumannii* and *Enterococcus faecalis*, and *Shigella boydii* that are resistant to antibiotics were not resistant to the essential oil as a result of investigation.

KEYWORDS

Ziziphora tenuior, Essential oils, Biological activities, folk medicine

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Session 3-2 - Production of medicinal and aromatic plants

Submission ID: 88

EFFECT OF HARVEST TIME ON ESSENTIAL OIL RATIO, LINALOOL AND LINALOOL ACETATE COMPONENTS IN LAVANDULA CULTIVARS

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ABSTRACT

This study was carried out in 2016 in the experiment field of Ankara University Faculty of Agriculture Field Crops Department. As the material in the experiment, Supper A and Zarif of *Lavandula intermedia* L. and Munstead and Tina varieties of *Lavandula angustifolia* L. were used. In these varieties, harvests are made in 3 repetitions in June and July. Flower harvests of lavender varieties were made and dried in a shadowy environment at room temperature. Dried flowers were separated from their stems and essential oils were obtained using Clevenger aparate. Analysis of variance of the results of essential oil was made and LSD grouping was made among the significant averages. Varieties and harvest times interactions were found to be significant at the 1% level of the analysis. The mean essential oil content of lavender varieties was found to be 1,1-7,53%, linalool content 23,1-31,8% and linalool acetate content 21,2-26,3,3%.

KEYWORDS

Lavender varieties, Essential oil ratio, Linalool, Linalool Acetate.

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Session 3-2 - Production of medicinal and aromatic plants

Submission ID: 205

EFFECTS OF DIFFERENT SALT CONCENTRATIONS ON QUINOA SEEDLING QUALITY

SELDA ÖZMEN¹, CANSU KÜÇÜK, NURAY ÖKTEM, AYŞE ÖZEROĐLU, FATMA BURCU OKUR, YAKUP ONUR KOCA⁶

ABSTRACT

Salinity in agricultural soils in the Mediterranean region is the most important problem for agricultural production. Quinoa is shown as an alternative crop tolerant to salinity condition. The experiment designed a completely randomized experimental design was carried out Adnan Menderes University, Agriculture Faculties greenhouse with six replicates for different salinity concentration effects on quinoa seedling quality certainly. Quinoa variety candidate named "Saponinsiz" is used experimental material. The seeds were sowed in plastic pots filled with soil and perlite (%50+%50) at the greenhouse. Five different salt concentrations were determined as 0 (control), 4 ds m⁻¹, 8 ds m⁻¹, 16 ds m⁻¹ and 30 ds m⁻¹ and were applied with NaCl solution which was prepared before sowing. Leaf number, leaf length, leaf width, leaf thickness, stem thickness and green biomass weight values were measured when the quinoa plant reached 6 leaf stage (45 days after the germination). As a result of the study, it was observed that the differences between the salt concentrations in leaf number, leaf length, leaf width and green biomass weight were significant. The maximum leaf length (11.53 mm) was measured with 8 ds m⁻¹ salt concentration applied plants, whereas the maximum leaf width (4,99 mm) and green biomass (1019,5 mg) were measured with 4 ds m⁻¹. The control plot only showed the highest values for the leaf number value. These results confirmed that the quinoa plant was facultative halophytic species (salt-resistant). Difference among concentrations of salt at the leaf and stem thickness values was found nonsignificant. It was determined that 16 ds m⁻¹ dose gave the lowest values in all measurements. And any plant wasn't growing at the 30 ds m⁻¹ applied pots. The values of the experiment measured of 4 ds m⁻¹ pots and 8 ds m⁻¹ pots, which is considered the limit values for the field crops, were approximately equal or greater than control pots. Moreover, there was a rapid decline of plant on the 16 ds m⁻¹ values. Therefore, new salt doses between 8 ds m⁻¹ and 16 ds m⁻¹ (10 ds m⁻¹, 12 ds m⁻¹ and 14 ds m⁻¹) may be determined because of be able to see that the certain limit of salt concentration range which is quinoa seedling resistant.

KEYWORDS

Salinity, Quinoa, Seedling Quality, Biomass

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Session 3-2 - Production of medicinal and aromatic plants

Submission ID: 257

**PRODUCTION OF INSTANT TEA FROM SAGE TEA (SALVIA)
PLANTS, DETERMINATION OF ITS PHYSICO-CHEMICAL
PROPERTIES, AND PACKAGING**

CEMALETTİN BALTACI¹, MUHAMMED ŞİDİM¹, ZEYNEP AKŞİT¹

ABSTRACT

PRODUCTION OF INSTANT TEA FROM SAGE TEA (Salvia) PLANTS, DETERMINATION OF ITS PHYSICO-CHEMICAL PROPERTIES, AND PACKAGING
*Cemalettin Baltacı, Muhammed ŞİDİM, Zeynep AKŞİT aGumushane University, Department of Food Engineering, Bağlarbaşı, 29100. Sage tea (Salvia) is also known by the names of leadwort and common sage. Furthermore, scientific studies have shown that it has positive effects on memory in addition to its antioxidant, antibacterial, antidiabetic and anti-tumor effects [1]. Sage tea is a plant which is used as an aroma and spice in foods around the world. With its strong and even bitter taste, sage tea has been traditionally used as an effective solution to many health problems for centuries. It has been shown to have the best antioxidant activity among many plants [2,3]. It helps to whiten the teeth when it is used as a mouthwash, and its anti-infective feature is good for gingival diseases. It is rich in compounds such as etheric oil (thujone, cineol, borneol, pinene), saponin, tannin, glycoside, picrosalvin, resin, fumaric acid, irsol acid, oleanolic acid, flavone, asparagine, and uvaolpa radiphenol. In this study, instant tea production was performed from the dried samples of sage plant (Salvia) using two drying methods of lyophilization and spray drying. In spray drying method, the sage leaves were extracted in boiling water and the extract was evaporated till to a certain concentration and then powdered using a spray dryer [4]. In lyophilization method, the sage leaves were powdered under vacuum in a freeze drier after being extracted in boiling water and evaporated under vacuum. The sensorial properties, physical properties and chemical properties of the products obtained by both methods were analyzed. Yield analysis (20% spray dring; 24% lyophilization), analysis of hunter color values, analysis of solubility in water, moisture analysis (21% spray dring; 4% lyophilization), total phenolic content analysis, antioxidant activity analysis (TEAC, FRAP), analysis of the aroma content (19 organic compounds were detected in the spray dried samples and 82 organic compounds were found in the freeze dried samples), sugar analysis, crude protein analysis (4.46% spray dring; 5.29% lyophilization), ash analysis, mineral analysis, cellulose analysis, antimicrobial analysis and sensory analysis were performed. Significant differences were found between soluble teas obtained by the spray drying method and the freeze drying method especially in terms of aroma compounds and antioxidant activity [5]. The differences between the products obtained by using both methods were also revealed. The soluble herbal tea produced in this study will allow consumers to consume natural herbal tea that is rich in bioactive ingredients and easy to use. The importance of this study originated from that the prepared instant sage tea was studied for the first time, and it is aimed to be a preliminary resource for the studies to be carried out on this subject. Keywords: Instant tea, Spray drying, Freeze drying, Sage tea References: 1. Topçu G. (2006) Bioactive triterpenoids from Salvia species. J. Nat. Prod., 69 (3) 482-487. 2. Atoui, A.K., Mansouri, A., Boskou, G., Kefalas, P. (2005) Tea and herbal

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KEYWORDS

instant tea, spray, freezing, sage tea

Session 3-2 - Production of medicinal and aromatic plants

Submission ID: 496

GENERAL OUTLOOK OF HARVESTING AND THRESHING MECHANIZATION OF MEDICINAL AROMATIC PLANTS IN TURKEY

DENİZ YILMAZ¹, MEHMET EMİN GÖKDUMAN¹

ABSTRACT

In agricultural sector, important changes have took place in parallel with the applications of developing technology and agricultural mechanization. The increasing demand for medicinal and aromatic plants in the world markets necessitate the development of the mechanization in this scope. The fact that our country has different climatic and ecological conditions and the presence of many plant species reveals the necessity of harvesting and threshing mechanization of medicinal and aromatic plants. The harvesting and processing of medicinal and aromatic plants in Turkey are mostly conducted by hand. However, in recent years, various medicinal and aromatic plants have been cultivated and started to be produced, and studies have been carried out to increase yield and quality. Harvesting, threshing and separating mechanisms are developed in various forms depending on the variety of medicinal aromatic plants and product characteristics. Harvesting systems are based on the principle of directing crops to free or shear-cutting units. Threshing systems are consisted of various form and a number of finger-type or groined-type-thresher units, produced tangentially and axially, On the other hand separating of medicinal aromatic plants is carried out by passing the product through various types and several numbers of sieves. In the process of harvesting and threshing mechanization of medicinal aromatic plants, leaves and flowers are required to be separate from stalk and other materials without any damage. Therefore, it is necessary to increase mechanization studies for harvesting, threshing and separating of medicinal and aromatic plants, using new technologies, for high yield and quality product.

KEYWORDS

Medicinal aromatic, harvesting, threshing, agriculture mechanization

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Session 3-2 - Production of medicinal and aromatic plants

Submission ID: 668

EFFECTS OF DIFFERENT MEDIUM ON SEED GERMINATION OF SPARTIUM JUNCEUM L. WITH MEDICINAL AND AROMATIC IMPORTANCE

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ABSTRACT

Spartium junceum L., the natural vegetation of Turkey flora, is one of the indicator plants of the Mediterranean climate. Especially in rural landscape, they offer aesthetic values with floral beauties in dense stands. Functionally, they are effective in planting design in many ecologically distressed areas, such as in sloping areas, highway vegetation, coastal areas affected by sea salt, and so on. They are also preferred for controlling dune areas. In addition to these properties, this species is mainly used as a medicinal and aromatic plant. In particular, the aim of the study were 1) to evaluate the aesthetic, medicinal and aromatic properties of *Spartium junceum* L. in rural and urban areas in landscape architecture 2) to investigate the effect of different medium on the germination of seeds of *Spartium junceum* L. As a result of the study, the success of the germination of seeds has been determined: peat 34%, peat + soil (7: 3) 35,33% and peat + sand (7: 3) 42,67%. In addition, root lengths, root counts and plant height of germinated seedlings were measured. In the statistical analysis results, the best medium of root length and number of roots was determined as peat + sand (7: 3) medium. Peat + sand (7: 3) and peat + soil (7: 3) medium are in the same group in terms of plant height.

KEYWORDS

Spartium junceum, Planting design, Medicinal and aromatic plant, seed germination.

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Session 3-2 - Production of medicinal and aromatic plants

Submission ID: 1398

THE EFFECTS OF VARIOUS TYPE PRESS WHEEL MOUNTED ON PNEUMATIC PRECISE DRILLING MACHINE ON SOME QUALITY CRITERIA OF BLACK CARROT

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ABSTRACT

Black carrots are consumed as fresh vegetables in Turkey and are preferred in the form of fermented beverages in large quantities. Black carrots are cultivated in different regions of Turkey. The black carrot are cultivated heavily in Eređli region. In the region, the highest yields for black carrots are obtained by planting on the ridge at narrow interval range with triplet drilling. In this study, the effects of front and rear stainless steel press wheel (BT1), front and rear rubber press wheel (BT2) and front and rear rubber press wheel and triple narrow intermediate rubber wheels (BT3) on black carrot quality criteria on field conditions were investigated. According to results, plant number per meter, yield, single carrot mass, diameter and length varied between 11.47 and 43.87 number/m², 15.11 and 41.61 t/ha, 76.96 and 226.43 g, 33.61 and 53.14 mm, 193.65 and 237.33 mm respectively. It was found that total phenolics varied 349.80 ile 745.37 mg gallic acid equivalent/100ml and antioxidant activity value determined by DPPH was found between %26.71 and %54.80

KEYWORDS

Press wheel, plant number per meter, yield, black carrot, quality criteria

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Session 3-3 - Traditional and Functional Foods

Submission ID: 110

**THE EFFECTS OF MINT(MENTHA SPICATA) ESSENTIAL OIL
FORTIFIED EDIBLE FILMS ON THE SOME PROPERTIES OF
KASHAR CHEESE**

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ABSTRACT

Sorbitol + whey protein isolate and 2 different edible films containing mint essential oil (*Mentha spicata*) were prepared in 1.5 % (v/v) (Me1) and 3 % (v/v) (Me2) concentrations. These films were used for coating kashar cheese samples and stored at +4°C for 30 days. Microbiological and physical-chemical analyses were carried out on the 1st, 7th, 15th and 30th days of storage. The increase in the concentration of essential oil had a significant effect on the fat content, titratable acidity, water vapor permeability, weight loss and antimicrobial activity. For the determination of antimicrobial activity, the cheese samples were artificially contaminated with *Escherichia coli* and *Staphylococcus aureus*. The general results showed that addition of mint essential oil to S+WPI based film in 3 % (v/v) concentrations had a positive effect on the extension of the shelf life of kashar cheese.

KEYWORDS

Mint Essential Oil, Mentha Spicata, Kashar Cheese, Edible Films

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Session 3-3 - Traditional and Functional Foods

Submission ID: 144

PRODUCTION OF BAR WITH FRUIT

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ABSTRACT

Different parts of plants have been used as medicinal purpose for long time. One of these parts of the plants is fruits. Fruits are a valuable source of different bioactive compounds. They have also played an important role on human diet. Therefore, different processes are applied to fruits to increase their consumption. Bars with fruit were produced using banana, apple, carrot, orange in different formulations in this study. Baking and frying methods were used in production. The lowest and highest values of L*, a*, b*, pH and % acidity (as malic acid), moisture, ash in product were 33.51-53.84, 7.23-11.66, 17.62-38.87, 6.77-7.4, 0.93-1.20, 5.41-10.82, 1.95-2.45 respectively. Additionally, bars with fruit produced using frying method had a higher score.

KEYWORDS

Fruit, bar, banana, apple, carrot, orange

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Session 3-3 - Traditional and Functional Foods

Submission ID: 236

OTTOMAN SHERBET

MESUT KAPLAN¹

ABSTRACT

Summary: Sherbet is a widely consumed beverage variety in Anatolia at the time of Seljuk and Ottoman States. Anatolia, where various trade routes intersected, also hosted many civilizations. This diversity is also reflected in the food and drink culture. Despite the fact that there are more than 200 variety of sherbet is known, sherbets with regional characteristics show a very limited diversity. The Sherbets which used for medical purposes still continue to be used for centuries. A significant portion of the sherbets used for medical purposes have been used in Bilecik province. This study was carried out with the cooperation of various institutions in Bilecik province with the aim of modernizing the taste and the development of sherbets which are used for medical purposes and also used as beverages on special occasions. Since 2012, with contribution of Bilecik Municipality and Bilecik Chamber of Commerce and Chamber of Industry the historical sherbets made in Bilecik was examined and modernized in accordance with today's taste. There were studies have been done on 125 varieties of sherbet. Eight kinds of sherbet formulations were created which are suitable today's tastes. The sherbets served to the people of Bilecik has been spread depending on the seasonal conditions. The sherbet drinking habits have being tried to gain to our people on important days and nights, in Ramadan nights, ethical celebrations and setra. The sherbet formulations have been tested primarily with fruit varieties grown in the region and with quality spices brought from far-east. In the tests, we tried about 40 spices and 22 fruit varieties.

KEYWORDS

Ottoman Sherbet

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Session 3-3 - Traditional and Functional Foods

Submission ID: 383

**PHYSICO-CHEMICAL PROPERTIES DETERMINATION OF
COMMERCIAL/HOME MADE SOUR POMEGRANATE JUICE
CONCENTRATE (POMEGRANATE SOUR-NAR EKŞİSİ) FROM
ŞANLIURFA REGION**

SELİN ALİHANOĞLU¹, DEMET EKTİREN, MEHMET KARAASLAN¹, HASAN VARDİN¹

ABSTRACT

Pomegranate (*Punica granatum*) fruit has a tough skin and many seeds. It is rich in vitamin C, pantothenic acid, potassium, flavonoids, and other natural phenols such as ellagitannins, a powerful antioxidant. The pomegranate also has unsaturated oils, fiber, and many additional micronutrients in seeds. Pomegranate is an ancient fruit with an illustrious medical history. It shows anti-oxidative, anti-inflammatory, anti-carcinogen properties due to its composition. Pomegranate can be processed into wine, jam, pomegranate juice, fruit leather (pestil), and concentrated sour pomegranate juice (Pomegranate sour) as well as raw consumption as a fruit. In this study 42 different commercial pomegranates sour were examined and their pH, brix, titratable acidity%, color, total phenolic compounds, anthocyanins, antioxidant activity, HMF (Hydroxy Methyl Furfural) contents, formol number were determined. There was a significant difference ($p < 0,05$) between pH, brix, titratable acidity%, formol number of pomegranate syrup samples. Total phenolic contents of samples were varied between 1.08-3.06 mg GAE/g and there was no phenolic compound in one of pomegranate sour sample. Antioxidant activity of samples were determined in a wide range between 11.78-82.38 %. Anthocyanin was observed in only three samples and maximum value was observed 2.78 mg/100g. Color values of samples were determined as L*, a*, b* values. Their results were varied between 13.70-20.26 ; -0.13 - 7.77 ; 0.58-4.38 respectively and HMF values determined between 48.5-761 mg/kg in pomegranate syrup samples. This study reveal that the pomegranate sour obtained from Şanlıurfa markets are display different physico-chemical properties but all of them are suitable for consumption according to the characteristics that are measured. Results of analysis shows that usage of different source of pomegranate and process condition change the physico-chemical properties of pomegranate sour. Pomegranate sour production techniques are required to improve. It is necessary to use a vacuum for the concentration process especially limiting HMF content with adverse health effects which is resulting from prolonged thermal processing and storage.

KEYWORDS

pomegranate syrup, antioxidant, phenolic compound, HMF, anthocyanin

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Session 3-3 - Traditional and Functional Foods

Submission ID: 1116

A TRADITIONAL TASTE OF KAHRAMANMARAS' CUISINE: TIRSIK

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ABSTRACT

Kahramanmaraş is a province with rich plant life thanks to its climate, geographical conditions and other factors. The biodiversity of edible wild flora in Kahramanmaraş has also affected its cuisine culture. Tirsik is one of the most important wild plant dishes of Kahramanmaraş. Tirsik is a dish made from the fresh leaves of a wild plant that grows in mountainous terrain at high altitudes on the east side of Mediterranean region and is known as tirsik beets, gentian and *Arum dioscoridis*. The aim of this study was to determine the traditional preparation and production stages of tirsik, a wild plant dish peculiar to Kahramanmaraş cuisine. A qualitative research design was used in the study with descriptive analyses. It was conducted with 5 volunteers who were older than 40 years, residents of the Andırın District of Kahramanmaraş Province and producing tirsik traditionally for more than ten years. The data were collected using a semi-structured interview form, which was prepared by the researchers and included questions to determine the demographic information of the participants and information about tirsik's properties, production and consumption. Audio and video recordings were also made. The interview form was assessed by the experts for content validity. The preparation stage of tirsik consists of collecting fresh leaves, breaking them into pieces and washing them. In terms of its production stage, this study found that tirsik is fermented for 8-12 hours at temperatures between 20°C and 30°C by adding yogurt and whole wheat flour, then removing its upper layer and giving it a good texture by adding bulgur wheat, garlic and water and cooking it for 3-4 hours. It is consumed cold with lemon juice or pomegranate syrup. This study found that tirsik is a dish made from wild plants specific to the Kahramanmaraş cuisine. It is produced by fermentation and can be beneficial for health due to its type of production and ingredients.

KEYWORDS

Tirsik, Kahramanmaraş, Turkish cuisine

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Session 3-3 - Traditional and Functional Foods

Submission ID: 1525

**BASARA BEKMEZI WHICH OBTAINED FROM QUERCUS
VULCANICA (BOISS. ET. HELDR EX) KOTSCHY LEAVES**

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ABSTRACT

Some taxa of the Quercus L. (oak) genus, formed at the large forests in temperate regions of the Northern Hemisphere with more than 400 species, numerous subspecies, varieties and natural hybrids, are found in high mountainous regions in the tropics. Quercus is a family of beech family and appearance as woody, long-lived trees, shrubs and large shrubs. They are in winter or always leafy woody plants and they have an important place in the Turkish Flora. There are 18 species of Quercus that grow naturally in Turkey, of which 4 are endemic. There are 11 subspecies of 6 these species. In addition to its main beneficiaries, the leaves and fruits are important for animal feeding. The mushroom crust, which is obtained by robbing the tannin-rich shells and fruit glasses, oak texts and the bastions of the mushroom stand grown are important by-products in some Mediterranean countries. Quercus vulcanica (Boiss et al. Heldr ex) Kotschy (Kasnak meşesi) is endemic for our country. An ethnobotanical use of Q. vulcanica has been identified in negotiations held in Çavuş Village under the name of the ongoing project of ethnobotanical features of Seydisehir. The molasses, named as "Basara Bekmezi ", is obtained as a result of the collection of leaves when the parasite called "Basara" is placed among the leaves of Q. vulcanica. The ethnobotanic use of our endemic species determined for the first time in the study and the production of this molasses are given in detail.

KEYWORDS

Basara Bekmezi, Quercus vulcanica, Seydisehir

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Session 3-4 - Chemotherapeutic Effects

Submission ID: 51

ANTICANCER ACTIVITIES OF SOME PLANT GROWING IN TURKEY

FERDA ARI¹

ABSTRACT

Natural products from plant sources are used for treatment of various diseases for more than thousands of years either in the pure forms or as crude extracts. As a possible source for anti-cancer compounds, the plants are still gaining importance. Several investigations were conducted related to cytotoxic activity and antiproliferative effects of plant extracts or its compounds. We have investigated the anti-cancer activity of different plant extracts, growing in Turkey. In our previous studies, we showed that the methanol extract of *Prunella L.* species extracts inhibited anti-growth activity against breast cancer cell lines (MCF-7, MDA-MB-231) [1]. We also exhibited the methanol extracts from *Hypericum adenotrichum* is an endemic plant from Turkey induced apoptosis in human breast cancer cells [2]. Recently, we investigated anti-growth/apoptotic effects of methanol extracts of *Hypericum adenotrichum* and *Hypericum olympicum* against on human lung cancer cell lines (A549 and PC3), as well as apoptosis-inducing effects in PC3 cells [3]. In addition, we showed the extract of *Pelargonium quercetorum* have anticancer potential inducing by apoptosis in lung [4] and breast cancer cells. Our data and previous studies demonstrate that plant extracts and their compounds are potential sources of anticancer drugs and need further analysis. [1] Sahin S, Ari F, Demir C, Ulukaya E. Isolation of Major Phenolic Compounds From The Extracts Of *Prunella L.* Species Grown In Turkey And Their Antioxidant And Cytotoxic Activities. *Journal of Food Biochemistry*. 38, (2), 248-257, 2014 [2] Sarimahmut M, Balıkçı N, Çelikler S, Ari F, Ulukaya E, Güleriyüz G, Özel MZ. Evaluation of Genotoxic and Apoptotic Potential of *Hypericum adenotrichum* Spach. *in vitro. Regul Toxicol Pharmacol*. 74, 137-146. 2016 [3] Aztopal N, Erkisa M, Çelikler S, Ulukaya E, Ari F. Antigrowth and Apoptosis Inducing Effects of *Hypericum Olympicum L.* and *Hypericum adenotrichum* Spach. on Lung Cancer Cells *In Vitro: Involvement of DNA Damage*. *Journal of Food Biochemistry*, 40, 559-566, 2016. [4] Aztopal N, Cevatemre B, Sarimahmut M, Ari F, Dere E, Özel MZ, Fırat M, Ulukaya E. *Pelargonium quercetorum* Agnew induces apoptosis without PARP or cytokeratin 18 cleavage in non small cell lung cancer cell lines. *Oncology Letters*, 12, 1429-1437, 2016

KEYWORDS

Plant extract, cell death, apoptosis, cancer

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Session 3-4 - Chemotherapeutic Effects

Submission ID: 268

ANTI-ACHE AND ANTI-PROLIFERATIVE EFFECTS OF GLAUCIUM ACUTIDENTATUM AND GLAUCIUM CORNICULATUM ALKALOID EXTRACTS

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ABSTRACT

Alzheimer's disease (AD) is a progressive neurodegenerative disease characterized by loss of neuron and synapse in various parts of central nervous system (CNS) and associated with decrease in cognitive function and self-care deficiencies. As noted in World Alzheimer's Report 2015, there are an estimated 46 million people living with dementia worldwide and the number is expected to be increased up to 74.7 million in 2030 and 131 million in 2050. Until now, the major mechanism that results in successful symptomatic treatment of AD is the inhibition of AChE. Recent studies have demonstrated that the AChE metabolism also associated with cancer. Accumulating evidence suggests that AChE activity is increased in some tumor types and some AChE inhibitors (AChEi) are suppressive for the growth of some cancer cells. But, none of the identified AChEi were able to completely cure AD and cancer so far. Therefore new studies on the identification of new AChE inhibitory agents that can provide the treatment of AD and cancer are required. It is known that alkaloids, which are secondary metabolites of plants, have different pharmacological effects such as anti-tumor, anti-proliferative, AChE inhibitory and cytologic activities. The Papaveraceae family members are remarkable because of they are biosynthesizing pharmacologically active alkaloids. In this study, methanol and water alkaloid extracts of *Glaucium acutidentatum* and *Glaucium corniculatum*, they are members of the Papaveraceae family, were evaluated for their anti-AChE and anti-proliferative activities. The total alkaloid, phenol and flavonoid content were analyzed for the determination of active compounds. The amount of total alkaloid was analyzed by chloride colorimetric method, total phenol was determined by Folin-Ciocalteu assay and total flavonoid was determined by aluminium chloride method. The anti-AChE activity was examined by Ellman's method. Also the cellular anti-AChE effects of these extracts were analyzed on NGF-differentiated PC12 cells (dPC12). For anti-AChE activity determination dPC12 were subjected to a necrotic insult by hydrogen peroxide (H₂O₂). Also these extracts were assayed for their ability to exert anti-proliferative activities on HeLa and HT-29 cell lines using the MTT assay. According to our results, alkaloid was major compound (76.65-100.61 mg AE/g) and it was determined that flavonoid and phenolic content was less than a substantial degree compared to alkaloid. It was also found that *G. corniculatum* methanol extract had the highest amount of total alkaloid. Our data showed that all extracts of plants demonstrated AChE inhibitory properties in a dose dependent manner. The methanol extracts of *G. corniculatum* showed the most in vitro AChE inhibitory activity (90±2%). Results show that all the plant extracts prevented an increase in AChE activity in H₂O₂ treated dPC12 cells. The methanol extracts of *G. acutidentatum* showed the greatest cellular inhibitory effects of AChE (54±2%). It was also found that all the extracts had anti-proliferative effects on both HeLa and HT-29 cells. The methanol extracts of *G. acutidentatum* showed the highest anti-proliferative activity in HT-

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29 cells ($55\pm 5\%$) and in HeLa cells ($36\pm 3\%$). According to these results, Glaucium alkaloid extracts may have favourable pharmacological profile in the treatment of AD and cancer. Also, this study may have provide further works of the importance of Glaucium alkaloid compound as potential AChEi targeting the inhibition of cancer. This study constitutes a strong awareness about the therapeutical use of AChEi in carcinogenetic diseases.

KEYWORDS

Glaucium spp., *Acetylcholinesterase (AChE)*, *Anti-proliferative activity*

Session 3-4 - Chemotherapeutic Effects

Submission ID: 947

EFFECT OF GRAPE SEED ON CANCER TREATMENT

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ABSTRACT

Cancer is a major public health problem in many country of the world. The second most important cause of death in America is cancer. In a few years it is expected to override heart diseases and take the first place. For prevention and treatment of this disease a wide variety of phytochemicals, especially flavonoids or polyphenolics are consumed. Grape seed includes mixture of several polyphenolic components and proanthocyanidins such as dimers, trimers, tetramers, and oligomers/polymers of monomeric catechins and/or epicatechins. These compounds may promote to the pharmacologic properties of grape seeds. It has been significantly shown that high level of flavonoids and proanthocyanidins intake are linked together with a lower risks of cancers. Grape seed proanthocyanidins have preventive and therapeutic benefits on various stages of neoplastic processes and carcinogenesis including detoxification of carcinogenic metabolites. Chung et al. indicated that grape seed procyanidin prevent the proliferation of pancreatic carcinoma cells by cell cycle blockage or apoptotic induction. Therefore they concluded grape seed procyanidin has potency of chemotherapeutic or preventive effect for pancreatic carcinoma. Raina et al. reported that grape seed extract has inhibitory effect on bladder cancer. They found that the extract reduced cancer cell viability due to apoptotic cell death. Similarly, Dinicola et al. determined that high concentrations of grape seed extracts prevent metastasis in breast cancer via inhibiting cell proliferation and apoptosis. In another study, HaCaT cells that are cell line from adult human skin pre-treated with grape seed extract after exposing ultraviolet B radiation. As a result of treatment, cell viability increased, lipid peroxides level, the lesions cores and DNA photolesions lowered. Also they found significant reduction of the cells undergoing apoptosis. The results suggest that use of grape seed extract single or in combination with sunscreens have photochemoprotective effect. Huang et al. found that grape seed proanthocyanidins inhibited colon tumor-induced angiogenesis. Tumor cells stimulate angiogenesis via overexpression of some angiogenic factors. Grape seed proanthocyanidins inhibit the expression of these factors. Thus the compounds act as chemopreventive agent for colon cancer. The results of all these studies obviously shows that compounds found in the natural composition of grape seed, such as flavonoids or polyphenolics have beneficial effect on various types of cancer. However it must be used under the supervision of health professionals.

KEYWORDS

Grape Seed, Cancer, Proanthocyanidins

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Session 3-4 - Chemotherapeutic Effects

Submission ID: 1153

ANTIOXIDANT, ANTIMICROBIAL AND ANTITUMORAL EFFECTS OF STACHYS ANNUA (L.) L. SUBSP. ANNUA IN COMPARATIVE CANCER PROFILES

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ABSTRACT

The genus *Stachys* (Lamiaceae) is represented by 89 species and 51 of the 113 taxa are endemic in Turkey. Plants of this genus have been used for the treatment of cold, cough, diarrhea, urinary system disorders, hypertension, throat pain and as an antipyretic or stomachic in folk medicine. Also they have been used as tea which is made from whole plant or leaves. Natural compounds have been used extensively in the treatment of many diseases including cancer and are of interest to researchers both in their natural forms and as templates for synthetic modification. Sample sources and molecular mechanisms are highly important in the development of novel, clinically useful anticancer agents for treatment. Numerous cancer research studies have been conducted using traditional medicinal plants in an effort to discover new therapeutic agents that lack the toxic side effects, drug costs and safety associated with current chemotherapeutic agents. This study was designed to investigate the *in vitro* antioxidant, antimicrobial and antitumor effects of *Stachys annua* (L.) L. subsp. *annua*. Plant samples were collected from region of Duzce/Turkey during the flowering stage *Stachys annua* subsp. *annua*. The leaves of the plant were dried and powdered. Each dry powdered plant material (20 g) was extracted with 150 mL of 99% ethanol (Merck) for 24 h by using Soxhlet equipment. Antimicrobial susceptibility testing was determined with using the disc diffusion method according to the protocol applied by CLSI. All the bacteria were incubated at 35 ± 0.1 °C for 24 h by inoculation into nutrient broth (Merck), and the yeast cultures studied were incubated in malt extract broth (Merck) at 27 ± 0.1 °C for 24 h. Inoculums containing 1.5x10⁸ cfu/ml bacterial cells or yeast cells were spread on Mueller Hinton Agar plates (1 mL for each plate). The discs were impregnated with 75 µL of each extracts solution. After the discs were placed on the agar and incubated at 35 °C (24 h) and at 25 °C (72 h) for bacteria and yeast, respectively. For determination, anticancerogen effect, we used HeLa and PC3 cells to test urinary effect. The cells were cultured in sterile T25 flasks in RPMI 1640 medium supplemented with fetal bovine serum 10% v/v, penicillin (100 units/ml) and streptomycin (100 mg/ml) were grown in monolayer cultures in humidified air containing 5% CO₂ at 37 °C. The 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyl tetrazolium bromide (MTT) assay is one of the most widely used methods for viability screening due to its simple and rapid procedure. The potency of cell growth inhibition for each extract was expressed as IC₅₀ value. The absorbance of different wells was measured at 570 nm. As a result of our study, *Stachys annua* subsp. *annua* extract had strong antibacterial activity against test bacteria as compared to test fungi. We have determined that plant revealed similarly effect against Gram (+) and Gram (-) bacteria as compared to standart antibiotics. Also, we were investigated the antioxidant activity of methanol extract. We

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indicated that compound may use anticancerogen depend to their time and dose usage. *Stachys* potential difference within the same species can occur generally as a result of the varied ecological or geographic origin as well as the genetic differentiation, collection time, climate or method of analysis. *Stachys annua* subsp. *annua* may evaluated in advanced pharmacological studies for distinct features.

KEYWORDS

Stachys, antioxidant activity, antitumoral effect, antimicrobial activity, natural compounds.

Session 3-4 - Chemotherapeutic Effects

Submission ID: 1379

APOPTOTIC EFFECT OF ALPHA LIPOIC ACID ON HUMAN COLON CANCER CELL LINE SW-480: AN IN VITRO STUDY

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ABSTRACT

Colon cancer is the fourth commonest cancer and the most frequent causes of cancer morbidity and mortality worldwide so treatment alternatives are always on the agenda. ROS levels increase in a tumoral formation, thereby destroying signaling pathways caused by oxidative damage and contributing to the proliferation and apoptosis suppression of tumor cells. Alpha lipoic acid (ALA) is a natural antioxidant found in some foods and at the same time is de novo synthesized in humans. In addition, ALA has been shown to play an important role in caspase activation in tumor cells. In light of this information, we aimed to investigate whether ALA has apoptotic effect on SW-480 colon cancer cells. The SW-480 colon cancer cell line was cultured in monolayer model. Cells were treated with ALA at 24, 48, and 72 hours of incubation. TUNEL assay were used to determine the apoptotic cells in the monolayer culture. The BrdU labeling index was used to determine the proliferation of cells. An IC₅₀ inhibition dose of ALA in SW-480 colon cancer cell was 250 µM/ml at 24, 48, and 72 hours of incubation. The control group had a normal pattern of S-phase fraction and many of the SW-480 cells nuclei were observed to be positive for BrdU. TUNEL positive cells were detected after treatment with ALA in the monolayer cultures. The dead cell count was higher in the SW-480 cell lines with ALA applied than in the control. We concluded that ALA inhibit colon cancer growth by apoptosis. Further in vivo studies are needed to confirm our findings in humans. Three-dimensional studies and Caspase and AIF immunostainings are still ongoing.

KEYWORDS

Alpha lipoic acid, apoptosis, colon cancer, in vitro

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Session 3-5 - Toxicity Studies

Submission ID: 36

**INVESTIGATION OF CHROMIUM TOXICITY EFFECTS ON
CONTENTS PHOTOSYNTHETIC PIGMENT, PROTEIN CONTENTS
AND LIPID PEROXIDATION OF CERATOPHYLLUM DEMERSUM L.,
AN IMPORTANT MEDICINAL AQUATIC PLANT**

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ABSTRACT

Ceratophyllum demersum L., belonging to the family Ceratophyllaceae, is one of the major medicinal aquatic plant. It has been traditionally used in the treatment of diseases such as ulcer, diarrhoea, dysentery, wounds, fever, burning sensation, haemorrhoids, intrinsic haemorrhages, epistaxis. This study presents the photosynthetic pigment (chlorophyll a, chlorophyll b, total chlorophyll and carotenoid) and protein contents and lipid peroxidation of C. demersum exposed to chromium (Cr) at different concentrations (0-12 mg/L) and durations (1, 3 and 5 days). The plants exposed to Cr showed significant decreases ($p < 0.05$) in their chlorophylls and carotenoids with increasing metal concentration and exposure time. Compared with the control groups, minimum photosynthetic pigment levels were determined at 12 mg/L Cr after 5 days. In general, the protein contents of the plants decreased with increasing concentrations of metal and exposure time. The maximum decrease in protein content was found 35.84% less than that of the controls. Malondialdehyde (MDA) content was measured as a product of lipid peroxidation. A significant increase in the MDA content was recorded with the increase in exposure of concentration and duration ($p < 0.05$). The maximum MDA level in the plant was measured as 15.58 nmol mg L⁻¹ at 12 mg L Cr (58.23% higher than that of the control).

KEYWORDS

C. demersum, Chlorophyll, Lipid peroxidation, Protein

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Session 3-5 - Toxicity Studies

Submission ID: 203

COULD THYMOL PROTECT THE LIVER AGAINST DRUG-INDUCED GASTRIC ULCER

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ABSTRACT

Non-steroidal anti-inflammatory drugs (NSAIDs) are used massively worldwide and are among the most common drugs associated with drug induced liver injury. Although there are many studies attempting to decrease the toxicity of NSAIDs and till date no any drugs and effective therapeutic strategies are available for the therapy or prevention of hepatic damage caused by NSAIDs. Indomethacin is one of the most commonly used NSAIDs. It is rapidly absorbed from the gastrointestinal tract after oral administration and hepatic clearance is low. Thymol, a monoterpene phenolic compound, is found in the oils of thyme and and produced from different plant species such as *Thymus vulgaris*, *Thymbra spicata*, *Thymus ciliates*, *Origanum vulgareae*, *Trachyspermum ammi* species, *Monarda fistulosa* and *Nigella sativa* seeds. It have been reported to have many pharmacological biological activities such as antibacterial, antifungal, anti-inflammatory, anti-hepatotoxic, antioxidant, antiapoptotic, anti-hyperlipidemic, anti-hyperglycemic, neuroprotective and radioprotective activities. However, to the best of our knowledge, this is the first study performed on the hepatoprotective effects of Thymol with a broad dosage range (75–500 mg/kg) on gastric ulcer model caused by oral administration of Indomethacin in rats. In this study we have used antioxidant/oxidant capacity (TOS/TAS), tumor necrosis factor-alpha (TNF- α) and prostaglandin E2 (PGE2) levels, Caspase-3 activity assay, as well as AST, ALT, LDH levels and histopathologic examination in the liver tissue. With this aim, thirty five Sprague-Dawley rats were divided into seven groups: control, ulcer control (30 mg/kg Indomethacin), Indomethacin + reference standard (50 mg/kg Ranitidine), Indomethacin + Thymol (75, 150, 250 and 500 mg/kg) groups. Thymol was orally administered to rats after 10 minutes from induction of ulcer with Indomethacin. Six hours later, the animals were anesthetized and liver tissue samples were obtained for analysis. All biochemical assays were evaluated on homogenized pancreas samples using ELISA methods. The results of the present study showed that the administration of Indomethacin (30 mg/kg) caused severe liver dysfunction in rats, demonstrated by significant elevation of serum AST, ALT and LDH levels, elevation of TNF- α level and caspase-3 activation, reduction of PGE2 activity, induction of hepatic oxidative stress and histopathological changes. However, treatment with Thymol exhibited a significant improvement in these parameters. This improvement was more pronounced in the group treated with Thymol 250 mg/kg. Treatment with Thymol 75 and 150 mg/kg did not also succeed to reverse the parameters. On the other hand, treatment with Thymol 500 mg/kg dramatically affected the parameters much worse than Indomethacin treated group. The effect of Thymol on the measured biochemical parameters in hepatic tissue is well correlated with the improvement observed in hepatic histological picture of the Thymol treated animals. Our results demonstrated that Thymol has an impressive hepatoprotective effect on acute liver injuries induced by Indomethacin; however, its high dosage (500 mg/kg) should take into account for further examination.

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KEYWORDS

Non-steroidal anti-inflammatory drugs (NSAIDs), Thymol, Oxidative stress, Histopathology, Cytokines

Session 3-5 - Toxicity Studies

Submission ID: 286

PROTECTIVE EFFECTS OF SILYMARIN AND CURCUMIN ON CYCLOPHOSPHAMIDE-INDUCED CARDIOTOXICITY

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ABSTRACT

Cyclophosphamide (CP) is a potent anticancer agent; its clinical use is limited due to its marked cardiotoxicity. In the present study was aimed at evaluating the cardioprotective effects of silymarin (SLY) and curcumin (CUR), which have strong antioxidant properties, against the toxic effects of high-dose CP on the heart of rats. A total of 36 adult Wistar albino female rats were randomly divided into six groups. Group I (control group; nothing was administered), Group II (CP group; 30 mg/kg/day CP was administered intraperitoneally to each animal for seven days), Group III (SLY group; 100 mg/kg/day SLY by gavage for 14 days), Group IV (CUR group; 100 mg/kg/day CUR by gavage for 14 days), Group V (SLY+CP group; 100 mg/kg/day SLY by gavage for 14 days plus 30 mg/kg/day CP intraperitoneally starting from the seventh day) and Group VI (CUR+CP group; 100 mg/kg/day CUR by gavage for 14 days plus 30 mg/kg/day CP intraperitoneally starting from the seventh day). Biochemical, histopathological and immunohistochemical methods were utilised for evaluation of the cardiotoxicity. The result showed that an increase in heart MDA and DNA fragmentation levels were detected while significant decreases were seen in SOD levels in CP alone group when compared to the other groups. CP caused severe damage in the histopathological status of heart tissue including oedema, haemorrhage, degeneration and necrosis in muscle fibrils and perinuclear vacuolization. A significant increase in the percentage of TUNEL-positive cells and γ H2AX protein expression was detected in the CP-treated group compared to the control and other treated groups. There was significant increase in the percentage of caspase 3-positive cells and decrease in the percentage of Bcl-2 positive cells in the CP group compared to the control group and other treated groups. However, a significant decrease in the percentage of cTnI and cTnT immunoreactivity was also observed in the CP-treated group compared to the control and other treated groups. These results lead to conclusion that the SLY and CUR might have protective effects against CP-induced cardiotoxicity and oxidative stress in rats.

KEYWORDS

Cyclophosphamide, silymarin, curcumin, biochemistry, pathology

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Session 3-5 - Toxicity Studies

Submission ID: 358

CYTOPROTECTIVE EFFECTS OF RHEUM RIBES RESVERATROL AND QUERCETININE TREATMENTS IN CCI-CREATED LIVER DAMAGE

SEVGİ YÜKEK¹, SEMA KAPTANOĞLU¹, GÖKHAN OTO¹

ABSTRACT

Aim:It is known that the role of free radicals in liver damage is great and it is a coronary effect of antioxidants. Many pharmacological agents have been tried in order to prevent acute and chronic liver damage. This study aimed to test Rheum ribes L. for the investigation of resveratrol, quercetin and cytoprotective effects known to have cytoprotective effect on acute liver damage in rat liver with carbon tetrachloride. **Materials and Methods:**In this study, 70 Wistar -Albino female rats weighing 200-220 gr were used in the experiment. The animals were divided (n=7), 10 different groups.1st Group: (Control, n=7, standard pellet for 7 days), 2 nd Group : (DMSO n=7, 0.3 ml/kg i.g, for 7 days), 3 rd group: (Olive oil, n=7, 1 ml/kg i.p, single dose 7th day), 4 th Group: (CCI4, n=7, 1 ml/kg i.p, olive oil 1:1), 5th Group:(Rheum ribes L., n=7,water extract, 100 mg/kg i.g for 7 days),6 th group: (Resveratrol, n=7, 100 mg/kg i.g for 7 days), 7 th group: (Quercetin n=7, 100 mg/kg i.g for 7 days), 8th group: (CCI4, n=7, 1 ml/kg, single dose 7th day and Rheum ribes L. water extract, 100 mg/kg i.g for 7 days), 9 th Group: (CCI4, n=7, 1 ml/kg i.p single dose 7 th day and resveratrol 100 mg/kg i.g for 7 days), 10 thGroup: (CCI4, n=7, 1 ml/kg, i.p single dose 7 th day and Quercetin, i.g 100 mg/kg for 7 days). CCI4 stimulating was done on 7 th day and animals were sacrificed on 8 th day. **Results:**In blood samples, alanine transaminase (ALT) and aspartate aminotransferase analyses were performed. Serum ALT and AST levels increased in CCI4 group. It was found that, although serum ALT levels decreased in Rheum ribes L. + CCI4 group, It not changed in resveratrol + CCI4 and quercetin + CCI4 groups. AST levels more increased in all therapy groups in according to CCI4 group. After sacrifice, %10 the formaldehyde was placed for examination histopathological.After 48 hours of detection, the running tap water was washed for 10 hours. Routine tissue was implanted in blocks of paraffin after it was done.Sections examined in the light microscope were evaluated as no (-), mild (+), moderate (++) and severe (+++) according to the specificity of the fire.1st group, 2 nd DMSO group,3 rd olive oil group, were found to be in normal histological structure (-).4 thCCI4 group, hydropic degeneration in the portal region, fatty degeneration in hepatocytes, coagulation necrosis, intrahepatic cholestasis, hyperplasia in kupffer cells, mononuclear cell infiltration were observed in the liver of rats. Severe (+++) necrotic hepatitis and haemorrhages were found in hepatocytes, especially those close to the serosa of the liver.5th group, Rheum ribes L. water extract group, 6th group Resveratrol and 7 th group Quercetin, were examined, it was determined that they had normal histological appearance (-). 8 th, the CCI4 and Rheum ribes L. group; Hydropic degeneration of the hepatocyte in the central region of the liver, dilatation of the sinusoids, and severe (+++) degenerative and necrotic hepatocytes in the vicinity of the serosurface of the liver.9 thgroup,CCI4 and Resveratrol group, the liver was found to have few (+) degenerative and necrotic hepatocytes in the area close to

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serosal.group, 10 th,CCl4 and quercetin group, liver showed degenerative and necrotic hepatocytes in a significant amount (++) near the serosal region.

KEYWORDS

Rheum ribes L., Resveratrol, Quercetin, CCl4, Cirrhosis

Session 3-5 - Toxicity Studies

Submission ID: 852

EFFECTS OF NIGELLA SATIVA ON OXIDATIVE STRESS PARAMETERS AND LIVER HISTOPATHOLOGY IN DICHLORVOS RATS

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ABSTRACT

As a result of the rapid increase of the world population after the industrial revolution, it is unavoidable to anticipate the increase in the same amount in the agriculture sector which will feed this population. To this end, thousands of chemicals have begun to be used in this sector in order to remove the factors that cause pathogens in crop production and low yields. In our study, dichlorvos, an organophosphate insecticide, was used. For the study, the control group (each of which was given orally 12 days with corn oil gavage in the form of 5 mg / kg of rats), each group of 7 rats, was dissolved in dichlorvos corn oil in the dichlorvos group (5 mg / kg in rats)) And a group of dichlorvos + nigella sativa (gavage was given for 12 days in dichlorvos such that the rats were given 5 ml / kg of donut oil and 5 mg / kg after half an hour). At the end of the experiment, blood samples were taken from the animals by entering the heart. Plasmas were centrifuged at 3000 rpm for 10 minutes and the resulting samples were stored at -20 [deg.] C. until analysis. Total oxidant, total antioxidant and total sialic acid levels were measured in the obtained plasma samples. Liver tissue samples taken for histological examinations were prepared after tissue tracing procedures and examined by light microscope. Dichlorvos group; Degeneration in the liver, cell infiltrations around the central and portal vein, and areas of focal necrosis were detected. Histopathological findings were also found in the same group, although the prevalence was less in Dichlorvos + nigella sativa group. The statistical significance of the increase in total sialic acid level is insignificant, while the total oxidant level in the dichlorvos plasma increases the statistical significance compared to the control group. Again, dichlorvos and total antioxidant levels decreased the statistical significance compared to the control group. It has been determined that nigella sativa oil acts to reduce the toxic effect against the pathological and biochemical effects of Dichlorvos.

KEYWORDS

Dichlorvos, Nigella sativa, Histopathology, Sialic acid, Total oxidant/antioxidant status.

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Session 3-5 - Toxicity Studies

Submission ID: 1809

ASSESSMENT OF THE CARDIOTOXICITY BY SUBCHRONIC GLYPHOSATE-BASED HERBICIDE EXPOSURE: AMELIORATIVE EFFECT OF N-ACETYLCYSTEINE IN WISTAR RATS

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ABSTRACT

The aim of this study was to clarify the the ameliorative effects of N-Acetylcysteine on oxidan and antioxidant status in heart tissue and some cardiac biomarkers by subchronic glyphosate-based herbicide exposure in Wistar rats. Twenty-eight male Wistar rats were used for the study. Group I (control group) was given normal rodent diet and tap water for eight weeks. The agent(s) administered are as follows: Group II (NAS), N-Acetylcysteine (160 mg/kg), group III (GBH), glyphosate-based herbicide (375 mg/kg, 10 % of the LD50), group IV (NAS+GBH), N-Acetylcysteine (160 mg/kg) and glyphosate-based herbicide (375 mg/kg). The treatment regimens were administered orally by gavage once daily for eight weeks. Serum cardiac damage markers (troponin I, creatine kinase-MB, IgE), oxidative and antioxidant status (malondialdehyde, glutathione, superoxide dismutase and catalase) in heart homogenate were measured. Increased levels of troponin I, creatine kinase-MB, IgE, and malondialdehyde, and decreased glutathione levels were observed after GBH administration for eight weeks. In contrast, treatment with NAS reversed GBH-induced oxidative stress, lipid peroxidation, and cardiac parameters. Consequently, our results demonstrate that NAS treatment has ameliorative effect on cardiotoxicity by subchronic glyphosate-based herbicide in Wistar rats.

KEYWORDS

1. Cardiotoxicity 2. N-Acetylcysteine 3. Herbicide 4. Rat

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Session 4-1 - Anthropology, Social, Culture and Ethics

Submission ID: 5

**MEDICINAL HERBS AS MANIFESTATION OF GOD’S NAME AL-
SHĀFĪ/ HEALTH-GIVING ACCORDING TO SUFIS (FORMER TITLE:
HERBAL MEDICINE/TREATMENT ACCORDING TO SUFIS)**

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ABSTRACT

Using herbal extracts to cure patients was the very first way of curing. For instance Lokman, who was known with the nickname “Hakīm/Physician” in the Qoran, was perceived as a person who knows the essence of the herbs and prepare extracts from them. Furthermore, when the Quran asks: Do they not look at the earth? We have produced therein beautiful and useful things/plants of all kinds” (Quran 26:7) implies that there are many useful plants on earth. According to Sufis, all the beings are alive; they glory the name of God in a way peculiar to them. They say: "Behave well to all the plants. Don't say that this or that plant is not alive!", confirms this idea. According to them, being a plant is even a stage in humans’ being a human. The Quran also emphasize that human being is like a plant: “God has produced you from the earth like a plant.” (Quran 71/17) Some Sufis believed that herbs cannot be deemed and used as medicinal things as only God can be considered as the Shāfī / Health-Giving, since the Quran says: “And when I am ill, it is he who cures me” (Quran 26:80). Ibn al -Arīf (d. 536/1141) was such a Sufi. His disciple Abū Abdallah al-Ghāzalī relates the following story concerning his attitude towards this issue: One day, I went out of presence of my sheikh Ibn al-Arīf, and wandered in open country. Every tree or plant I came across, told to me: “Come here! I am good at curing such sickness, I can restore its damage.” When I entered to the presence of my sheikh again, I told him what happen. He did not like what I told and even rebuked me saying: “Did I train you fort his end? What was your response against the trees and plants claiming to be useful or restoring or causing damage? Don’t you know that it is only God who can be curing and restoring health? ” Then I said: “O my master! I really repented from what I said. ”. He said again: “God tested you such way. I showed you the way to God; not to anyone else. Go out immediately and see that those trees and plants do not say a word to you.” I went out, and came across the same trees and plants. They did not utter a word to me. He came to his sheikh and told what had happened. His sheikh prostrated to God paying his thanks to him and said: “Thanks God for choosing you for Himself and did not submit you to another creature like you.” But according to majority of the Sufis, herbs/spices can play a role when they became sick, that is, physically or spiritually not well. This does not change the fact that God is the real health Giving. Since everything on the earth are manifestations of God’s names and attributes. Hence, it is necessary that some items on the earth became the manifestations of His name “al-Shāfī. Among the defenders of this idea we can cite the names of Abū Tālib al-Makkī (d. 388/998), Abū Hāmid al-Ghazalī (d. 505/1111), Sa’d al-dīn Jabawī (d. 575/1180), Muhyī al-dīn Ibn al-Arabī (d. 638/1240), Mawlāna Jalāl al-dīn Rūmī (d. 672/1273), Shaykhī/Yūsuf Hakīm Sinan (d. after 832/1429), Taqī al-dīn Ibn Hakīm (d. 1007/1598), Omar Shifāī (d. 1155/1742), Hajī Ali Pasha (d. 1333/1917). We take a couple of examples of medicinal herbs from Abū Hāmid al-Ghazalī’s epistle entitled Sirr al-

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ālamayn wa kashfu mā fi-l-darayn: 1. Honey is a very useful food for health. But it does not suit for everybody. For instance, it is not good for people with high blood pressure; it can be deemed even as “unlawful” to them to consume honey. 2. Fig is a very useful food. It can cure leprosy and gout. 3. Quince juice is good for high fever (it brings the fever down). 4. Apple juice is a very useful drink for a weak heart. It is also important to note that some Sufis like Abū Tālib al-Makkī and al-Ghazalī say that a healthy person should not use something that cures an illness. In this case, they say, he/she catch that illness. They also say: Do not use medicine when you are healthy; if you use you become sick, as your body will interpret your taking medicine as something wrong in the body and becomes sick accordingly.” This statement looks like a little to the verdict of Samuel Hahnemam’s (1755-1843) “Similia Similia” in Homoe Pathie: The medicines that cause some illnesses, can cure these illnesses. In fact, something that is good for an illness, is not good for a healthy person. Therefore, a diet that is good for a sick person, is not good for a healthy person.

KEYWORDS

Medicine/Treatment, Herbs, Sufis, Doctor, health.

Session 4-1 - Anthropology, Social, Culture and Ethics

Submission ID: 220

EVALUATING THE CANON OF MEDICINE BY AVICENNA BASED ON CURRENT PHYSIOTHERAPY AND AROMATHERAPY LITERATURE

ECE ACAR¹, TUBA ZOROĞLU¹

ABSTRACT

Introduction: Physiotherapy and rehabilitation is an interdisciplinary science that uses aromatic oils or plants with massage, compress, hot and cold baths or electrophysical agents. The Canon Of Medicine by Avicenna have been studied and used for many years in the medical science. When researching a field-specific observation on The Canon of Medicine is made, it is seen that many of the important issues are explained as closer as today's physiotherapy and rehabilitation literature . **Objective:** We aimed to analyze and elaborate Avicenna's herbal practices which related to physiotherapy rehabilitation based on the our current knowledge and cause-effect relation. **Material and Method:** The first, fourth and fifth books of Canon of Medicine, which translated by the Kahya into Turkish, were examined. In addition, related publications have been reviewed. The first book consist of the articles about bones, spine and muscles. The fourth book has the chapters related fractures and edema. Also Avicenna's own practices are in fifth book. All of the practices and thesis by Avicenna was discussed. **Results:** It is noticed that the almost practices which was used Avicenna based on the same principle with today's practices suprisingly. One of the more interesting result is, his using sheep wool after rubs on the skin with a cream which consist of olive oil and iris oil. It is evident that his aim was not to keep the region warm. Sheep wool contains high moisture so that it has too few electric charge. In those days, the existence of electric charges was unknown undoubtedly. But nowadays it is known that the materials are electrically charged and the same charges push each other and the opposite charges pull each other. We use this principle in the practice of iontophoresis. Thus, we provide electrical transmission of the desired substance into the skin. If he had used some other material instead of sheep's wool, perhaps the material he was using and the medicine it prepared would attract the electrical charges and would reduce ion passage into the tissue. **Discussion:** We noticed that how Avicenna's practices or assumptions was quite accurate as closer as today's literature. In this way our respect for his knowledge is increasing. We will learn from him is not over yet. In addition this, reading his book again and again will inspire all health care professionals.

KEYWORDS

Canon of Medicine, Avicenna, Physiotherapy and Rehabilitation, Aromatherapy, Health history

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Session 4-1 - Anthropology, Social, Culture and Ethics

Submission ID: 319

HISTORY OF DOG ROSE (ROSA CANINA) PLANT IN STAMPS

ÖZÜM ERKİN¹

ABSTRACT

Since antiquity people, various natural resources have been used for medical purposes. World Health Organization announced that 75 -80 % of the world's population is treated with natural remedies. Rosa canina- known in English as "Dog rose" and in Turkish as "Kuşburnu"- grows crazy in various parts of the world. Dog rose as a remedy in traditional folk medicine is caused by high phenolic compounds and minerals. Dog rose is a rich source of vitamin C and it was used as syrup because of its preventive effect on the scurvy during World War II. Rosa canina contain vitamins A, B1, B2, B3, K, and tannins, flavonoids. Dog rose mostly used in the prevention and treatment of colds, gastrointestinal disorders, diabetes, kidney disorders and other infections. A postage stamp, is a valuable and generally square or rectangle shaped label which is used to show that postage is paid. The most important of these tasks is its role as an advertisement tool and as a cultural reflection of its country through the graphics on it. Aim of this study to show the importance of Dog rose (Rosa Canina) plant as a medical and aromatic plant through past to the present by stamps. The most respected sources (Scott and Michel catalogues) of philately world were searched . Twenty three philatelic materials were found from 19 countries of the world about Rosa Canina.

KEYWORDS

Rosa Canina, Dog rose, History, Stamps, Philately

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Session 4-1 - Anthropology, Social, Culture and Ethics

Submission ID: 416

PLANTS USED IN THE PRODUCTION OF TRADITIONAL ARTS

ALI FUAT BAYSAL¹, AYŞE ZEHRA SAYIN¹

ABSTRACT

Plants undertake a vital function in protecting human health by providing the oxygen and nutrients necessary for people to survive. Therefore, the to protect presence of plants means to protect the existence of human beings. In addition to the basic benefits of plants for vital functions such as health and nutrition, there are also important tasks and benefits during the formation stages of works of art. The plants used for different purposes in different branches of art form one of the basic materials especially in traditional Turkish arts. Thanks to the different plants growing in our geographical area with a rich plant cover and diversity, it is obtained different colors that reflect our culture. This tradition which protected until todays is applied in arts such as calligraphy, illumination, ebru or weaving arts such as carpets and rugs, which we refer to as daisies, linden, walnuts, indigo grasses and similar plants and book arts. The subject of declaration is to indicate of importance the plants in our culture and to introduce the usage areas and features of plants in our traditional arts. The plants used in our Traditional Arts will be classified and It will be presented visually to the participant in which art branch the plant is used for what purpose.

KEYWORDS

Plants and Art, Traditional Turkish Arts, Plants Used in Traditional Turkish Arts

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Session 4-1 - Anthropology, Social, Culture and Ethics

Submission ID: 1926

NECESSITY, FEASIBILITY AND PROBABLE OPPORTUNITY OF DETERMINATION OF REAL TARIFF PRICE FOR NON-WOOD VEGETAL PRODUCTS

MUSTAFA FEHMI TÜRKER¹, ELİF BERKER¹, CANAN YILMAZ¹

ABSTRACT

Forests have a special place among natural resources, and have provided several benefits for human beings since historical times and continue to do so. The benefits of forest resources were mainly wood raw material in the past, while today demand for non-wood forest products has also increased as a result of increasing requirements of versatile utilization of forests and the changing demands of the people for forest products. On the other hand, although Turkey is an importer of wood products, it is an exporter for non-wood forest products, and this fact reflects the significance of this issue. Within non-wood forest products, non-wood vegetal products (NWVP) are significant and these products constitute about 98% of forest product exports of Turkish forestry industry and provide important source of income in foreign trade. Furthermore, when national and international NWVP markets are considered, these products are also an important source of revenue for state forest enterprises (SFE) and the forestry industry, but despite all these favorable conditions, the forestry industry does not receive the attention it deserves in Turkey. However, it is also important that NWVP operations, management and marketing should be conducted effectively and efficiently. But, when we examine the distribution of income among the stakeholders in the distribution channels in the industry from procurement to the market, it could be observed that there is an unfair distribution in the country. A significant portion of the generated revenue is hold by wholesalers and, if any, retailers, and the raw material producer SFE and the forest villagers who collect the raw materials cannot get a fair share. One of the major underlying problems is the low tariff prices. The fact that the tariff rates are low decreases the economic success of the SFE and negatively affects the efficient and effective use of the resources. To correct these problems, the real NWVP tariffs should be calculated and the sales in marketing distribution channels should be conducted with these prices and the policies implemented should prioritize rural development. The present study will aim to identify the official calculation of the real tariffs for these products, the negative effects of the official calculation method on the economic success of the SFE, and its insufficiency for the development of forest villagers, and will establish the need to recalculate real tariff rates for these products.

KEYWORDS

Non-wood vegetal products, tariff rates, management of forest resources

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Session 4-2 - Endemic Plants

Submission ID: 251

**PHYTOCHEMICAL COMPOSITIONS OF ENDEMIC SPECIES GROW
IN TURKEY: IRIS TAOCHIA WORONOW EX GROSSH. (IRIDACEAE)
AND ITS NEW CHOLESTEROL-LOWERING PLANT STEROL
ESTER: BETA-SITOSTEROL**

ŞEYMA BAKIRCI¹, HAKAN AŞKIN¹, ARIF AYAR³, BİLAL YILMAZ¹

ABSTRACT

Introduction Beta-sitosterol is a substance found in plants. Chemists call it a plant sterol ester. It is found in fruits, vegetables, nuts, and seeds. It is used to make medicine. Beta-sitosterol is used for heart disease and high cholesterol. The federal Food and Drug Administration (FDA) allows manufacturers to claim that foods containing plant sterol esters such as beta-sitosterol are for reducing the risk of coronary heart disease (CHD). Iris taochia (IT) is a species in the genus Iris. The Taochia lived in a mountainous area of the Black Sea to the current borders of Georgia, Armenia and Turkey. This plant is endemic to the Caucasus (Kandemir 2006). Native to upland basalts in the north-eastern corner of Turkey around especially in Erzurum. We investigated of the chemical constituents from dried whole plant of IT. Material and Method Whole plant of IT were collected in Erzurum province. Hexane, ethyl acetate and ethanol extraction were done by Soxhlet extractor. The plant extracts obtained from IT was analyzed using an Agilent GC-MS system. Results Fourteen compounds were obtained and identified as L- α - terpineol, tetradecanoic acid, neophytadiene, 2-pentadecanone, 6,10,14 trimethyl, phthalic acid, n-hexadecanoic acid, linolenic acid, oleic acid, octadecanoic acid (stearic acid), hexacosanoic acid, docosanoic acid 1,2,3-propanetriylester, β - sitosterol, α - tocopherol and α - amyryn. Discussion and Conclusion All of these compounds are isolated from IT for the first time. These findings may shed light on the design of new drugs, the cholesterol-lowering effect. References 1-Kandemir N. 2006. Investigation on the Autecological of Endemic Iris taochia Woronow Ex Grossh. (Iridaceae) Distributed in the North East Anatolia Region. Pakistan Journal of Biological Sciences 9:2753-2760.

KEYWORDS

Chemical constituents, β -sitosterol, GC-MS, Iris taochia

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Session 4-2 - Endemic Plants

Submission ID: 303

**DETERMINATION OF BIOLOGICAL ACTIVITY AND ACTIVE
SUBSTANCES OF THREE LOCAL ENDEMIC (HEDYSARUM
VANENSE, TRIGONELLA MACRORRHYNCHA, ASTRAGALUS
GUZELSUENSIS) BELONGING TO FABACEAE**

MEHMET EMRE EREZ¹, SÜLEYMAN MESUT PINAR², MEHMET FİDAN¹, ABDULLAH DALAR²

ABSTRACT

Hedysarum vanense Hedge & Hub.-Mor., Trigonella macrorrhyncha Boiss., Astragalus guzelsuensis F. Ghahrem. Behçet & Demir are genus of Fabaceae. The Fabaceae (Leguminosae) is a family of flowering plants comprising about 269 genera and 5100 species (Mabberley, 2008) and it is one of the largest plant families in Turkey and in the world. It has 68 genera and more than 900 species in Flora of Turkey (Davis, 1970, 1988). Many species of genus Hedysarum have been employed in traditional Chinese medicine to strengthen the immune system and improve the energy of the body (Dong et al., 2013). Several reports focus on trigonelline belonging to Trigonella, a major active constituent having hypoglycemic activity, hypocholesterolemic, antiseptic, antimigraine, antitumor, mutagenic and osmoregular properties (Barnes et al., 2002). Several species of this Astragalus genus are used in foods, medicines, and cosmetics (Zarre-Mobarakeh, 2000). The aim of the present study was to examine the biological activity and active substances of aerial part of three different species by different solvents and methods. First, the methanol extracts were used and then fractionated extracts (Acetone, Ethanol and water) were studied. The results were compared with each other. For this aim the total phenolic and flavonoid content, DPPH and FRAP activity were determined. Finally the active substances of methanol extract were also examined. According to results; the maximum DPPH activity was found in H. vanense as 85,58 % comparing with all extractions. Consideration of total phenolic and flavonoids contents the methanol extract of Astragalus guzelsuensis were shown the maximum value as 40,40 mg/ml gallic acid and 83,13 rutin equivalent respectively . Also comparing to the FRAP activity of plant extract, H. vanense was estimated the maximum inhibition activity in fractionated method. The values were estimated as 270, 62 µmol Fe+2/g in acetone, 152,68 in ethanol and 80,50 in water extracts. Evaluation of volatile compound and fatty acid compositions on the plant extracts. Cyclopentane, Cyclohexane and palmitic acid in H. vanense, Octadecane, 3-Eicosyne and α-Linolenic acid in T. macrorrhyncha and Heptacosane, 2-Propenoic acid and Linoleic Acid substances were detected in A. guzelsuensis. Finally according to obtained data, these three endemic species were having a potential for using as medicinal plants and have to evaluate.

KEYWORDS

*Hedysarum vanense, Trigonella macrorrhyncha, Astragalus guzelsuensis, Endemic,
Biological activity and active substances*

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Session 4-2 - Endemic Plants

Submission ID: 340

JUNIPERUS SSP. FORESTS IN KONYA REGIONAL DIRECTORATE OF FORESTRY

BEKİR KARACABEY¹, ERDAL TUNÇEZ¹, MEHMET VEHBİ TEMİRCİ¹

ABSTRACT

Because of Konya Regional Directorate of Forestry is located in climate zone of Central Anatolia, behind of Taurus Mountains and low annual rainfall, the spread and growth of forests is limited. The main tree species forming forests are Larch (torch pine), oak, juniper, cedar and fir. The juniperus which has wide spreading capacity in our country is an important forest tree of this climate zone. Konya Regional Directorate of Forestry have rich in juniper species and its areas. 344677.3 hectares of the total area of 704058 hectare forest area in this region consists of pure and mixed juniper forests. Because of the medicinal properties of juniper tree and its wide use area and other characteristics, this study has been dealt with.

KEYWORDS

Juniper Sections, Central Anatolia, Taurus, Pharmacology, Juniper Products, Economic Benefit.

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Session 4-2 - Endemic Plants

Submission ID: 499

**ANTIFUNGAL ACTIVITY OF ENDEMIC ANATOLIA SIGLA TREE
(LIQUIDAMBAR ORIENTALIS MILL.) PLANT EXTRACTS AGAINST
FUSARIUM OXYSPORUM F.SP. CUCUMERINUM AND MONILINIA
FRUCTIGENA**

YUSUF YIKILMAZ¹, ABDURRAHMAN ONARAN¹

ABSTRACT

Natural antifungal substances obtained from plants are used as an alternative method of struggle from past to present day. In this study, the antifungal activity of resin and leaf methanol extract obtained from Liquidambar orientalis Mill. plant, endemically grown in our country, was investigated. In our study, activity studies were carried out using agar plate method against Fusarium oxysporum f. sp. cucumerinum (FOC) and Monilinia fructigena plant pathogens causing damage in cucumber and apple plants. Concentrations of plant parts of 0 (negative control), 500, 1000 and 2000 mg/ml were used. Mycelial growth inhibition (MGI) and lethal doses (LD50-90) were obtained as a result of the obtained data. Activity was observed at every concentration used against plant pathogens. MGI values increased as the amount of concentration increased. Thus, the highest MGI ratio for L. orientalis resin is calculated 100% against M. fructigena (same as positive control) and 74% for FOC. These values were 66% for M. fructigena and 51% for FOC for L. orientalis leaf extract. In addition, LD50 values were found between 732 (for M. fructigena) to 442 (for FOC) mg/ml in resin extract and 1698 (for M. fructigena) to 765 (for FOC) mg/ml in leaf extract. According to these results, the resin extract against the test organisms was found to be more effective than the leaf extract. Natural antifungal agents are among the preferred products due to their low cost and less side effects.

KEYWORDS

Anatolia Sigla Tree, Antifungal Activity, Plant Extracts, Liquidambar orientalis, Fusarium oxysporum f.sp. cucumerinum, Monilinia fructigena

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Session 4-2 - Endemic Plants

Submission ID: 1584

PRODUCTION AND QUALITY OF MEDICAL PLANT ENDEMIC FOR TURKEY

PROF DR YÜKSEL KAN¹

ABSTRACT

Turkey, where a myriad of plants are used in traditional medicine and food, is one of the world's richest countries in terms of genetic diversity. The main reasons for the richness of the endemic plant species in Turkey are due to different types of soil and topography which are the results of the climate and other environmental conditions. Turkey's flora has a total of 12,000 endemic plant taxons, including about 4,000 plant taxons. In Turkey, about 500 plant taxons are used for medicinal purposes. Some of the plants used for medicinal purposes are endemic taxons. These medicinal plants are used in many different purposes by Turkish populations, such as food, tea, spices, as well as pharmaceuticals and cosmetics. Phytochemical investigations of these endemic plants which grow naturally in Turkey have revealed many interesting bioactive compounds. Part of the medicinal plants, collected from natural habitats in Turkey, has been assessed for external and internal trades. In recent years, some medicinal plants have been cultivated for the purpose of commercial production in Turkey. In this presentation, investigation of medicinal plants with high economic values, both natural habitats and cultivated areas to promote the conservation of the biodiversity in natural flora of Turkey will be discussed.

KEYWORDS

Medicinal plants, Endemic species, Biodiversity, Secondary metabolites, Quality

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Session 4-3 - Plant Protection in Medicinal And Aromatic Plants

Submission ID: 147

**REPELLENT ACTIVITY OF SOME PLANT ESSENTIAL OILS
AGAINST THE CITRUS MEALYBUG, PLANOCOCCUS CITRI RISSO
(HEMIPTERA: PSEUDOCOCCIDAE)**

TUĐBA ERDEMİR¹, FEDAI ERLER²

ABSTRACT

The citrus mealybug, *Planococcus citri* Risso (Hemiptera: Pseudococcidae), is one of the most important pests of citrus groves in Turkey. In recent years, it caused important damages in some cut-flowers (especially in roses) in greenhouses in Antalya (South-western part of Turkey). In the present study, repellent activity of essential oils extracted from anise (*Pimpinella anisum* L.), rosemary (*Rosmarinus officinalis* L.), mint (*Mentha piperita* L.), Turkish oregano (*Origanum onites* L.) and thyme (*Thymus vulgaris* L.) was investigated against the adults of *P. citri* using choice and no-choice test methods under laboratory conditions. In choice tests, the insects were given a choice to select the eligible food for them by placing two sprouted potato tubers, one of which was treated with a chosen concentration of a chosen essential oil and the other with distilled water, in the same container. In no-choice tests, the insects were given no choice to select the eligible food for them by placing the essential oil-treated and water-treated tubers in two separate containers. Four different doses (0.625, 1.25, 2.5 and 5.0 mg/l water) of essential oils and four different exposure periods (24, 48, 72 and 96 h) were used in all the bioassays. The controls were treated only with distilled water including 0.001% Tween-20). According to the results from the study, all the essential oils showed a repellent activity by varying the dose and the exposure period tested. Repellency increased with increasing doses of the essential oils, but it considerably decreased with increase in the exposure period (elapsed time). Based on the highest dose (5 mg/l water) and the longest exposure period (96 h), the essential oils from *O. onites* and *T. vulgaris* had the highest repellency (%) in both choice and no-choice tests (respectively, *O. onites*: %88.9 and %65.4; *T. vulgaris*: %88.8 and %69.6), and followed by *P. anisum* (%80.1 and %50) and *R. officinalis* (%57.1 and %45.2) essential oils. *M. piperita* essential oil had the lowest repellent activity against adults of the pest in both choice and no-choice tests (%37.8 and %28.6, respectively). Overall results suggest that the essential oils tested in the present study (especially, *O. onites*, *T. vulgaris* and *P. anisum*) may be eco-friendly alternatives of synthetic insecticides in controlling *P. citri* in various agro-ecosystems.

KEYWORDS

Essential oil, citrus mealybug, Planococcus citri, repellent activity

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Session 4-3 - Plant Protection in Medicinal And Aromatic Plants

Submission ID: 1226

**CHEMICAL COMPOSITION AND FUMIGANT TOXICITY AGAINST
COLORADO POTATO BEETLE, LEPTINOTARSA DECEMLINEATA
SAY (COLEOPTERA: CHRYSOMELIDAE) OF THE ESSENTIAL OIL
OF FERULAGO MUGHLAE**

SELÇUK KÜÇÜKAYDIN¹, MEHMET EMİN DURU¹, MEMİŞ KESDEK¹, MEHMET ÖZTÜRK¹, MEHMET ALİ ÖZLER¹

ABSTRACT

The Colorado potato beetle (*Leptinotarsa decemlineata* Say) is the most destructive pest of potatoes, eggplants and tomatoes in the world (Hare, 1990). Synthetic chemical insecticides and fumigants are commonly used in the pest control. However, there is a considerable problem in the use of these chemicals due to their residual toxicity in the post-harvest products and occurrence of insecticide resistant (Gelman et al., 2001). Synthetic pesticides also cause the environmental pollution owing to their slow biodegradation in the environment (Barnard et al., 1997). Hence, there is a need to develop natural and safe bio-pesticides. *Ferulago mughlae* is the endemic plant to Mugla-Turkey member of Apiaceae family. In this study, the chemical composition of the essential oils of *Ferulago mughlae* was analyzed. As well as chemical composition of essential oils, fumigant toxicities of essential oil obtained from *Ferulago mughlae* (Apiaceae) were evaluated against the adults of Colorado potato beetle (*Leptinotarsa decemlineata*). The aerial parts of *Ferulago mughlae* were identified and collected from southern of Turkey (Muğla) in July 2015. Essential oil was obtained using a Clevenger apparatus from the dried aerial parts of *Ferulago mughlae*. Chemical compositions of the essential oils analyzed by GC-FID and GC-MS. In addition to, fumigant toxicities of essential oil were evaluated against the adults of Colorado potato beetle (*Leptinotarsa decemlineata*) in the Petri dishes. After exposure, mortality of the adults was determined at 24th, 48th and 96th hours. The essential oils of *Ferulago mughlae* 20 constituents were identified. The main components of the essential oil were Limonene (42.86%), alpha-pinene (12.68%) and p-cymene (9.78%). The insecticidal effect was influenced by the concentrations of the essential oil and the exposure time. Experiments showed increased mortality rate as a result of the increase in concentration. The mortality rates after 72 h of treatment with the concentration (10 µl) %23,6, (20 µl) %42,3 and (30 µl) %87,4. Considering on all these results, essential oils of *F. mughlae* may be used as potential natural and non-toxic insecticidal agent against adults of *Leptinotarsa decemlineata*.

KEYWORDS

Ferulago mughlae, Essential oil, Fumigant toxicity, Leptinotarsa decemlineata

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Session 4-3 - Plant Protection in Medicinal And Aromatic Plants

Submission ID: 1237

ANTIFEEDANT EFFECTS OF EXTRACTS OF AN ENDEMIC PLANT (FERULAGO LONGISTYLIS BOISS) ON STORED PRODUCT PEST, EPHESTIA KUEHNIELLA ZELLER

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ABSTRACT

Ferulago longistylis Boiss. (Apiaceae) is an endemic species in Turkey. Naturally grown in Eastern Anatolia Region in Erzincan and Malatya provinces. Antifeedant effects of hexane, chloroform and water extracts of *F. longistylis* against *Ephestia kuehniella* (Lepidoptera: Prelidae) larvae were evaluated in this study. was investigated in this study. Both our country and all around the world, insect pests living in the stored products cause a serious decline in the quality of products. One of them is *Ephestia kuehniella* which is well-known and called as a flour moth. The use of plant extracts against insect pests is becoming increasingly popular. On this purpose, collected endemic plant samples belong to *F. longistylis* are dried in the shade in the laboratory with good air space. Dried aerial parts of the plant were powdered. A portion (20 gm; 5 gm portions into 3 cartridges and 1 control) of dried plant material was extracted with hexane, chloroform and water in Soxhlet apparatus. The potential of the antifeedant effect of the extract against to *E. kuehniella* was determined by the antifeedant test. Accordingly, in this study, consumption of wheat flour eaten by *E. kuehniella* larvae were determined by following. Larvae were cultivated in sterile petri dishes including 50, 100, 250 and 500 ppm for each hexane, chloroform and water extracts for 24 hours and the average of the difference between the final and initial weight of the petri dishes was determined as the amount of consumption. Each test group was set up with petri dishes (6 cm in diam.) each including 10 larvae (4th instar). According to the results, the highest antifeedant effect was observed in the petri including 50 ppm water extract. Hexan extract at 50 ppm and doses of water extracts at 250 and 500 ppm showed low antifeedant effect when compared to the control. All of chloroform extracts showed similar effects to the control.

KEYWORDS

Antifeedant, Endemic, Ephestia kuehniella, Ferulago glareosa.

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Session 4-3 - Plant Protection in Medicinal And Aromatic Plants

Submission ID: 1301

**OVICIDAL ACTIVITIES OF EXTRACTS OF SOME MEDICINAL AND
AROMATIC PLANTS TO EURYGASTER MAURA L.
(HEMIPTERA:SCUTELLERIDAE)**

FATMA NUR ELMA¹

ABSTRACT

Turkey has a rich flora of medicinal and aromatic plants. Their toxic effects against insects have centre of attention during the last twenty years. Botanical insecticides may be alternative to synthetic chemical insecticides in the future. In this search, the ovicidal effects of four medicinal and aromatic plant extracts *Melissa officinalis* L, *Humulus lupulus* L, *Origanum vulgare* L. and *Syzygium aromaticum* (L.) were tested against *Eurygaster maura* L. (Hemiptera: Scutelleridae) under laboratory conditions. One to three day old eggs were dipped in plant extracts. The effects of three concentrations of plant extracts 2.5, 5 and 10% were studied. It was observed that as the concentration increased, the inhibition of egg hatchability increased. *Melissa officinalis* extract didn't show significant ovicidal effect. On the other hand, *Origanum vulgare* and *S. aromaticum* extracts moderately showed ovicidal effect. *Humulus lupulus* extract revealed the best result in inhibiting egg hatchability (57.49%) at 10% concentration. It can be concluded that *H.lupulus* extract may be used as supportive in an integrated pest management programme aimed at controlling *E.maura*.

KEYWORDS

Ovicidal effect, Eurygaster maura, Humulus lupulus, Origanum vulgare, Syzygium aromaticum

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Session 4-3 - Plant Protection in Medicinal And Aromatic Plants

Submission ID: 1872

**FIRST REPORT OF DOWNY MILDEW CAUSED BY PERONOSPORA
SP. ON SWEET BASIL (OCIMUM BASILICUM) IN WEST
MEDITERRANEAN REGION OF TURKEY**

ESIN BASIM¹, HÜSEYİN BASIM¹, DERYA BAKI¹

ABSTRACT

First Report of Downy Mildew Caused by Peronospora sp. on Sweet Basil (*Ocimum basilicum*) in West Mediterranean region of Turkey Esin BASIM1* Hüseyin BASIM2 Derya BAKİ2
1 The University of Akdeniz, Korkuteli Vocational School, Department of Horticulture, Antalya/Turkey 2The University of Akdeniz, Faculty of Agriculture, Department of Plant Protection, Antalya/Turkey *Corresponding Author: esinbasim@akdeniz.edu.tr Sweet basil (*Ocimum basilicum* L.) is an annual aromatic plant, grown mostly for culinary use for both fresh and dry consumption as well as a source of essential oil. During the spring and fall of 2015, a damaging foliar disease, Downy mildew was detected from as observed in sweet basil (*Ocimum basilicum*) grown in greenhouses in Antalya province of Turkey. More than 80% of basil plants were affected in produced greenhouse-grown for fresh and processed consumption. The disease incidence was determined to be nearly 85% and caused economically important yield losses on sweet basil grown in greenhouse in Antalya. Symptoms on the leaves of infected basil plants were initially chlorotic, and then a characteristic gray as well as purplish sporulation and velvety fungal growth were observed on the lower and sometimes on the upper leaf surfaces. Dichotomous branching, hyaline sporangiophores with a length of 200 to 600 µm bearing single sporangia were detected by microscopic examination. Sporangia were light brown, ovoid, and measured 15 to 22 × 15 to 20 µm. The pathogen was identified as *Peronospora* sp. on the basis of light microscopy examination of its morphological characteristics. Pathogenicity was confirmed by inoculating leaves of 30-day-old healthy plants with a sporangial suspension (1×10⁵ sporangia/ml). The healthy basil plants were inoculated by sterilized water served as controls. The plants were maintained in a growth chamber at 20°C± 2 for 12 h of light per day and at 90 % relative humidity until typical symptoms of downy mildew developed on the plants. The pathogenicity test was repeated twice. Control plants did not show any symptoms. To our knowledge, this is the first report of *Peronospora* sp. on sweet basil in Turkey. Keywords: Antalya, Downy mildew, *Ocimum basilicum* L., *Peronospora* sp., Sweet basil

KEYWORDS

Antalya, Downy mildew, Ocimum basilicum L., Peronospora sp., Sweet basil

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Session 4-4 - Antibacterial and anti-inflammatory effects

Submission ID: 112

THE EFFECT OF COMBINATIONS OF AMPHOTERISIN B AND SOME HERBAL QUORUM SENSING INHIBITORS ON CANDIDA ALBICANS BIOFILMS

DIDEM KART¹, MERAL SAđIROđLU¹

ABSTRACT

Biofilms are common problem in nosocomial infections. Quorum sensing is an alternative strategy in fighting biofilm infections and some natural quorum sensing inhibitors (QSI) were found successful to interfere with the infections. *Candida albicans*, one of the major pathogen related with the biofilm infections, is an important trouble in hospitals. Development of *Candida albicans* biofilm model which is reproducibly grown in a 96-well microtiter plate was performed in this study. We determined the antibiofilm effect of amphotericin B and some natural QSIs alone or in combinations on biofilm cells of *C. albicans* SC 5314. Amphotericin B combinations with QSIs such as cinnamaldehyde, resveratrol, L-canavanin, 4-nitropyridine N-oxide, p-benzoquinon, farnesol, epigallocatechin gallate, catechin hydrate, curcumin, baicain hydrate ve esculin hydrate and cyclic di-GMP inhibitors such as sulfatiazol and azathioprine were tested with MBEC assay and MBIC (minimum biofilm inhibition concentration), MBEC (minimum biofilm eradication concentration) and log reduction of the antimicrobials were determined. Amphotericin B significantly decreased the sessile cells of *C. albicans* in mono biofilms in range of 0.0625-4 $\mu\text{g/ml}$. However, combinations of Amphotericin B with azathioprine killed completely the biofilm cells even in the minimum concentration tested (0.0625 $\mu\text{g/ml}$). Moreover, the combinations of amphotericin B with curcumin, L-canavanine, sulphatiazole, 4-Nitro N-oksit, p-benzokinon, esculin hydrate, baicalein hydrate, cinnamaldehyde and farnesol were found effective to kill the cells completely in concentrations of 1 and/or 2 $\mu\text{g/ml}$ when compared with amphotericin B only.

KEYWORDS

Biofilm infections, Candida albicans, herbal Quorum sensing inhibitors

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Session 4-4 - Antibacterial and anti-inflammatory effects

Submission ID: 199

DETERMINATION OF ANTIMICROBIAL ACTIVITY OF TRIGONELLA FOENUM-GRÆCUM L. SEED EXTRACT

PERİHAN AKBAŞ¹, GÖZDE ATILA¹, HAMİT USLU¹, HİCRAN ALKAN¹

ABSTRACT

Nowadays alternative antimicrobial agents have been searching because developing products antimicrobial resistance will decrease. In this study we aimed to investigate antibacterial and antifungal activity of *Trigonella foenum-græcum* seed, it is known hypoglycaemic, hypocholesterolemic, antioxidant, antiulcer and immunomodulator effects. *Trigonella foenum-græcum* seed was extracted with water-alcohol by maceration method. Its antimicrobial activity was tested by well diffusion technique against *Bacillus subtilis*, *Bacillus cereus*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Pasteurella multocida*, *Yersinia enterocolitica*, *Klebsiella pneumoniae*, *Staphylococcus aureus* bacteria, *Candida albicans*, *Rhodotorula glutinis* yeast and standard antibiotics. *Trigonella foenum-græcum* seed extract was detected to be effective against Gram (+) and Gram (-) bacteria and yeasts. Best antibacterial activity of *Trigonella foenum-græcum* has been found against *P. multocida* (22 mm), its other antibacterial activities were *B. subtilis*, *B. cereus*, *K. pneumoniae*, *S. aureus* 10 mm, *E. coli* 8 mm, *Y. enterocolitica* 14 mm. The extract showed best activity for yeasts against *R. glutinis* (20 mm), this activity was equal penicilin antibiotic and there is no antifungal activity for *C. albicans*. In general, *Trigonella foenum-græcum* seed extract has antimicrobial activity, but this is lower than penicillin and erythromycin antibiotics.

KEYWORDS

Trigonella foenum-græcum seed extract, antibacterial, antifungal

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Session 4-4 - Antibacterial and anti-inflammatory effects

Submission ID: 520

ANTIMICROBIAL EFFECT OF SOME PLANT OILS AGAINST SOME BACTERIAS IZOLATED FROM PATIENTS SAMPLES

ÇİĞDEM EDA BALKAN¹, ŞABAN KORDALI², AYŞE USANMAZ BOZHÜYÜK³

ABSTRACT

ANTIMICROBIAL EFFECT OF SOME PLANT OILS AGAINST SOME BACTERIAS IZOLATED FROM PATIENTS SAMPLES AİM The aim of present study was to compare the antibacterial potential of *Thymus sipyleus* boiss. subsp. *sipyleus* boiss. var. *sipyleus* L. (Thymol and camphor both tested), *Satureja thymbra* L. and *Origanum onites* L. by Kirby bauer discdiffusion method. We isolated *Enterococcus* spp., *E.coli*, *Morgonella morganii*, *Pseudomonas aeruginosa*, MSSA, *Klebsiella pneumonia* and *Proteus mirabilis* from different patient samples. Key Words: Antimicrobial, Bacterias, Essential oils INTRODUCTION This study was undertaken to determine the in vitro antimicrobial activities of three commercial essential oils and their main components in order to pre-select candidates for potential infections. The antibacterial effects against pathogenic bacteria which are isolated from patients samples (*Enterococcus* spp., *E.coli*, *Morgonella morganii*, *Pseudomonas aeruginosa*, MSSA, *Klebsiella pneumonia* and *Proteus mirabilis*) were tested using paper disk diffusion method. These materials could be served as an important natural alternative to prevent bacterial enfections in the future. MATERIALS AND METHODS Plant material and isolation of essential oil *Origanum onites* L. (Lamiaceae), *Satureja thymbra* L. (Labiatae), *Thymus sipyleus* boiss. subsp. *sipyleus* boiss. var. *sipyleus* L. (Lamiaceae) were collected at the flowering stage from different regions of Turkey between June and August. Voucher specimens have been deposited in the herbarium of Ataturk University, Faculty of Agriculture, the Department of Plant Protection, Erzurum, Turkey. Aerial parts of the plants were dried in shade and ground in a grinder. The dried plant samples (500 g) were subjected to hydro distillation for 4 h using a Clevenger-type apparatus. The oil yields of *O. onites*, *S. thymbra* and *T. sipyleus* were 4.5, 2.3 and 1.17 % (w/w, dry weight basis), respectively. The yield was based on dry materials of plant samples. The oils were dried over an hydrous Na₂SO₄ and stored in a sealed vial until required, and then stored at 4°C until used for toxicity bioassays. The pure compounds were purchased commercially from Fluka and Sigma. (Camphor (Fluka, purity 97%), Thymol (Sigma, purity 95%)). The compounds tested for toxicity against *Enterococcus* spp., *E.coli*, *Morgonella morganii*, *Pseudomonas aeruginosa*, MSSA, *Klebsiella pneumonia* and *Proteus mirabilis*. Collection of bacterias *Enterococcus* spp., *E.coli*, *Morgonella morganii*, *Pseudomonas aeruginosa*, MSSA, *Klebsiella pneumonia* and *Proteus mirabilis* isolated from different patient samples in the laboratory of clinical microbiology with VITEC microbial identification system. Kirby Bauer Disc Diffusion Method The experiment was performed with a bacterial inoculum of 0.5 McFarland; Mueller-Hinton (MH) was inoculated with each bacterial strain. Each oil was applied to a sterile fitler paper disc (6-mm diameter) 2µl placed on the surface of inoculated plates; duplicate plates for each oil were used. After overnight incubation at 37 C, the inhibition zones were measured. Control plates was

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prepared by placing sterile water for negative controls. RESULTS Table 1: Table 1 shows the results of the antibacterial assays in terms of Kirby Bauer. Inhibition ranged from 0 to 30 mm. *Proteus mirabilis* were the most susceptible, followed by *Klebsiella pneumonia* and *Morganella morganii*, *Pseudomonas aeruginosa* did not show susceptibility to any oil. *Klebsiella pneumonia* susceptible, other oils did not show susceptibility to the Camphor oil. DISCUSSION In the literature, the results of experiments showed that the oil from *Thymus* exhibited extremely strong activity against all of the clinical strains. In our hands, comparison of the results of this study with previously published data is difficult because the composition of plant oil products is known to vary according to local air conditions, soil composition and to extraction techniques. Moreover, the results obtained may differ because of the method used to assess antimicrobial activity and quantity of oil. The essential oils of the *T. sipyleus*, *O. onites* and *S. thymbra* were especially very effective against the resistant strains such as *Enterococcus* spp. and *Klebsiella pneumonia*. The maximum antimicrobial activity was observed with the essential oils of *Origanum onites* and *Satureja thymbra*.

KEYWORDS

Antimicrobial, Bacterias, Plant oils

Session 4-4 - Antibacterial and anti-inflammatory effects

Submission ID: 979

ANTIMICROBIAL POTENTIAL OF TARAXACUM OFFICINALE F.H.WIGG CLONALLY PROPAGATED VIA ORGANOGENESIS

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ABSTRACT

Taraxacum officinale, commonly named dandelion is an edible plant distributed worldwide, which belongs to the Asteraceae or Compositae family. Dandelion contains flavonoids including luteolin, apigenin, isoquercitrin, caffeic acid, chlorogenic acid, terpenoids, triterpenes, and sesquiterpenes. It has been used as an herbal remedy in Europe, North America, and China. In this study, the antimicrobial effects of plantlets cloned by organogenesis method from leaf explants of *Taraxacum officinale* were investigated. *T. officinale* seeds were immersed in 70% (v/v) ethanol for 3 min followed by 0.5% sodium hypochlorite for 5 min, then three rinses in sterile water. Later on, the seeds were germinated in glass jar containing 30 ml Murashige and Skoog medium (MS; Murashige and Skoog, 1962). One leaf excised from four-weeks-old germinating seedling was used as an explant. The leaf explant was cut into 2cm² segments and transferred on MS medium supplemented with 2mg/l benzil amino purine (BAP) and 2mg/l naphthalene acetic acid (NAA) for organogenesis studies. Obtained shoots were subcultured twice every 4 weeks. The shoots were harvested and dried at 24±2°C room temperature. For antimicrobial studies, *T. officinale* cultivated by tissue culture was tested for its antibacterial activities by using agar well diffusion method. Ethanol and chloroform extracts from this plant were assayed against nine bacteria species (*Staphylococcus aureus* ATCC 6538, *Escherichia coli* ATCC 25922, *Bacillus cereus* ATCC 7064, *Bacillus subtilis* ATCC 6633, *Salmonella typhimurium* CCM 5445, *Proteus vulgaris* ATCC 6896, *Enterococcus faecalis* ATCC 29212, *Enterobacter cloacae* ATCC 13047, and *Kocuria rhizophila* ATCC 9341). Seed germination of *T. officinale* was observed in 10 days. One were sliced and transferred on 2 mg/l BAP and 2 mg/L NAA. Adventitious shoot regeneration was obtained at the end of the third week on leaf explants at MS medium supplemented with 2mg/l BAP and 2mg/L NAA. After eight weeks the shoots were harvested and dried for antimicrobial studies. As a result, ethanol extracts of *T. officinale* showed 21 mm and 23 mm inhibition zones against *Escherichia coli* and *Proteus vulgaris*, respectively. *T. officinale* was found weakly effective on gram negative bacteria.

KEYWORDS

Taraxacum officinale; organogenesis; BAP; NAA; Antimicrobial activity.

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Session 4-4 - Antibacterial and anti-inflammatory effects

Submission ID: 1319

PLANT-EXTRACT MEDIATED SYNTHESIS OF ZNO NANOPARTICLES USING SARCOPTERIUM SPINOSUM (L.) SPACH LEAF EXTRACT AND THEIR ANTIMICROBIAL ACTIVITY

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ABSTRACT

In this study, green synthesis of zinc oxide nanoparticles have been performed utilizing of leaves extract of *Sarcopoterium spinosum* (L.) Spach. This method is simple, nontoxic, inexpensive and eco-friendly. The ZnO nanoparticles synthesized using *S. spinosum* leaves as a reducing and stabilizing agent have been evaluated for antibacterial activity against Gram-positive and Gram-negative bacterial strains. Moreover the effect of pH and temperature on the size and shape of the synthesized ZnO nanoparticles have been evaluated. The nanoparticles were synthesized with three different pH (4, 7 and 10) values and at different temperatures (100, 200, 300, 400 and 500 °C). The particle size and morphology of the synthesized nanoparticles is characterized by using UV-Vis spectroscopy, Scanning Electron Microscope, X-ray Powder Diffraction, Zeta sizer and Energy-Dispersive X-ray spectroscopy. The antibacterial property of synthesized nanoparticles was observed by modification microdilution broth method with bacteria strains. The synthesized nanoparticles size are between 60.86 and 226.6 nm. The largest nanoparticle size was observed at pH = 10 and at temperature of 200 °C and the smallest nanoparticle size was observed at pH = 4 and at temperature of 500 °C. It is observed that the synthesized nanoparticles size decreased depending to the increasing temperature. According to the antimicrobial studies, all extractions inhibited the growth of Gram-negative bacteria and anti-yeast activity with the same MIC values ranging between 250 – 15.625 µg/cm³. While the MIC values in *Candida albicans* is 15.625 µg/cm³, in others are between 250-31.25 µg/cm³. The obtained results was showed that the best inhibition effect against bacterial and fungal strains was obtained at pH value of 10 and at temperature of 500 °C. Acknowledgement: This study was supported by the Research Fund of Mersin University in Turkey with Project Number: 2017-1-TP2-2177.

KEYWORDS

Rosaceae; Sarcopoterium Spinosum; ZnO nanoparticles; Extraction; Antimicrobial activity.

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Session 4-4 - Antibacterial and anti-inflammatory effects

Submission ID: 1657

DETERMINATION OF THE ANTIBACTERIAL EFFECT ON ORAL MICROORGANISMS OF GINGER OIL (ZINGIBER OFFICINALE)

ZUHAL KIRZIOĐLU¹, ALP KAYAHAN KIVANÇ, CANAN BAYRAKTAR¹, MERİH KIVANÇ

ABSTRACT

Oral diseases are a major cause of health problems worldwide. Many oral diseases such as tooth decay and gum disease are caused by the oral plaque. Oral plaque removal is provided by chemical agents as well as mechanical cleaners. In addition to these chemicals, plants such as ginger, propolis, green tea, garlic and thyme have been used in some countries for many years. Among these plants, ginger (*Zingiber officinale*) has effects on removal of oral plaque and prevention of toothache and halitosis. Ginger has immunostimulatory, antiinflammatory, and anti-oxidant effects. Thus, it can lessen or prevent the formation of free radicals. Besides, by inhibiting the growth of oral pathogens, it reduces the reproduction of dental plaque and affects the surface adhesion of bacteria. Prevention of decay, especially in children, requires products that will not harm children, and herbal products can be an alternative in this respect. However, it is very important to determine the effective concentrations of these plants and the number of studies done in this regard is low. Side effects may occur, if they are not used at appropriate doses. Therefore, it is important to know the required bactericidal and bacteriostatic concentration of the medicinal plant that can be used for the removal of the oral plaque. In this study; the antibacterial activity of ginger in oral bacteria was tried to be determined. Materials and Methods In previous studies, *S. anginosus*, *S. dysgalactie*, *S. mutans*, *E. faecium*, *S. agalactie*, *S. pyogenes*, *S. salivarius* and *L. paracasei* were isolated and described from the samples obtained from saliva, gingival fluid, caries and oral plaque of children. The antimicrobial activity of ginger oil on the 30 strains was determined by the microtubule dilution method to the minimum inhibitory concentration (MIC). We have tried to determine the minimum bactericidal concentration (MBC) in appropriate media of samples from non-reproductive tubes. Results Ginger oil was found to be 0.33 mg / mL for *E. faecium* 11.3, while MIC value for *E. faecium* 13.1.1 and *E. faecium* 13.3.1 was found to be 21.3 mg / mL. *S. mutans* 3.3. *L. paracasei* 6.2 and *S. anginosus* microorganisms have an MIC value of 21.2 mg / mL. It has been observed that the antibacterial activity of ginger oil varies according to the test bacteria. Ginger oil against oral bactericide was found to be bacteriostatic effective. Conclusion Ginger oil is useful in the prevention of oral bacterial growth and can be used in oral preparations. These plants exhibit different activities according to their species and growth area and may cause allergic and toxic effects. For this reason, especially in children, more and more long-term follow-up studies are required.

KEYWORDS

Oral Bacteria, Ginger Essential Oil, S.Mutans

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Session 4-4 - Antibacterial and anti-inflammatory effects

Submission ID: 1730

**THE EFFECTS OF N-ACETYLCYSTEINE ON ANTIOXIDANT
DEFENCE SYSTEM, SOME BIOCHEMICAL PARAMETERS AND
HISTOPATHOLOGICAL CHANGES IN THE LIVER AND KIDNEY
DURING SUBCHRONIC EXPOSURE OF WISTAR RATS TO
GLYPHOSATE-BASED HERBICIDE**

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ABSTRACT

In this subchronic toxicity study was to determine the glyphosate-based herbicide (GBH) induced oxidative stress, some biochemical parameters and histopathological changes in the blood, liver and kidney of rats and the ameliorative effect of N-Acetylcysteine (NAS). Twenty-eight male Wistar rats were divided into four equal groups of seven each. Group I (control group) was given normal rodent diet and tap water for eight weeks. The agent(s) administered are as follows: Group II (NAS), N-Acetylcysteine (160 mg/kg), group III (GBH), glyphosate-based herbicide (375 mg/kg, 10 % of the LD50), group IV (NAS+GBH), N-Acetylcysteine (160 mg/kg) and glyphosate-based herbicide (375 mg/kg). The treatment regimens were administered orally by gavage once daily for eight weeks. The GBH significantly increased serum biochemical parameters and malondialdehyde levels in blood, liver and kidney tissues while reduced glutathione levels in blood, liver and kidney tissues. In contrast, treatment with NAS reversed GBH-induced oxidative stress, lipid peroxidation, and biochemical parameters. Moreover, histopathologically NAS also exhibited protective action against the GBH-induced mononuclear cells infiltration around the portal tracts in liver and increased in number of Kupffer cells, necrotic and degenerative changes in tubular epithelium of kidney. It was concluded that NAS protected against GBH-induced oxidative stress and GBH-induced hepatotoxicity and nephrotoxicity in Wistar rats possibly through their antioxidant activity as well as an inhibition of lipid peroxidation.

KEYWORDS

1. Glyphosate 2. N-Acetylcysteine 3. Herbicide 4. Rat

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Session 4-5 - Landscape and Cosmetics

Submission ID: 3

COSMETIC PLANTS TRADITIONALLY USED BY THE PEOPLE IN TURKEY

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ABSTRACT

From day to day, human beings (especially women) have prepared and used herbal dyes, ointments, lotions, perfumes for several purposes such as dermatological applications, look younger, against hair loss or change of hair color. The plant preparations have been preferred for natural cosmetic use in the traditional folk medicine. This tradition still continues in the rural areas of several countries even today, where these herbal cosmetic products prepared by the public are easily found, cheaper and have no side effects. In this study, ethnobotanical studies carried out uptill now in the country have been compiled with the aim to provide an overview of the herbal cosmetic products used by the people. The data evaluated has revealed that, a total of 122 plant taxa are used for this purpose. Out of these taxa, 40 are used for hair care (hair coloring, for glossy hairs), 25 against hair loss, 11 against hair dandruff, 24 for skin care, 19 as essence, 17 for bad breath, 10 for soap making, 7 for mouth and dental hygiene, 6 against foot odor and sweating, and 4 for other purposes. Moreover, among the herbal cosmetics most commonly used taxa are; *Juglans regia*, *Urtica dioica*, *Vitis vinifera*, *Matricaria chamomilla*, and *Laurus nobilis*. These are traditionally used in our country especially for hair care; *Juglans regia* against hair loss; *Ammi visnaga* in mouth and dental hygiene; and *Vites agnus-castus* against the odor and sweating of feet. An attempt is made here to evaluate the role of plants used for cosmetic purposes in different regions of Turkey for alternative treatments in the context of sustainability. In addition, it has been emphasized that there is need for evaluation of new plant taxa present in the country, which may have a strong commercial impact as herbal raw materials.

KEYWORDS

Traditional cosmetics, Natural plants, Herbal cosmetics, Turkey

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Session 4-5 - Landscape and Cosmetics

Submission ID: 129

THE USAGE OF OILS OBTAINED FROM SHELL AND SEEDS OF CITRUS RETICULATA IN NATURAL COSMETIC FORMULATIONS

ŞEYDA KIVRAK¹, TOLGA GÖKTÜRK¹, İBRAHİM KIVRAK¹

ABSTRACT

In recent years, consumers' interest in products derived from natural sources has increased rapidly. For this reason, many studies carried out on flowers, leaves or all body of the medicinal and aromatic plants which have economic value in the food, medicine, cosmetic and dye industries. The cosmetic characters of medicinal and aromatic plants, especially as fragrance, originate from the volatile and fixed oils, which they contain. One of the basic reason of usage of essential oils in cosmetic formulations is the improvement of the final product's fragrance. They also have broad spectrum antimicrobial and antifungal properties and are also used as preservatives in cosmetic products. Another very important feature of essential oils is their antioxidant activity, which prolongs the shelf life of the products and protects the skin from free radicals that cause aging. One of the plants that have been investigated many times because of the volatile and fixed oils they have is the *Citrus reticulata*, one of the 17 species of the Rutaceae family, which are outspred in temperate and tropical regions. Citrus oil and D-Limonen are included in the GRAS class (Generally Recognized as Safe) by the FDA since the products obtained from citrus fruits are natural, biodegradable and non-toxic. Studies on *C. reticulata* show that the peels show antioxidant, anticollagenase, antielastase, antifungal, antimicrobial properties and the seeds have antioxidant properties. In this study, *C. reticulata* (also known as Bodrum mandarin) peels were left in open air for 3 days and then their volatile oils were obtained by water vapor distillation method. Again, the *C. reticulata* seeds were washed and then dried for 10 days in the open air. The dry seeds were crushed by a 20 ton press. The components of the obtained volatile and fixed oils were determined using Agilent 6890 Gas Chromatography (GC) and 5975 Mass Spectrometry (MS). Alpha-Limonene was found as the major component in the volatile oil whereas 38% Linoleic acid, 28% Oleic acid and 22% Palmitic acid were detected as major components in the fixed oil obtained from the seeds, respectively. The obtained oils were used to make moisturizing skin lotion. For this purpose, 10 g fixed oil which obtained from seeds and 2 g of essential oil obtained from peels were added into 87 g of purified water. Then this mixture stirred with magnetic stirrer for 10 minutes. Finally, the formulation is completed by the addition of the homogenized polymer mixture. The rheological properties of the final product were determined after all treatments were completed. Stability tests have been performed on the product (Centrifugation assay, temperature stability, pH and rheological measurements). The product viscosity was found to be 14.024 cP (pH 6 and 1% polymer concentration).

KEYWORDS

Citrus reticulata, Essential oil, Linoleic acid, Cosmetics

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Session 4-5 - Landscape and Cosmetics

Submission ID: 154

THE POSSIBILITIES OF USING SOME NATURAL SPECIES IN KOCAELI URBAN LANDSCAPE PLANNING

SELDA AKGÜL¹, HÜLYA TAMYÜKSEL²

ABSTRACT

Despite 12 500 plant species found in whole Europe, our country is hosting about 10 thousand plant species and about 1/3 of them are endemic in our country. If we add to this quantity also species that have been brought and adapted to the conditions of our country many years ago you can understand better how rich our flora is. Our country with a huge variety of flora reserves lots of medical and aromatic plants within its structure. In Turkey, almost all nurseries which are producing or supplying botanical materials are taking plantations in Europe-where the climate conditions are partially-/humid-as a model by producing or importing water absorbent species. These species belong to ecologies having no water shortage or only for limited periods. And in these cultivation areas the soil and water show acidic characteristic. In our country -except a part of Blacksea region- the situation is the opposite; in our country long-term periodic droughts reigns, it seems scorching heat of the desert from time to time and the soil is of alkaline characteristic. If we take into consideration that a wide region of our country is under influence of a steppe and semi-arid ecosystem and we think that we will soon feel the negative effects of global climate change that it is obvious necessity of using natural or long years tested species without irrigation or less, which can be based on alkaline soil as soon as possible. As in whole world, use of plants existing in the natural flora for different purposes in public such as treatment food tea, spice, paint, insecticide, veterinary cure, resin, glue, essential oil, beverage and cosmetic industry has been a part of our traditional cultere for years. On the other hand, this existance is facing a danger of being lost by contemporary urbanisation. With this study, the biological wealth of the city has tried to be analyzed on a small scale. In natural forest areas in Kocaeli, natural species that can be used in urban landscape planning was aimed at identifying. In addition, the phenological observations to be made in determining the type, aimed to obtain information that will form the basis of the production work. For this purpose, Kartepe, Yuvacık and Kerpe in the forest areas in Kocaeli, Aceraceae, Cornaceae, Rosaceae, Celastraceae, Aquifoliaceae, Lauraceae, Staphyleaceae and Ericaceae, including total eight families the Ericaceae, belonging to 13 natural species, seed collection time, habitats and seasonal views have been determined. In addition, the seeds are collected for production work, 1000 dane weights were calculated

KEYWORDS

Kocaeli, natural species, urban landscape, seed

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Session 4-5 - Landscape and Cosmetics

Submission ID: 262

**MYTHOS AND OPPORTUNITIES OF USAGE IN LANDSCAPE
ARCHITECTURE OF SOME MEDICINAL AND AROMATIC PLANTS
NATURALLY GROWING IN TURKEY**

MÜKERREM ARSLAN¹, ERDI EKREN²

ABSTRACT

For people who have witnessed various natural phenomena since ancient times, mythos has been the best reflective for this. The plants that are accepted as a gift by the gods to humans have an important place in mythology. People used plants for various purposes such as food, warming, defense, tapping their feelings, and most importantly finding healing throughout the history. As the ages progressed, with the development of medical science, the importance of medicinal and aromatic plants used for the purpose of healing has also increased and it has become a big market that deals with various professions. In addition to these developments, medicinal and aromatic plants have a very important place in the aesthetic and functional aspects of plant design works with leaf forms, different colors and flowers and fruits in different colors and textures. The use of natural plant species belonging to the region to be studied in landscape architecture applications is very important for the preservation of the ecological integrity of the region and also natural plant species adapt more easily to climate conditions, thus they reduce the risk of failure and maintenance costs to a minimum. In this context, the preference of natural species in plant design works which will be formed by using medicinal and aromatic plants in our country is important in terms of ensuring the sustainability of the works. Our country has a diversity of flora that is similar to the other in terms of having three different floristic regions, different geographical features and having different climate varieties. While the European continental flora has close to 12,000 species, this number is about 9,500 in our country. Furthermore, while the number of endemic plant species in the continental flora of Europe was around 2.750, approximately 3.700 of the species in our country are endemic. Our country has a very important potential for medicinal and aromatic plants thanks to this floristic richness. In this study; some of medical and aromatic plants, naturally growing in Turkey, will be informed about past daily usages, mythos and it will be conveyed that their importance which they have in various cultures and opportunities of usage in landscape architecture. As a result, importance of the usage of natural plant species in landscape architectural application works will be given and it will be emphasized that the importance of plant design works of medicinal and aromatic plants.

KEYWORDS

Medicinal and aromatic plants, landscape architecture, plant design, plant mythos

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Session 4-5 - Landscape and Cosmetics

Submission ID: 1581

**DETERMINATION LEVELS OF ANTIOXIDANT ACTIVITY AND
PHENOLIC COMPOSITION OF SUMAC (RHUS CORIARIA L.)
EXTRACTS IN DIFFERENT REGION**

SEVİM ÇİFTÇİ YEGİN¹

ABSTRACT

This study aimed to determine the antioxidant activity levels of sumac sour collected from different regions. *Rhus coriaria*, is the only species of *rhus* in Turkey. It shows spread in different regions in Turkey. Particularly, it is used as sour spice in Anatolia. Sumac sour is usually consumed in Hatay, Gaziantep, Mersin in Turkey. Phenolic compounds, which are secondary metabolites in plant materials are known to be responsible for antioxidant effect. Recent epidemiological studies have strongly suggested that consumption of certain plant materials may reduce the risk of chronic diseases related to oxidative stress due to their antioxidant activity and promote general health benefits. The antioxidant effects of phenolic compounds are explained by bonding of free radicals, the activity of methal chelating, inactivation of some enzymes. In this study, DPPH (SC50), the activity of scavenging H₂O₂ (SC50), the levels of total phenol-flavanoid (mg/g), the activity of methal chelating (%), FRAP activity (%) are evaluated. The highest DPPH, the highest levels of total phenol-flavanoid, the highest activity of scavenging H₂O₂ was detected in Gaziantep sumac syrup, the highest FRAP and the highest metal chelating activity were observed in Hatay sumac syrup.

KEYWORDS

Sumac syrup, antioxidant contain

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Session 4-5 - Landscape and Cosmetics

Submission ID: 1856

SCENTED PLANTS, HEALING GARDENS AND PRINCIPLES OF ENVIRONMENTAL DESIGN

MURAT ERTEKİN¹, ÖMER LÜTFÜ ÇORBACI²

ABSTRACT

One of the most powerful and attracting properties of plants is scent. In today, apart from their visual and ecological properties, the scent of plants is used in landscape designing, as well. Scented gardens that have been designed with those plants are arousing interest in society. There are a few things to note when creating a healing garden of scented plants. The healing or scented gardens are often designed in fractions of aromatic plants in various parks and gardens. In this study; examples from scented plant species are mentioned and points to be noted in the healing gardens to be formed with scented plants.

KEYWORDS

Scent, scented plants, Healing gardens, Landscape, Environmental design

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Session 5-1 - Functional Foods

Submission ID: 133

MINERAL AND FATTY ACID COMPOSITION OF BITTER GOURD GENOTYPES (*MOMORDICA CHARANTIA* L.) SEEDS FROM TURKEY

AKİFE DALDA ŐEKERCİ¹, KEVSER KARAMAN¹, HALİT YETİŐİR¹

ABSTRACT

Momordica charantia L. known as bitter melon, bitter gourd, bitter cucumber belongs to Cucurbitaceae family. In Turkey, it is known as "kudret narı" locally and consumed as oil, paste made by seeds and also vegetable. It is used to treat the digestive system diseases and to enhance the immune system in traditional medicine. Besides, several studies that have been carried with *M. charantia*, in related to therapeutic effects such as antidiabetic, antiviral, antitumor, antileukemic, antibacterial, anthelmintic, antimutagenic, antimycobacterial, antioxidant, antiulcer, anti-inflammatory, hypocholesterolemic, hypotriglyceridemic, hypotensive, immunostimulant, and insecticidal properties. In this study, the seeds of *M. charantia* genotypes collected from different geographical regions of Turkey were used as material. The seedling of 12 different genotypes were grown in unheated greenhouse belonging to Erciyes University, Faculty of Agriculture, Department of Horticulture. The seedlings are transplanted at the 2-3 true leaf stage and seeds were produced by selfing from each genotype. The seeds were extracted from mature fruit and dried at room temperature in laboratory for fatty acid and mineral compositions. To determine the fatty acid composition of the extracted oil, a methylation process was performed to produce fatty acid methyl esters and Gas Chromatography (GC) System was used. Additionally, mineral composition was evaluated with using ICP-OES system. Palmitic (C16:0), stearic (C18:0), oleic (C18:1), linoleic (C18:2) and eleostearic acid (C18:3n5) were major fatty acids detected and the most abundant fatty acid was eleostearic acid. Ca, K, and P were also measured as to be major elements. Other elements found present in the seeds include sodium, magnesium, iron, sulphur, manganese, zinc and copper. The study demonstrates the presence of nutritional components that are beneficial and curative properties of the plant.

KEYWORDS

Momordica charantia L., mineral, fatty acid

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Session 5-1 - Functional Foods

Submission ID: 238

ANTI-CARCINOGENIC EFFECT OF FUNGI SPECIES AND THAT'S CONTENT OF BIOACTIVE SUBSTANCES

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ABSTRACT

Medical fungi have long been recognized as natural sources of bioactive compounds, are regarded as immune system regulatory and anti-cancer agents. It has been thought that the consumption of these fungi had positive effects on human health. Cancer is a general term for a variety of diseases that can be chronic and is responsible for many deaths worldwide. Although significant progress has been made in modern cancer treatment trials, the difficulties in understanding the molecular behavior of various cancer types and the numerous side effects patients experience are still important problems. For this reason, natural bioactive compounds have been used in supportive treatments in traditional cancer treatments. There are many types of fungi containing anti-carcinogenic bioactive substances. These genres are; Lentinula, Lentinus, Lepista, Marasmius, Omphalotus, Panus, Phellinus, Pholiota, Pholiota, Cryptoporus, Flammulina, Ganoderma, Grifola, Hericium, Hypsizygyus, Grifola, Hericium, Agaricus, Agrocybe, Albatrellus, Antrodia, Armillaria, Auricularia, Pleurotus, Polyporus, Poria, Russula, Schizophyllum, Sparassis, Taiwanofungus, Thelephora, Trametes, Tremella and Tricholoma. The bioactive substances found in these fungi may be high molecular weight compounds such as polysaccharides, proteins and lipids as well as a number of low molecular weight metabolites such as lectins, lactones, terpenoids, alkaloids, sterols and phenolic substances. In this review, studies on the anticarcinogenic fungus types, their bioactive substances and their usefulness in cancer treatments have been compiled.

KEYWORDS

Medicinal fungi, anti-carcinogens, bioactive substances, treatment

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Session 5-1 - Functional Foods

Submission ID: 1253

EFFECTS OF CAPSAICIN ON ENERGY METABOLISM

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ABSTRACT

Red peppers, which are plants belonging to the genus *Capsicum*, contain a class of pungent compounds called capsaicinoids. Capsaicin (CAP, 8-Methyl-N-vanillyl-trans-6-nonenamide) is one of the most active components of red and chili peppers and it is a naturally occurring phytochemical. It is an odorless, white crystal with harsh flaring pungency. Even a solution with 1 in 17,000,000 concentration causes pain in humans. Capsaicin preserves its original potency through storage, freezing and cooking. Capsaicin is an important molecule widely researched in medicine. This compilation aims to study the effects of capsaicin on energy metabolism. Capsaicin moves along tongue epithelials when placed in the mouth cavity. It binds to the TRPV1 receptor (Transient receptor potential vanilloid receptor-1) with high affinity. It is passively absorbed from stomach and upper small intestine with higher than 80% efficiency. Capsaicin stimulates catecholamine secretion by the TRPV1 receptor and this increases energy consumption by stimulating the sympathetic nervous system (SNS). Furthermore, activation of the sympathetic nervous system increases thermogenesis and excess energy is released as heat. This prevents weight gain. Another intriguing point is that TRPV1 dependent effect of capsaicin consumption activates brown adipose tissue. The activation of neurons expressed by the capsaicin receptor in the digestive system signals the brain via the vagal nerve. This stimulates selective activation of sympathetic neurons for brown fat, thus increasing total energy consumption. Many clinical trials have studied the effects of capsaicin consumption on metabolic rate and respiratory quotient. The result is that capsaicin temperately increases energy consumption. A study on rats reports that activation by TRPV1 signalization has a positive effect on energy consumption. In human studies; in a randomized controlled study conducted by Ludy et al. on 25 healthy adults, energy consumption at 30-60, 120-150 and 240-270 minute intervals after eating and body temperature in 270 minutes of the group that consumed 1 g red pepper capsules with test meal (red pepper: 1995 mcg/g capsaicin, 247 mcg/g nordihydrocapsaicin and 1350 mcg/g dihydrocapsaicin; 53 800 SHU) was statistically significantly higher than that of the control group. In another study conducted by Lejeune et al. on 91 slightly overweight adults, the subjects were first put on a diet to lose at least 4 kg of body weight in 4 weeks. At the end of 4 weeks, they moved on to a 12-week maintenance program. The subjects were then divided into two groups in a randomized fashion. The first group was given 135 mg capsaicin capsules daily, whereas the second group was the control group. At the end of 12 weeks, the resting energy consumption of the group that took capsaicin (6.9 ± 1.1 MJ/d) was statistically significantly higher than that of the control group (6.5 ± 0.8 MJ/d). In conclusion; even though study populations, study methods, capsaicin dosage, duration and form of consumption differ, capsaicin consumption generally increases energy consumption through its boosting effect on basal metabolism rate and thermogenesis. However, due to the variations mentioned above, daily dosage of capsaicin required to increase energy consumption is not exactly clear. Further experimental study is required to precisely declare the effects and dosage of capsaicin.

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KEYWORDS

Capsaicin, TRPV1, energy, metabolism

Session 5-1 - Functional Foods

Submission ID: 1643

TOTAL POLYPHENOL CONTENT, ANTIOXIDANT ACTIVITY AND CHEMICAL COMPOSITION OF METHANOLIC EXTRACT FROM ALLIUM KHARPUTENSE FREYN ET. SINT.

ERDAL YABALAK¹, A. MURAT GİZİR¹

ABSTRACT

Allium Kharputense Freyn Et. Sint which is belongs to Allium genus and regionally called Soryaz is one of the numerous of herb species used worldwide for their various benefits [1-3]. In addition, we have determined the mutagenic and antimicrobial effect of methanolic extract from Allium Kharputense in our previous work [4]. Many health risks based on free radicals that formed in metabolism can be prevented through consuming natural foods containing functional ingredients that exhibit antioxidative properties. Thus, antioxidant compounds protect organism against damages caused by free radicals [5]. Polyphenols are also known as powerful antioxidants. Thus, evaluation of antioxidants activity, total polyphenol content and identifying of chemical compounds of herbs gain great importance. Allium Kharputense had never been investigated by researchers for its antioxidant activities, total polyphenol content and chemical composition. In the present study, these properties were investigated for methanolic extract from Allium Kharputense. Total polyphenol content was determined as 257 mgGA/100 g dried weight. In DPPH test, IC₅₀ values of gallic acid (GA) and Trolox (Tr) were determined as 0.02642 mg.mL⁻¹ and 0.225 mg.mL⁻¹, respectively. IC₅₀ value of extract from Allium Kharputense was found as 2.186 mg.mL⁻¹. Thus, DPPH free radical-scavenging activity of extract from 1 mg of Allium Kharputense was determined 0.01207 mg GA and 0.1029 mg Tr, respectively. Dimethyl trisulfide, Pyrazine, L-Glutamic acid, L-Proline, palmitic acid, γ -Tocopherol are some of the chemical compounds of methanolic extract from Allium Kharputense. This herb should be evaluated for its probable effects for bio-chemical processes in further studies. Acknowledgements: This study was supported by the Research Fund of Mersin University in Turkey with Project Number: 2017-1-AP1-2207 References: 1. Block E., Sci. Am. 252 (1985) 114-119. 2. Najjaa H, Ammar E, Neffati M., J. Food Agric. Environ. 7 (2009)150-154. 3. Demirtas I, Erenler R, Elmastas M, Goktasoglu, Food Chem. 136 (2013) 34-40 4. Erdoğan, E. A., Yabalak E., Everest A., Gizir A. M., SpatulaDD 5 (2015) 83-87. 5. Dziri S., Hassen I., Fatnassi S., Mrabet Y., Casabianca H., Hanchi B., Hosni K. J.funct. Foods 4 (2012) 423-432.

KEYWORDS

Allium Kharputense, polyphenolic content, DPPH, Chemical composition

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Session 5-1 - Functional Foods

Submission ID: 1725

**PHYSICAL AND CHEMICAL PROPERTIES OF A TYPE OF
ALMOND CALLED "AKBADEM" GROWN IN THE AEGEAN REGION
IN TURKEY**

NIZAM MUSTAFA NIZAMLIOđLU¹, SEBAHATTİN NAS²

ABSTRACT

A type of almond, called "Akbadem", grown in the Aegean region in Turkey were evaluated in terms of several physical and chemical properties of nut and kernel. The average length, width, thickness, arithmetic mean diameter, geometric mean diameter, particle size and surface area of nuts were 39.04±2.94 mm, 23.56±1.88 mm, 15.60±1.15 mm, 26.07±1.19 mm, 24.29±1.75 mm, 5053.05±1100.12 mm³ and 1565.14±225.63 mm² respectively. Corresponding values for kernel were 28.25±1.92 mm, 14.28±1.17 mm, 6.87±0.53 mm, 16.46±1.05 mm, 14.03±0.87 mm, 887.05 ± 167.28 mm³ and 533.90±65.86 mm² respectively. "Akbadem" nut shell has a significant impact on the dimensional properties. Dimensional properties were decreased significantly than the almond nut to almonds kernel. The average almond nut shell thickness was determined as 3.35±0.34 mm. Akbadem nut gravimetric properties; thousand seed weight, seed density and bulk density were determined 4950±0.01 g, 1140±0.001 kg/m³ and 375±5.00 kg/m³ respectively. Corresponding values for "Akbadem" kernel were determined 1430±0.08 g, 1080±0.003 kg/m³ ve 485±5.00 kg/m³ respectively. Internal efficiency of Akbadem was determined as 30±0.50%. The "Akbadem" kernel was determined L-value 59.56±1.98, a-value 5.68±0.79 and b-value 16.74±0.54. "Akbadem" kernel shell is quite dark as shown in Hunter color values. Chemical composition of Akbadem kernel; moisture, total oil, total ash, protein, oleic acid, linoleic acid, palmitic acid and palmitholeic acid were 3.57±0.15%, 52.32±1.21%, 3.15±0.01%, 20.57±0.07%, 76.11±1.18%, 17.71±1.14%, 6.14±0.05% and 0.04±0.01%. "Akbadem" is seen that fatty acids and the relatively high amount of protein.

KEYWORDS

Almond, "Akbadem", Physical Properties, Chemical Properties

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Session 5-1 - Functional Foods

Submission ID: 1773

CHIA SEED (SALVIA HISPANICA L.) AND IT'S EFFECTS ON METABOLIC DISEASES

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ABSTRACT

Chia (*Salvia hispanica* L.) is a plant that blooms in summer, whose leaves are 4-8 cm long, 3-5 cm wide and about 1 meter long. Chia seeds are classified as non-classical seeds because they are not consumed frequently in the daily diet, but this changes from day to day. Chia seed contains approximately 64.0% omega-3 and 19.0% omega-6 fatty acid. The α -linolenic acid, which is an essential fatty acid, is present in high proportion. The protein content of the chia seed varies between 15.0% and 23.0% depending on the geographical position of the crop and growth conditions. In Chia, 9 essential amino acids have been found in significant quantities. The water content of the Chia seed, which is water up to 15 times the weight of the seed, is quite high. Dietary fiber content is high compared to cereals, such as kinoa, flaxseed, amaranth, which is a pulp source; At 100 g there are 34-40 g dietary fiber. The niacin content of the chia seed, which is a rich source of vitamin B group, is higher than corn, soya bean and rice. Tiamine and riboflavin contents are similar to rice and maize. Chia is an excellent mineral source and contains 6 times more calcium, 11 times more phosphorus and 4 times more potassium than 100 grams of milk. Another feature that makes Chia seed even more attractive is that it has a number of antioxidant compounds. The most important phenolic compounds found in Chia seed are chlorogenic and caffeic acid, followed by mycetin, quercetin and kaempferol. These phenolic compounds have antioxidant, antiinflammatory, anticancerogenic and antithrombotic activity. It is thought that Chia seed can be used to prevent metabolic diseases such as diabetes and cardiovascular diseases due to both fatty acid pattern and high pulp contents. As a result of studies using animal models, it was found that Chia seed developed insulin and glucose tolerance, reduced insulin resistance and dyslipidemia, increased antioxidant capacity and decreased lipid peroxidation. It was also found that consumption of Chia seed increased the function of intestinal tissue. Chia seed was shown to cause weight loss, decrease in waist circumference, and decrease in CRP level and increase in adiponectin level in Type 2 diabetic individuals. It was determined that it accelerated weight loss, decreased total cholesterol, VLDL-C, and increased HDL-C in obese people. It was found that triglycerides and blood glucose levels decrease in individuals with metabolic syndrome as well as in weight loss. Chia provides blood pressure reduction both in treated and untreated hypertensive individuals. Based on the present research findings, it seems that Chia seed is a healthy choice to provide weight loss, improvement in lipid profile, decrease in blood glucose level and blood pressure, but more work is needed for definite results.

KEYWORDS

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chia; metabolic diseases; health



Session 5-2 - Volatile Oils

Submission ID: 644

VOLATILE OIL COMPOSITION OF KASTAMONU-TAŞKÖPRÜ GARLIC

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ABSTRACT

Medicinal and aromatic plants are attractive with their taste and aroma as well as their therapeutic properties. Volatile oil that impart flavor and smell to these plants is used in many areas such as the food industry and perfumery, and there are many researches on their pharmaceutical effects. Volatile oil is complex mixtures obtained from leaves, fruits, shells and root parts of plants by distillation or pressing and natural products that is liquid at room temperature, easily crystallizable, generally colorless or pale yellow, volatile, strongly aromatic. Studies are shown that volatile oil exhibits antibacterial, antiviral, antioxidant and antidiabetic activities. Many studies suggest that volatile oil of spices and some plants can be used as food preservatives and it is emphasized that volatile oil is used as a natural preservative may be an alternative of the used chemicals. Kastamonu is first in garlic production in Turkey and approximately 85% of the production is done in the Taşköprü. In this study is carried out to determine the volatile oil composition of Kastamonu-Taşköprü Garlic, volatile oil is obtained by steam distillation method in Clevenger type device and the composition of the volatile oil is determined by GC-MS analysis. Garlic is provided from 25 different fields of Taşköprü and the average of 37 components are detected. The main components of volatile oil of Kastamonu-Taşköprü garlic are determined as diallyl trisulfide (39.18%) and diallyl disulfide (20.24%). Other major components are Diallyl tetrasulfide (9.83%), Allyl methyl trisulfide (8.72%) and Diallyl sulfide (1.63%).

KEYWORDS

Kastamonu, Taşköprü, garlic, volatile oil

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Session 5-2 - Volatile Oils

Submission ID: 673

THE ANTIPROLIFERATIVE AND ANTIOXIDANT ACTIVITIES OF THE ESSENTIAL OILS OF STINKING JUNIPER (JUNIPERUS FOEDITISSIMA WILLD.)

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ABSTRACT

The genus *Juniperus* (Cupressaceae) consists of approximately 68 species [1]. It is reported that *Juniperus* species exhibited several biological activities. The essential oils of *J. foetidissima* Willd. have been reported for their antimicrobial [2], antioxidant and anti-inflammatory [3] activities. The present study aims to determine the essential oil compositions of *Juniperus foetidissima* Willd. along with its antioxidant and antiproliferative activities. The experiments were carried out both on the needles and the cones of the plant, as well. The antiproliferative activity of the essential oils was determined against HeLa (human cervix carcinoma) and C6 (rat brain tumor cell) cell lines by BrdU cell proliferation assay. The essential oils were tested for their total reducing power activity, DPPH (2,2'-diphenyl-1-picrylhydrazyl) free radical scavenging activities and hydrogen peroxide scavenging activities. Thirty-four components were determined from the essential oils of the cones and the needles of *J. foetidissima*. The major components of *J. foetidissima* was defined as α -pinene (56.1 %) and cedrol (25.5 %) in the needles, and α -pinene (90.2 %) in the cones, respectively. Essential oils of *J. foetidissima* exhibited interesting biological activity on C6 and HeLa cells. The antiproliferative activity of the needle of the plant was considerably higher than the cones.

KEYWORDS

Stinking juniper, Juniperus foetidissima Willd., essential oil, antiproliferative, antioxidant

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Session 5-2 - Volatile Oils

Submission ID: 701

INVESTIGATION OF TOTAL PHENOLIC CONTENTS, ANTIOXIDANT AND ANTIBACTERIAL ACTIVITY OF CENTAUREA PULCHERRIMA

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ABSTRACT

Centaura pulcherrima is a local endemic plant which grows on Artabel, Gümüşhane. It is a special plant because of endemism. For this reason the plant was explored in terms of total phenolic contents, antioxidant and antibacterial activity abilities in this study. Firstly, the plants were collected Artabel National Park on August, 2016. Plants were dried on away from sunlight. Then dry plants were dismissed by miller and used for extraction. Ethanol, methanol, ethyl acetate and hexane were used as solvent. Totally four extracts were investigated. To determine the antioxidant activity, extracts were evaluated by UV-spectrophotometer. DPPH (2,2-diphenyl-1-picrylhydrazyl) and ABTS (2,2'-azino-bis-(3-ethylbenzothiazoline-6-sulfonic acid)) were used for antioxidant activity and Kirby- Bauer disk diffusion method was used for determine antibacterial activity. Total 12 bacteria strain were used for test. Plants extracts have shown that highly antioxidant properties. For instance, results were found for DPPH on the ethanol extract: 36.64 µg/ml and ABTS on the methanol extract: 1.34 mg/ml. Total phenolic contents were found 20 mg GAE/g extract on the methanol extract. All extracts exhibited significant antimicrobial activity against at least one test organisms. Especially ethyl acetate extracts showed significant inhibition activity to *P. aeruginosa*, *S. aureus*, MRSA, *E.coli* and *S. typhimurium*, respectively. As a results, it has been found that Centaura pulcherrima various extracts have strong antimicrobial activity especially on Gram (-) microorganisms. According to this study, this plant could be potential source of as an antimicrobial agents and a natural antioxidant. Therefore, the plant might be used for industrial application.

KEYWORDS

antioxidant, antibacterial activity, local endemic, plant extre

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Session 5-2 - Volatile Oils

Submission ID: 1151

**TOXICOLOGICAL EVALUATION OF SUBMERGED LIQUID
CULTURE FROM PHANEROCHAETE CHRYSOSPORIUM
MYCELIUM ON HUMAN BLOOD CELLS: CYTOTOXICITY,
GENOTOXICITY AND OXIDATIVE DAMAGE**

FATİME GEYİKOĞLU¹, SALİM CERİĞ¹, MURAT ÖZDAL¹, KÜBRA KOC¹, ÖMER FARUK ALGUR¹, GÜLŞAH DENİZ YILDIZ¹

ABSTRACT

Mushrooms produce a variety of bioactive antioxidant secondary metabolites including ectins, polysaccharides, pigments, phenolic compounds, sterols and terpenes. Extracellular and intracellular compounds produced by submerged liquid fermentation are important industrially and economically. *Phanerochaete chrysosporium* (PC) is the model white-rot fungus that easy cultivation on lignocellulose-containing substrates. PC can be used as a bioprotein source. Objectives of this investigation were to determine the in vitro antioxidant, cytotoxic and genotoxic effects of hot water extract obtained from PC on human blood mononuclear cells (hBMCs). Cytotoxicity was determined by neutral red (NR) and lactate dehydrogenase (LDH) leakage assay. Total antioxidant capacity (TAC) and total oxidant status (TOS) were detected to appreciate the oxidative damage. Genotoxicity was characterized by micronuclei and chromosome aberrations assays for specify DNA damage. PC (5-75 µg/ml) significantly increased antioxidant capacity and didn't cause significant alterations to cytotoxicity on hBMCs. The increasing doses of PC (5-250 µg/ml) didn't cause increase as genotoxic. Whereas, 250 and 500 µg/ml doses of mushroom statistically increased TOS levels, NR uptake, LDH release, CA/cell frequency and MN formation and also decreased TAC levels. This study is the first research on cytotoxicity, genotoxicity and oxidative damage of PC on hBMCs. In conclusion, the consumption of PC can be safely for humans, but it has also exposure period and dose-dependent effects on inducing oxidative damage and toxicity on hBMCs.

KEYWORDS

Phanerochaete chrysosporium, human blood mononuclear cells, cytotoxic, genotoxic, antioxidant

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Session 5-2 - Volatile Oils

Submission ID: 1816

**IMPROVEMENT IN THE YIELD AND ANTIOXIDANT ACTIVITY OF
THE ESSENTIAL OIL OF THYMUS PRAECOX OPIZ SUBSP.
GROSSHEIMII (RONNIGER) JALAS WITH ACID
HYDROLYSIS/CATALYSIS APPLICATION**

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DEMİR⁴, NESİBE ARSLAN BURNAZ⁴**

ABSTRACT

Thymus praecox OPIZ subsp. *grossheimii* (Ronniger) Jalas, locally known in Sürmene town of Trabzon as yaylaçayı, is an aromatic plant which finds widespread use as aqueous infusion. There is a limited number of scientific articles on this plant in the literature. The current study focused on the components of the essential oil of this plant and its antioxidant activity based on ferric reducing / antioxidant power (FRAP) assay. The essential oil of the plant was obtained in two ways: first with normal hydrodistillation using Clevenger type apparatus and second hydrodistillation after acidification with HCl to cause acid catalyzed hydrolysis and other catalytic conversions of the plant components in order to increase the amount of the oil and total bioactivity. The normal hydrodistillation procedure resulted in 1,3 mL essential oil with 73 components of which monoterpenoids form the major class. The major compounds with percentages higher than 10% were α -terpinyl acetate (11,99%), linalool (17,46%), and thymol (27,73%). On the other hand, the essential oil obtained with acid hydrolysis/catalysis (AHC) procedure resulted in 1,5 mL essential oil with 77 components of which monoterpenes form the major class. The major compounds with percentages higher than 10% were α -terpinolene (10,11%), o-cymene (11,45%), thymol (11,92%) and δ -terpinene (18,46%). The essential oils were tested with FRAP antioxidant assay, and the activity was found to be about 1,5 fold higher in the case of AHC sample. The results of the current study conform to the previous findings with other aromatic plants investigated in our laboratory. The findings of this study confirm that application of AHC procedure in the essential oil production increases the product yield and also improve the antioxidant activity.

KEYWORDS

Thymus praecox OPIZ subsp. *grossheimii* (Ronniger) Jalas, acid hydrolysis/catalysis (AHC), essential oil, antioxidant

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Session 5-3 - Distribution of Medicinal and Aromatic Plants

Submission ID: 34

INVENTORY METHODS OF NON-WOOD FOREST PRODUCTS.

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ABSTRACT

In our country, non-wood forest products (NWFP) provided of forests that known to provide primarily wood products provide a wide range of human needs including food, medicines and construction materials. NWFP are often proposed as an environmentally friendly and socially equitable way of using forest resources Many of these NWFP are important sources of income and employment for rural people. Due to increasing interest in the national and international market, awareness about the use of these products has increased. Until today, the NWFP's have been used as unconscious and unplanned. Determining the quantity and spread of the NWFP's are the most important problem to be transferred to the plan. A number of biological characteristics have a key impact on the elaboration and improved of inventory for NWFP species. Practical methodologies for inventorying NWFP are under development, but still not yet fully elaborated neither widely available for implementation. Aim of this paper, methods of NWFP inventory are described and current knowledge gaps and needs are analysed. In addition, inventory classification methods of some NWFP important in Turkey are highlighted.

KEYWORDS

Non-wood forest product (NWFP), inventory, sampling

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Session 5-3 - Distribution of Medicinal and Aromatic Plants

Submission ID: 472

NON-WOOD PRODUCTS SPREADING IN KARADAĞ (BURSA)

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ABSTRACT

Karadağ (Bursa) replaces in the Karacabey district of Bursa and Bandırma district of Balıkesir. It is one of the important altitudes of South Marmara. The boundaries of the study area are formed by the Bandırma district in the west and the Kocayağ Delta in the east. Due to geographical position and climatic conditions it has very rich floristic diversity. The flora is consist of 1117 plant taxa belonging to 108 families and 498 genuses. In this study, plant taxa spreading in Bursa (Karadağ) nd Bandırma district of Balıkesir were examined in terms of non-wood products. As a result of this study 92 families, 328 genus and 648 taxa are specified as economically important species. Usage of these plants are as follows; 308 taxa for health, 147 for food, (vegetable, fruit, spiceetc.), 89 taxa for posture, 109 taxa for commercial 118 taxa landscape architecture and 152 taxa for paint finish and other uses (traditional, evil eye, making pot and spoon etc.). 270 taxa are important for the apiculture. In addition, 18 of these species with economic value are endemic. 32 of these species are in the scope of CITES. In this study, the number of 153 plants have been found as toxic.

KEYWORDS

Karadağ (Bursa), Non-wood products, Ethnobotanic

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Session 5-3 - Distribution of Medicinal and Aromatic Plants

Submission ID: 776

USING REMOTE SENSING AND GEOGRAPHICAL INFORMATION SYSTEM IN THE PROVINCE OF ERZURUM SEEN IN THE WILD OLEASTER (HIPPOPHAE RHAMNOIDES L.) DETERMINATION OF THE NATURAL DISTRIBUTION AREA

MEHMET SIRAÇ KARAGÖL¹, MEHMET ALİ BAŞARAN¹, SELAMİ ÖKSÜZ¹, MURAT KÖSE¹, FAZİLET SARPDAĞ¹, YAŞAR AYHAN¹

ABSTRACT

Our country has different plant diversity and geographical features and is different from many countries around the country. The number of plant species spreading in Turkey is close to the number of plant species spreading throughout Europe. With the addition of the discoveries made in recent years, it has become clear that Turkey has about 12 000 plant taxa. Numerous geographical factors such as changes in short distances in climate characteristics, variations due to morphological characteristics, differences in soil types cause differentiation of plant formations and diversification of species. Because of its medical value, the wild plant (*Hippophae rhamnoides* L.) plant, which is called 'miraculous plant' and contains more than 190 bioactive substances, shows a promising feature for humanity in terms of pharmacological applications. In the province of Erzurum where it has spread widely, it forms the richest fruits of our country in terms of chemical content. In this study, the distribution of wild spots in some of the districts of Erzurum (Erzurum, Aşkale, Ilıca, Pasinler, Köprüköy, Tortum and Uzundere) was determined with the help of geographic information system and remote sensing. In the study, Landsat TM, 7 band satellite image of July 7, 2000 with a resolution of 30 m was used as satellite image material. In terrestrial studies, GPS (global positioning system) device was used for coordinate determination in some areas where wild spruce plants spread. ArcGIS 10 software was used for analysis and classification of satellite images. The coordinates of the spots where the wild spikelets are located were taken by GPS and processed on the map. NDVI classification method was used for classification of images. The results obtained vary between -1 and +1 depending on the area of the plant cover. In this study uncontrolled classification was made. The area is divided into 10 classes to see clearly the distinctions of vegetation, rocky and wetlands. Later, according to the reflection values of the 10 determined classes, which groups were formed, forest management was determined with the help of stand map. The wild spots forming the working position are classified according to the reflection values at the points where the coordinates are obtained by means of the GPS.

KEYWORDS

wild oleaster, remote sensing, Geographical Information System, Erzurum

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Session 5-3 - Distribution of Medicinal and Aromatic Plants

Submission ID: 988

INVESTIGATION OF SOME EXTREME ECOLOGICAL FEATURES OF *ACHILLEA ARMENORUM* BOISS. & HAUSSKN.

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ABSTRACT

Achillea armenorum Boiss. & Hausskn. is a perennial plant belonging to the family Asteraceae. It is an endemic plant that spreads in alpine regions especially located in karst ecosystems. This research - known as "Baytaran" among its people - *Achillea armenorum* Boiss. & Hausskn has been conducted to investigate climate, physiography and soil characteristics. This research was carried out on the Berit Mountain, which is located in Kahramanmaraş-Göksun. This species is found at an altitude of 2750-2900 m in the research area. It is located in the sub-alpine region in very steep and steep terrain. It is grown on karst landscape has soils with organic matter content of between 1,25 and 5,50%. These lands have soil textures such as "Clay", "Clay loam" and "Sandy clay loam". Soil reaction (pH) is between 7.55-7.97 in basic character. According to electrical conductivity values (1-5,69 mS / cm), soils are in the salt-free and slightly salty class. The surface stoniness ratio is over 50%. In addition, lime content was found to be high (12,3% - 18%). The wilting point of the soil was 3.64% and the field capacity was 31.78%. It has been determined that the nitrogen content is between 0.09% and 0.12%, the phosphor content is between 0.5-1.1 ppm and the potassium content is between 160-280 ppm. These soils are poor in phosphorus content and potassium content is sufficient. The C / N ratio ranges from 10 to 29. Decomposition rate is fast or normal. It has been used as a part of life in the region for many years with its long and effective smell. It is also used for breathing. Just as karst ecosystems are fragile and vulnerable, also they are habitats of many endemic species. Determination of the ecological conditions of these endemic species and evaluation of "in situ" or "ex situ" scopes should increase the number of species from which local people can make income from non-wood forest products.

KEYWORDS

Achillea armenorum Boiss. & Hausskn., Ecology, Karst, Soil

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Session 5-3 - Distribution of Medicinal and Aromatic Plants

Submission ID: 1516

**THE EFFECTS OF SOME SOIL PROPERTIES ON THE
DISTRIBUTION OF ORNITHOGALUM OLIGOPHYLLUM E. D.
CLARKE SPECIES IN SEMI-ARID AREAS**

EBRU GÜL¹, MELDA DÖLARSLAN¹

ABSTRACT

The semi-arid areas in Turkey cover mostly the areas where the Inner Anatolian Steppe is spreading. This study was carried out in order to determine the soil properties which are effective in the distribution of *Ornithogalum oligophyllum* E. D. Clarke geophytes species which is distributed on different main materials in semi - arid grassland areas of Center, Eldivan, Orta and Şabanözü districts of Çankırı province in Central Anatolian Region. Soil and plant sampling was carried out in 2016 year at 116 different points in 25m² quadrates. To determine the physical and chemical properties (texturing, pH, electrical conductivity (EC), lime content (CaCO₃) and soil organic matter content (TOM)) of the study area, composite soil sampling was performed at depths of 0-30 cm in quadrates. In order to determine the distribution of *O. oligophyllum* E. D. Clarke geophytes species, new quadrates of 1 m² were also settled into the determined quadrates and were taken the average of the obtained data. As a result of the obtained data, a correlation analysis was performed in order to determine the relationship between the distribution of *O. oligophyllum* E. D. Clarke geophytes species and soil properties. As a result of the study, it was determined that the chemical properties of soil (OM, EC) are particularly effective in the distribution of *O. oligophyllum* E. D. Clarke geophyte species at examined 116 points. OM and EC was high in areas where it was determined that a high number of plant species. This request shows that the salt demand of this species is high.

KEYWORDS

Semi-arid areas, Ornithogalum oligophyllum, Soil properties, Çankırı

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Session 5-4 - Genital System and Genotoxicity

Submission ID: 30

ASSESSMENT OF THE GENOTOXICITY OF USNIC ACID FROM LICHEN SECONDARY METABOLITES IN RAT NEURON AND GLIOBLASTOMA CELL LINES

BUGRAHAN EMSEN¹, HASAN TURKEZ², ALI ASLAN³

ABSTRACT

Glioblastoma multiforme (GBM) is the highest grade (grade IV) glioma tumor. Since glioblastoma always grows rapidly and shows highly malignant property, it is known as grade IV tumor. Since surgery, radiotherapy and chemotherapy methods utilized in treatment process with glioblastoma, usage of herbal products in the treatment process come into prominence. Lichens are symbiotic organisms used medicinal purposes for many years. It was reported that antitumorigenic activities of secondary metabolites from lichens on different cancer cells. The purpose of this study is determining of genotoxic effects in the cells via calculation of 8-hydroxy-2'-deoxyguanosine (8-OH-dG) level in U87MG, GBM cell line and primary rat cerebral cortex (PRCC) cells. 8-OH-dG level was measured using commercial oxidative DNA damage assay kit. 8-OH-dG level increased in a concentration-dependent manner for both cells. Correlation coefficient was 0.94 between concentration and oxidative DNA damage for both cells and this correlation was significant at the 0.01 level. While maximum concentration (40 mg/L) of usnic acid showed 4.55 pg/ml 8-OH-dG level on U87MG cells, 4.18 pg/ml 8-OH-dG level was seen in PRCC cells. There was statistically ($p < 0.05$) significant difference among the 8-OH-dG level of negative control and all concentration for both cells. Acknowledgment: We would like to thank Karamanođlu Mehmetbey University for granting us to conduct this study (BAP/01-D-13).

KEYWORDS

8-OH-dG, Genotoxicity, Glioblastoma multiforme, Lichen, Usnic acid

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Session 5-4 - Genital System and Genotoxicity

Submission ID: 72

GENOTOXICITY EVALUATION OF BIFENTHRIN ON EUKARYOTIC CELLS AND ANTIGENOTOXIC EFFECT OF PORTULACA OLERACEA ON ITS GENOTOXICITY

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ABSTRACT

In this study, bifenthrin's (BIF) genotoxic effects were evaluated in vitro and in vivo that were intensely used insecticide and attempted to resolve this effect with purslane (*Portulaca oleracea* L.) methanol extract (POmet). Somatic mutation and recombination test (SMART) was used for the in vivo study in *Drosophila melanogaster*, sister chromatid exchange (SCE) and micronucleus test (MN) tests were used for in vitro studies in human peripheral lymphocyte cells. Application groups were prepared in *Drosophila* instant medium (DIM) including different concentrations (4, 5, 6 and 7ppm) of BIF for SMART. 200 transheterozygote larvae were added to DIM. Wing preparations of hatching adult flies were made and were inspected. Different concentrations (50, 100, 250 and 500ppm) of BIF were added to human peripheral blood culture for SCE and MN. Spread preparations were made from the incubated cultures for 72 hours and were inspected. Ethyl methanesulfonate (EMS) was used as a positive control. When the all BIF application groups were compared with the DMSO application group for SMART, a positive result (+) was determined for the 7ppm BIF application group in normal wings phenotypes ($P<0.05$). All treatment groups of human peripheral lymphocyte cells in both in vitro tests results were statistically significant ($P<0.05$). Antigenotoxicity studies have been conducted being on the results of genotoxicity. 1% POmet was added to the highest application group of BIF for SMART, itself up POmet (1:1 v/v) was added to the highest application groups of BIF for SCE and MN. POmet has been found to be effective antigenotoxicity in both of in vivo and in vitro studies. Mutations increase on SMART, increase in the incidence of chromatid exchange on SCE and frequency increase on MN are indications of damage to genetic material. Also, removal of such damage by POmet, showed that POmet is a strong antigenotoxic agent.

KEYWORDS

SMART, Sister chromatid exchange, Micronucleus, Portulaca oleracea L., Bifenthrin

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Session 5-4 - Genital System and Genotoxicity

Submission ID: 373

CHRYSIN AND FLUNIXIN MEGLUMINE ATTENUATES TESTICULAR AND SPERMATOLOGICAL DAMAGES INDUCED BY COPPER SULFATE IN RATS

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ABSTRACT

Thirty-six healthy adult male Sprague-Dawley rats (6-8 weeks old, 250-300 g BW) were used in this study. Rats were randomly divided into the control and 5 treatment groups. During 21 days' period, group 1: Control group were not given any supplement, group 2: Copper Sulfate group (Cu) were given by gavage 500 mg/kg BW of copper sulfate every day; group 3: Flunixin Meglumine group were given intraperitoneally 2.2 mg/kg BW of flunixin meglumine every day; group 4: Chrysin group were given by gavage 50 mg/kg BW of chrysin every day; group 5: Cu+Flunixin Meglumine group were given by gavage 500 mg/kg BW of copper sulfate and intraperitoneally 2.2 mg/kg BW of flunixin meglumine every day; group 6: Cu+ Chrysin group were given by gavage 500 mg/kg BW of copper sulfate and 50 mg/kg BW of chrysin every day. In this study, sperm motility ($P<0.001$), sperm concentration ($P<0.05$), glutathione (GSH) and superoxide dismutase (SOD) activities ($P<0.001$) of rats given Cu decreased significantly in comparison with those in the control group. But malondialdehyde (MDA) activities indicating oxidative stress in testes tissues of rats given Cu increased significantly in comparison with those in the control group ($P<0.001$). In histopathological analyses, the testes tissues from the Cu-treated rats showed apoptotic indices along with degeneration, vacuolization, disorganization and destruction in seminiferous tubules when compared with the control group. The present study demonstrated that chrysin and flunixin meglumine to administrations Cu-treated rats provided significant improvements in the sperm qualities, disturbed oxidant/antioxidant balance, increased apoptotic cells and induced testicular damage. Chrysin and flunixin meglumine administrations to rats who were also treated with Cu increased significantly sperm motility ($P<0.001$), sperm concentration ($P<0.05$), GSH and SOD activities ($P<0.001$) whereas these agents decreased significantly MDA activities in the testes tissues in comparison to than that of the Cu group ($P<0.001$). In conclusion, it was determined that copper sulfate has quite toxic effect to on male reproductive system. Chrysin, that is a natural product, appeared to ameliorate the adverse effects on the sperm quality, the testicular antioxidant status and the testis tissue. Consequently, chrysin which has antioxidant effect may be prevents and treatments largely against the copper sulfate-induced reproductive system toxicity.

KEYWORDS

Copper Sulfate, Chrysin, Flunixin Meglumine, Oxidative Stress, Testicular Damage

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Session 5-4 - Genital System and Genotoxicity

Submission ID: 1716

PROTECTIVE EFFECTS OF HIPERICUM TRIQUETRIFOLIUM TURRA UPON CHEMOTHERAPY-INDUCED TESTICULAR TOXICITY IN RATS

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ABSTRACT

Drugs used for treating cancer are known to have acute toxic effects upon the tissues with a high proliferation. Such factors as high doses alkylating agents, Cyclophosphamide (CP) in particular, cause multiple-organ toxicity. While testicular damage is not uncommon, the adverse effects of anti-cancer drugs upon this organ have been studied less extensively than those on other organs. Therefore, the present study aims to investigate the possible preventive effects of Hypericum triquetrifolium Turra (HT, hypericum), a plant extract known for its effective antioxidant and anti-cancer properties, against the testicular toxicity due to CP, a widely-used anti cancer drug. With this in mind, healthy male albino Wistar rats, aged 3-4 months weighing 200±20 g, were divided into 9 groups, each of them containing 7 members (Control, 150 mg/kg CP Group, 25, 50, 100 µg/ml HT Groups, CP+25, 50, 100 µg/dl HT Groups and 0.2 ml DMSO Group). All the injections were applied intraperitoneally. Except for CP, all the other chemicals were given for 6 consecutive days. In the CP groups, the drug was given only one dose a day. On the 7th day, the rats were sacrificed under ketamine/xylazine anaesthesia before their blood and tissue samples could be taken for analysis. The samples were then analysed biochemically, histopathologically, and immunohistochemically (caspase 3, Bcl-2, Bax). In order to determine the effects of antioxidant properties of HT, malondialdehyde (MDA), glutathione (GSH), superoxide dismutase (SOD), catalase (CAT), total antioxidant level (TAL), total oxidant level (TOL) and oxidative stress index (OSI) were analysed. In the groups given CP, oxidative damage was observed and this CP-related damage was attributed to MDA and TOS the decrease of GSH and TAL. Caspase 3, Bcl-2, Bax immunoactivities showed CP-related testicular damage depending on the severity of coloration. Our experimental results have shown that HT has got antioxidant and anti-carcinogenic effects, and that it becomes highly protective and curative when used along with various cytotoxic drugs. This study was conducted with the approval Local Animal Ethics Committee Eskişehir Osmangazi University (No: 531-2/2016).

KEYWORDS

Cyclophosphamide, Testicular toxicity, Hypericum triquetrifolium Turra extract, antioxidant, rat

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Session 5-5 - Clinical Investigations and Rational Use of Medicinal and Aromatic Plants

Submission ID: 1524

HERBAL MEDICINE METHODS USED IN PEDIATRIC PATIENTS

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ABSTRACT

This compilation has been conducted for the purpose of explaining herbal medicine methods used in pediatric patients. The rate of using supplementary and alternative treatment methods in children especially with chronic illnesses varies between 1.8% and 84. Parents apply to these treatment methods due to believing in and adopting traditional applications, feeling unsatisfied with medical services, getting no result from modern medicine applications, feeling pain during efficient treatment methods, being tested and rejecting medicine and technology. Examining the treatment methods being applied; it is seen that herbal teas (mint-lemon, linden, sage) and ginger are used in upper respiratory tract infections; mint, lemon, linden in vomiting; herbal teas (anasone, razıyane, linden) in gas pains; herbal teas (linden, althaea pallida, cinnamon, mint-lemon, daisy) in coughing; mint-lemon in diarrhea; carob and pekmez in anemia. According to these results, it is recommended to inform families about consulting a physician before giving herbal products to their children.

KEYWORDS

Child, patients, herbal treatment

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Session 5-5 - Clinical Investigations and Rational Use of Medicinal and Aromatic Plants

Submission ID: 1645

THE EFFECTS OF MEDICINAL PLANTS ON CANCER CELL LINES AND EFFICACY OF EXPERIMENTAL ANIMAL MODEL

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ABSTRACT

The use of medicinal plants as an alternative treatment is a historical process and has been known for a long time so that classical treatment can be more effective in wound and cancer treatment. It is important to use these products in terms of the efficiency of treatment as well as the reduction of costs. There is not enough consciousness and evidence-based information for their use and it is a major problem. The purpose of this study was to investigate the effects of plant extracts used for therapeutic purposes in cancer cell lines in vitro wound model and in vivo experimental animal model in order to obtain this information. The medicinal plants or extracts, olive (*Oleocanthal*) oil, mistletoe (*Viscum album*), common centaury (*Centaurium erythraea*), *Momordica charantia*, *Inula viscosa*, *Citrus aurantium*, thyme oil (*Thymus vulgaris*) and algae (*Jania longifurca*), were used. MCF-7, MB-MDA-231, 67NR and 4T1 for breast, NB2a for neuron cell, L929 for fibroblast and normal somatic mesenchymal stem cell for comparison were selected for in vitro wound models. As an in vivo experimental animal model, breast cancer model with 4T1 cells and skin wound healing were investigated. The effects of medicinal plants were evaluated using MTT assay for viability and proliferation, TUNEL for apoptotic cell death, and immunohistochemistry staining NOS for oxidative stress and wound TGFbeta1 for skin healing wound. The cells were photographed using phase contrast microscopy and light microscopy for cells in tissues. In terms of wound healing effects, it was found that in the in vitro wound model with (+) plus shape these extracts were beneficial effective by increasing the cell proliferation and migration in the varying the degree of the somatic normal cells. This effect was found to reduce antioxidative damage and inhibit apoptosis. Similar results was found with cancer cells for all extracts, but it was understood that depending on the type of cancer, proliferation and migration were reduced and cell death was increased. It was observed that oxidative stress and apoptosis were increased in cancer cells, but less effective in invasive cell lines. In vivo experiments showed that wound healing was accelerated and that these rates were achieved with antioxidative and antiapoptotic effects. Increased oxidative stress and apoptosis-associated cell death occurred in adenocarcinomas induced with 4T1 cells in the breast cancer model, also it was revealed that tumor growth rate was decreased by the antiproliferative effect. Only the neurotoxic effect of the algae extract was shown in the experimental animal model, which had serious clinical consequences. The use of medicinal plants both in preventive medicine and in cases where treatment is difficult is an application that should be done as a medical procedure based on scientific data. Investigation of these effects with existing techniques is very important to prevent harmful effects of insensible use. In this study, the mechanisms by which the beneficial effects of the medicinal plants used among the people are revealed and influenced. The neurotoxic algae extract proved to be very important in terms of showing the meaning of these scientific studies. The frequent use of algae, based on the beneficial effects of the vast majority of them, emphasized that this harmful effect should be kept in mind. It has

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been concluded that medicinal plants are beneficial for treatment of difficult diseases in which patient quality of life is very effective and they should be used as scientific-based medical applications.

KEYWORDS

Medicinal plants, cancer cell lines, experimental animal model, alternative therapy

Session 5-5 - Clinical Investigations and Rational Use of Medicinal and Aromatic Plants

Submission ID: 1686

THE EFFECT OF GARLIC ON HYPERLIPIDEMIA

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ABSTRACT

Introduction: Garlic is an important diet and medicinal herb in human history. It has been used as food and medicine since ancient times. Garlic is a family of alliaceae and has the name *Allium Sativum* botanical. It is thought that the garlic is one of the first cultivated plants and the plantation started in the Middle East about 5000 years ago. It is a medicinal plant which is used in cardiovascular diseases, which is effective against blood pressure regulating, blood sugar and cholesterol lowering, bacterial, viral, fungal and parasitic infections, immunity system strengthening, antitumor and antioxidant properties as a result of information transferred between generations of generations and scientific studies. Reported. The investigation of the garlic began with an examination of antibacterial activity in 1930, and then continued with research on cancer inhibition at the end of 1940. Garlic is one of the most searched medicinal plants between 1960 and 2007. More than three thousand research articles on the chemical and biological effects of garlic and garlic preparations have been published. Aim: Hyperlipidemia is a significant risk factor for atherosclerosis and other cardiovascular diseases. Garlic, an important spice in human food, can contribute to lowering blood lipids and contributing to anti-atherogenic effects. For this reason, the hyperlipidemia effect of garlic has been evaluated in various clinical investigations to date. Studies on the effect of oral garlic on serum lipids have shown positive results in the majority of cases of low hyperlipidemia. In the light of the available information, the aim of this study is to systematically look into the investigations of the hypolipidemic effect of garlic. Material and Method: The survey of this work took place between 20-27 March 2017. Systematic literature reviews were conducted on Wiley-Blackwell, Web of Science, Scopus, Science Direct Journals, PubMed, Medline, Google Scholar, and electronic databases to gather the necessary information. Numerous articles in English, Russian and Turkish published between 2008-2017 have been reviewed. In total, over 60,000 articles related to the "garlic" key word have been reached on 18,900 articles on the key phrase "the traditional use of garlic", and 2000 articles on the "hyperlipidemia effect of garlic" key. A total of 100 full-text articles were reviewed, with a focus on the review type and articles containing meta-analysis. Results: The recent rise in the popularity of alternative medicine and natural products has increased the current interest because garlic and its derivatives are regarded as potential natural remedies. This systematic oversight can be useful for increasing our knowledge of the therapeutic effects of garlic and for improving our future experimental and clinical research plans. Nevertheless, although it has been shown that garlic may have significant clinical potential as an adjuvant treatment on its own or in different disorders, methodological insufficiencies, small sample sizes, lack of knowledge of dose justification, lack of placebo comparator or absence of control groups, beneficial effects of garlic There is a need for more standardized experiments and investigations to confirm. For better comparison in experimental investigations, studies on the effect of garlic should include information on the dosage of the active

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ingredients of standard garlic preparations. It will be positive to discover the effect of different forms of the garlic extract on standard drug therapy, especially when used as adjuvant therapy. While it is believed that garlic is safe to use, it can provide insight into the possible side effects of different garlic extracts for long enough to work. The safety of garlic should be tested in young children as well, especially in pregnant or lactating women. Long-term and major research is needed to assess the mortality, serious adverse events and morbidity of cancer and cardiovascular diseases after garlic treatment. In an experimental study comparing amaranth, linseed and olive oils and chitosan, alginate and pectin, it was found that garlic powder significantly reduced triglycerides (-23.6% -22.8%). Garlic can be considered as a complementary treatment option for lowering elevated cholesterol. There is a need for long-term work in the future to elucidate the effect of garlic on cardiovascular morbidity and mortality.

KEYWORDS

Garlic, Phytotherapy, Hyperlipidemia

Session 5-5 - Clinical Investigations and Rational Use of Medicinal and Aromatic Plants

Submission ID: 1754

A SYSTEMATIC REVIEW OF HERBAL MATERIALS USED TO ELIMINATE MENOPAUSAL COMPLAINTS

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ABSTRACT

Introduction: Menopause is a period of life in which the reproductive ability of women over reproductive functions has disappeared. Menopause according to the definition of World Health Organization (WHO); Is the permanent termination of menstruation as a result of the loss of ovarian activity. During menopause, hormonal, physical and emotional changes occur in women due to the decrease of estrogen hormone. The problems experienced during the menopausal period are: short-term vasomotor, atrophic and psychological changes, long-term cardiovascular diseases and osteoporosis. 75% of menopausal women in developed countries such as USA, Netherlands, Australia, Japan have a hot press, 41% nervousness, 40% fatigue, 39% sweating, 38% headache, 32% insomnia And 30% had complaints of depression. In our country, there are problems such as night sweats in 31.3%, rare cases of menstruation in 38.8%, hair loss in 42.2%, headache in 63.1%, dizziness in 39.7% and tingling of hands and feet in 45.2% . Women use different pharmacological and non-pharmacological treatment options to relieve the symptoms of menopause. They are used in herbal remedies in non-pharmacological treatments. These plants include flax seeds, peanuts and sage. **Purpose of the study:** In this study, it is aimed to examine the systematic compilation of the herbal materials applied to eliminate menopausal symptoms in the world and in our country. **Method:** The survey of the workshop was conducted between 3-15 March 2017. Through the use of 360 search by electronic scan engines, 55 articles have been reached with menopause in Wiley-blackwell, Web of Science, Scopus, Science Direct Journals, Pubmed, Medline and Cinahl plus full text databases. Menopausal symptoms expression has reached 12 articles. 20 articles have been reached with public health statement. In the context of herbal applications on menopause, 2 articles have been reached. In addition, 9 articles have been reached by systematic review. There are also scans in the google search engine (20 English, 4 Turkish articles reached). A total of 120 articles have been reached. 24 items related to menopause and plant use **Conclusion:** It has been determined that women use herbal materials in 80% of studies investigating menopausal symptoms and their relationship with herbal materials. The usage rates of these materials vary according to the countries and races. In 88.8% of the articles, there is a direct correlation between the severity of women's menopausal complaints and the use of herbal materials.

KEYWORDS

Menopause, Menopausal Symptoms, Herbal Practices, Public Health, Systematic Review

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Session 5-5 - Clinical Investigations and Rational Use of Medicinal and Aromatic Plants

Submission ID: 1757

THE USE OF MEDICINAL AND AROMATIC PLANTS IN DENTISTRY

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ABSTRACT

Our country locates in a geography where four seasons are lived and shapes of the earth are varied and so, the richest plant species of the world grow. The studies from past to present have aimed to determine the efficiencies and effects of plants that have traditionally been used for years on human health. In this respect, it is important to establish a framework for the use of these plants in the field of oral health by determining purposes of the use, appropriate concentrations and side effects. In this study, it was aimed to consider the most studied plants in dentistry and to provide a guide presenting the current status for clinical applications by considering previous researches performed. In our age, supporting modern medical approaches with alternative medicinal methods has become widespread. Plants have been used for centuries as a healing resource in diseases. Using plants for this purpose has led to emergence of the science of "Phytotherapy". The most common problem faced with using plants for medicinal therapies is the lack of information about the action mechanisms and side effects in tissues. In studies conducted in different countries in both medicine and dentistry, analgesic, sedative, antiinflatuar, antimicrobial, antibacterial, antiviral, antifungal, antihistaminic, antiseptic, and antioxidant properties of various plants have been utilized, and treatment alternatives have been presented. These herbal products which are used as an alternative to the traditional treatments in dentistry and are easily accessible and cheap have been used during and after dental treatments, in the presence of gum diseases, after surgical procedures, in microbial, viral, bacterial and fungal lesions of mouth and in temporomandibular joint pain. For these purposes, the most studied plants have been chamomile, propolis, green tea, ginger, aloe vera, sage, garlic, clove and rosemary, and positive features of those plants have been mentioned. Side effects such as halitosis, soft tissue burns, allergic reactions, cytotoxicity, digestive problems and abortion during pregnancy have also been reported in addition to the positive features of the plants used for alternative medicinal therapies. The use of plants for medicinal purposes increases day by day, but there are also some inaccurate informing about the subject in audial and visual media. To prevent this situation, the number of scientific researches dealing with plants should be increased, and the informing should be done by physicians with reference to results of the researches. On the other hand, it is also thought that the inclusion of alternative therapies, especially "Phytotherapy", with defined areas of usage and doses to the education of clinicians would be beneficial. In dentistry, there is a need for further long-term scientific studies for plants to be used routinely.

KEYWORDS

Herbal treatment, Dentistry, Phytotherapy

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Session 5-5 - Clinical Investigations and Rational Use of Medicinal and Aromatic Plants

Submission ID: 1824

REAL-TIME CELL ANALYSIS OF THE CYTOTOXICITY OF EUPHORBIA CHAMAESYCE EXTRACTS ON HUMAN COLORECTAL ADENOCARCINOMA (HT-29) CELL LINE

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ABSTRACT

Euphorbia L. (Euphorbiaceae) is one of the largest genus among flowering plants, with approximately 2160 species and represented by two subgenera (subg. Chamaesyce, subg. Esula) with 111 taxa (except for cultivated ones) in Turkey. Euphorbia chamaesyce belongs to subgenus Chamaesyce and known as “şebrem”, “alçak boylu sütleğen” in Turkey. In this study, various solvent extracts were obtained from stem and seed parts of Euphorbia chamaesyce L. Cytotoxic effects of the all extracts on human colorectal adenocarcinoma (HT-29) cell lines were investigated by Real Time Cell Analyzer xCELLigence method. The highest cytotoxic effect was observed from stem chloroform extract (IC₅₀ < 50 µg/mL) against HT-29 cell line. All the extracts exhibited moderate cytotoxic activity at 50 and 100 µg/mL concentrations and remarkable cytotoxic effect at the highest concentration (250 µg/mL). The stem acetone extracts exhibited low cytotoxic on HT-29 cells at tested concentrations. The results showed that E. chamaesyce extracts, especially stem chloroform extract, could be used as a natural source for pharmacy industry.

KEYWORDS

Euphorbia chamaesyce, HT-29, cytotoxicity, xCELLigence

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Session 6-1 - Cold Press and Vegetable Oils

Submission ID: 21

OPTIMIZATION OF GALLIC ACID EQUIVALENCE OF TOTAL POLYPHENOLICS EXTRACTION FROM BLACK CUMIN BY RESPONSE SURFACE METHODOLOGY

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ABSTRACT

Because free radicals are active molecules, any molecule in the environment can bind freely to itself, allowing them to proliferate in an uncontrolled manner, and this proliferation is predicted as the cause of cancer in the cells. Antioxidants are important compounds that neutralize and inactivate these free radicals. Gallic acid, a potent antioxidant, is known as showing cytotoxicity to cancerous cells without damaging healthy cells. Extraction, which is a separation process, is used to obtain the gallic acid from the plant source. Extraction is a process by which a particular material in a source is diffused into a suitable solvent. In this study, it was aimed to obtain gallic acid equivalence of total phenolics of black cummin by microwave extraction. As stated in the literature, polyphenols and lignans in plants can be separated by this method. In batch extraction experiments, selected parameters were solid-to-liquid ratio, extraction time and microwave power. In addition to utilizing the microwave power to achieve the maximum efficiency, multiple optimizations had been made to ensure that this maximum efficiency required minimum cost. In the study, multiple optimization was applied through the Design-Expert program using a three-parameter three-level Box-Behnken design. In the experiments, 1 gr black cummin was extracted with the different amounts of methanol (30, 45, 60 ml), within different time courses (10, 20, 45 sec) and by applying different microwave powers (0.3-0.6-0.9 kW). The samples were filtered with FilterLab paper (110 mm) and taken into the glass tubes. The amount of gallic acid equivalence of total phenolics in the samples was determined by the Folin-Chiocalteu Method (400µl sample, 100µl pure water, 0.5ml folin, 1.5ml Na₂CO₃, 5ml distilled water). Optimum function, three-dimensional surface graphics and optimum conditions transferable to the industry had been achieved by transferring the obtained data to the response surface method. In the study, optimum microwave extraction parameters were determined as 0,9 kW for the microwave power, 25 seconds for extraction time, and 1/60 g/ml for solid-to-liquid ratio. The quadratic model (R² = 0.9949) was found to be the best function when the ANOVA table was interpreted, and the most effective single parameter was found to be the microwave power by comparing F and p values. In binary interactions, it was determined that the most effective parameter pair on yield was the microwave power-time parameter. The optimum extraction conditions resulted from the best surface function obtained by the response surface methodology were 10.84 seconds, 1/46.97 g/ml, and 0.62 kW for time, solid-to-liquid ratio, and the microwave power, respectively. Under these conditions, the maximum amount of gallic acid (309.597 mg) was obtained.

KEYWORDS

Microwave extraction, Black cummin, Gallic acid, Optimization, Cancer

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Session 6-1 - Cold Press and Vegetable Oils

Submission ID: 212

INVESTIGATION AND DETERMINATION OF FATTY ACID, TRIGLYCERIDE AND TOCOPHEROL COMPOSITIONS OF COLD PRESSED THISTLE SEED OIL

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ABSTRACT

The cold-pressing procedure introduces neither heat nor chemicals in comparison with conventional screw press and organic solvent extraction practices to the raw material. Therefore, Cold pressed seed oils have important nutritional and chemical properties and retain higher levels of beneficial phytochemicals such as high content of tocopherols, sterols, carotenoids, phospholipids and antioxidative phenolic compounds as well as essential fatty acids. Among these seeds, thistle (*Silybum marianum*) grows easy cultivation, high yields in Turkey. Thistle seed contains vary valuable oil about 30 % on dry matter basis. The cold pressed thistle seed oil has triglycerides containing unsaturated fatty acids, rich in linoleic and oleic acids and, contains significant levels of tocopherols and tocotrienols (tocols). These triglycerides and tocols have nutraceutical, cytotoxic and biological activities such as reduce the risk of cardiovascular diseases, decreasing LDL oxidation, inhibiting lipid peroxidation in biological membranes, breaking free radical chain reactions and provides some natural oxidative protection to the oil. The goal of this study was to investigate the nutritional value and chemical properties of cold pressed thistle seed oil grown in Turkey by considering of fatty acid triglyceride and tocol composition. Fatty acid composition was performed by GC method. Triglyceride and tocol composition were performed by HPLC method. Cold pressed thistle seed oil contained greater amount of unsaturated fatty acids. Linoleic acid was found to be dominant (48 %) followed by oleic acid (30 %) and palmitic acid (7 %). Dominant triglycerides were found to be Oleic-Linoleic-Linoleic Acid (OLL) (24 %) and Linoleic-Linoleic-Linoleic Acid (LLL) (23 %) in cold pressed thistle seed oil, followed by Palmitic-Linoleic-Linoleic Acid (PLL) (12 %) containing palmitic acid and linoleic acid. The total tocol content was found as 185 mg/kg, while α -tocopherol (120 mg/kg) and γ -tocopherol (51 mg/kg) were the most abundant tocol forms. As a result, the obtained data demonstrate that cold pressed thistle seed oil should be regarded as nutritional and medicinal product due to its superior properties such as unsaturated fatty acid and triglyceride contents.

KEYWORDS

Cold Pressed Thistle Seed Oil, triglyceride, fatty acid and tocol composition

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Session 6-1 - Cold Press and Vegetable Oils

Submission ID: 448

**VARIATION OF FATTY ACID COMPOSITIONS IN CORIANDRUM
(CORIANDRUM SATIVUM L.) CULTIVAR GROWN IN TWO
DIFFERENT ECOLOGY**

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ABSTRACT

Coriander, *Coriandrum sativum* L., belonging Apiaceae family is an important spice plant grown different locations of Turkey. The study was aimed to investigate the composition of fatty acid compositions of 6 coriander cultivars (Gamze, Arslan, Erbaa, Pelmus, Kudret, Grbz) in two different ecologies of Turkey (Tokat and Mardin). The oil compositions of the obtained oils with cold extraction were analyzed by Gas Chromatography. In the results, total 22 fatty acids were identified in the cultivars Petroelinic acid was the major fatty acid in all varieties, followed by linoleic acid and palmitic acid. The variation of the major fatty acids was limited in the study. The highest amount of petroselinic acid was changed between 80.5-82.61% and the highest value was reached in Aslan variety in Mardin. Palmitic acid, which is saturated fatty acid in all varieties, was found high in Mardin, while unsaturated fatty acid linoleic acid in Tokat. It concluded that the effect of regions on fatty acids was limited in the study.

KEYWORDS

Coriander (Coriandrum sativum L.), fatty acid, ecology

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Session 6-1 - Cold Press and Vegetable Oils

Submission ID: 758

INTEGRITY INTACT CORIANDER FRUIT OIL: FRESH! NATURAL! MIRACLE! AND FUTURE PROSPECTS

ALEV ÖNDER¹

ABSTRACT

Nature is full of miracle plant species which serve for human health with a wide diversity of beneficial effects such as in foods, cosmetics, and pharmaceutical industry. Coriander (*Coriandrum sativum* L.) is a very popular medicinal plant from Apiaceae family which is widely used as a spice in folk medicine and also desired in pharmacy and food industries mainly employed as food in the Western and Eastern countries. Since 1550, it has been used in Egypt as one of the earliest spices. Coriander (Cilantro, Kişniş, Chinese parsley; *Coriandrum sativum*) is extensively known in almost every recipe. In the history, coriander was determined in the Neolithic level of the Nahal Hemar Cave in Israel and the tomb of Tutankhamun. *C. sativum* L. belongs to the family Apiaceae in taxonomic classification, but its origin is unclear. The genus Coriander was represented in Flora of Turkey with two different species as *C. sativum* and *C. toridylum*. It is mainly cultivated for the seeds in the countries which contain an essential oil (linalool, % 60-70), besides fatty acid content, coumarins, flavonoids, polyphenols. Nowadays, the seeds are exhibited internally carminative, digestive, spasmolytic, and galactagogic effects in many disorders and diseases. Using forms include a wide assortment of fresh and dried herbs, the seeds of coriander, extracts, varied oil, alcohol and water-based solutions, teas, essential oils. The current study is concentrated on integrity intact essential oil, which is extra virgin oil cold pressed from coriander seed with zero treatment other than mechanical at 30⁰ Celsius. In this presentation, of all the miracle effects of coriander, we aimed to focus on its skin regenerative properties of coriander essential oil, besides derive the methods, discover the formulations together with future prospects!!.

KEYWORDS

Apiaceae, Coriander, Kişniş, Oil

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Session 6-1 - Cold Press and Vegetable Oils

Submission ID: 1392

JUNIPER TREE (*JUNIPERUS COMMUNIS L.*), JUNIPER'S SEEDS AND JUNIPER OIL

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ABSTRACT

Juniper tree (*Juniperus communis L.*) is a fragrant tree and has got long and needle-like leaves, bright black, conifer-like fruit. It can grow to an average of 8-9 meters and live for hundreds of years. There are 60 species that grow in the Northern Hemisphere and 8 species of juniper grow in our country. It is also cultivated as an erosion preventative, wind, snow and sound curtain and ornamental plant. The juniper plant was a very popular plant in ancient Mesopotamia and Europe, medieval times and later periods. For protection from the witches, juniper were sew up on the garden and the juniper was burnt to expel the snakes. People in the Middle Ages ate plenty of juniper fruit in many parts of Europe to be protected from the plague disease. It was burned in plague outbreaks, the doctors used it as a primitive filter by putting it in the beaked masks. For thousands of years, Turkish culture has become one of the symbolic trees. The juniper can keep up for hundreds of years after the tree has been killed. It is a resilient species that can tolerate the most difficult climatic conditions such as drought and frost, and is also known as the last tree that leaves the juniper forest. The juniper word means "remains, not to disappear" in the Turkic language. It is a tradition to plant juniper in Central Asian Turkish graves. There are many sacred places in ancient Turks carrying the name of juniper. Currently, in our country people tie a cloth to the branch of the tree which are considered sacred in some regions to make a wish. It is obtained a easy-workable and semi-precious stone called "oltu stone" from the fossilized roots of the juniper tree. It is believed that the oltu stone known as the luck stone among the people today is good for the evil eye and gives positive energy to the human body. Juniper trees are used in abundance in the medical, pharmaceutical and food sectors due to the chemical compounds found in their leaves and seeds. The seeds are used to give a different smell to meals, snacks or different food. It is used to flavor many alcoholic beverages. The aroma is very strong and sharp. Antibiotic, analgesic, hepatoprotective, antidiabetic and antihyperlipidemic, antimicrobial, anti-inflammatory, diuretic, antioxidant, antihypercholesterolemic, anticathaleptic activity and neuroprotective activities in Parkinson's disease have been reported for this plant. Traditionally, the plant has been used as antidiarrheal, antiinflammatory, astringent, antiseptic, and in the treatment of various abdominal disorders. The major chemical components reported in *J. communis L.* can be summarized as α -pinene, β -pinene, apigenin, sabinene, β -sitosterol, campesterol, limonene, cupress flavone, flavonoids, lignans, tannins and others. The juniper, the most durable tree against tough conditions among tree species, once formed about ten percent of Turkey's forest entity. Today, however, juniper forests are rapidly disappearing in our country. The juniper trees that can not be cultivated from the seeds before and can only be grown by germinating seeds in stool of the juniper bird can now be produced by human hands. The recovery of juniper forests, which have an important tree of Turkish culture, and which have been lost to the present day, will provide economic and cultural value. This review contains pharmacological activity and health benefits and the place of this plant in Turkish and Anatolian culture.

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KEYWORDS

Juniper, Juniperus communis L., Turkish culture, Pharmacological activity

Session 6-1 - Cold Press and Vegetable Oils

Submission ID: 1547

EVALUATION OF SELECTED MEDICINAL HERBS' COLD PRESSED OILS ACCORDING TO THEIR PHYSICOCHEMICAL PROPERTIES WITH CHEMOMETRY

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ABSTRACT

There is growing interest in herbal preparations, such as oils from plant sources. Vegetable oils have significant antioxidant properties and unique phytochemicals and these have been used since the beginning of history to treat diseases due to the positive effects on human health [1]. Since these oils have been used to treat certain health problems, there is a significant increase in the use of these oils not only in the food industry but also in medicine and cosmetics [2]. In this study, we investigated the effects of cold pressed oil on physicochemical properties of milk thistle (*Silybum marianum*), anise seed (*Pimpinella anisum*), fennel seed (*Foeniculum vulgare*), terebinth (*Pistacia terebinthus*), coriander (*Coriandrum sativum*) and nettle seed (*Urtica dioica*) cold pressed oil according to their physicochemical characteristics. As a result of previous scientific studies of these medicinal plants, extensive collections of pharmacology and chemistry of plants have emerged [3-9]. Selected oils were investigated in terms of the fatty acid methyl esters (FAME) compositions, peroxide value (PV), free fatty acid (FFA) content, refraction index (RI) 40 ° C and oil seed yields. Seeds have been chosen from Central Anatolia Region and samples range differs from 4-7. The data obtained from the analyzes were evaluated chemometrically. The diagrams were obtained by a principal component analysis (PCA) score and loading plot and hierarchical clustering analysis dendrogram of seed oils. According to PCA and HCA results, selected seed oils have different properties in terms of FAME, FFA, PV and RI. This suggests that each fat originates from the physicochemical properties of its unique pharmacological properties. As a result, in this study, information on the physicochemical properties of oils obtained from six medicinal plants was given. These results indicate that the seeds of the Central Anatolian region can be used as acceptable raw materials for herbal natural support products. In addition, these analyzes can be used in quality control laboratories and production lines as they are intended to determine the purity and quality parameters of seed oils. It has been shown that the FAME, PV, FFA and RI analyzes can be used to determine any adulteration to these oils by chemometric analysis. [1] Gumus et al., *Colloids and Surfaces B: Biointerfaces* 133 (2015) 73–80 [2] Guler et al., *Colloids and Surfaces B: Biointerfaces* 121 (2014) 299–306 [3] Hermenean et al., *Open Life Sciences* 10 (2015) 225–236. [4] Shojaii and Fard, *ISRN Pharmaceutics* (2012) 1-8. [5] Kamila et al., *Chemistry & Biodiversity* 12 (2015), 1105-14. [6] Bozorgi et al., *The Scientific World Journal* (2013), 1-33. [7] Ntalli et al., *Pest Manag Sci* 67 (2011) 341–351. [8] Sahib et al., *Phytotherapy Research* 27.10 (2013) 1439-1456. [9] Cionca et al., *Physiology & Behavior* 120 (2013) 193-202.

KEYWORDS

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cold pressed oil, FAME, physicochemical properties

Session 6-2 - Aromatic Plants

Submission ID: 4

CHEMICAL COMPOSITION OF THE ESSENTIAL OILS FROM ROSINS OF TURKISH PINUS BRUTIA AND PINUS NIGRA

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ABSTRACT

In Turkey, the genus *Pinus* (Pinaceae) is represented by 5 species, e.g. *P. brutia*, *Pinus nigra*, *P. sylvestris*, *P. halepensis*, and *P. pinea*, *P. nigra* is distributed in Anatolia, Cyprus, Crimea, West Caucasus, Balkans, the South Carpathians, and Western Syria. All the *pinus* species contains essential oils, which have economic value and have been used in cosmetic, paint, pharmacology, agricultural protection and various chemical industries as solvent or main components. The essential oil yield greatly varied with tree parts of the *pinus* species. In this study, the rosins were provided from from *P. brutia* L. and *P. nigra* L. trees grown in Andırın state forests located in Emirler village in Kahramanmaraş province of Turkey. The stems of the living trees, having age of 20 years, were injured, and the flowed rosin were collected after 10 days. The essential oil from the rosins of Turkish *Pinus brutia* and *Pinus nigra* (Pinaceae) was obtained by the hydro-distillation method, and its chemical composition was analyzed by GC and GC-MS. The results showed that yields of essential oil from *P. brutia* and *P. nigra* were 5.09% and 2.52% (on the basis of wt% of rosin), respectively. The major components of essential oil from rosin of *P. brutia* were α -pinene (44.97%), Δ^3 -carene (15%), β -pinene (10.83%) and camphene (2.88%), while the major components of essential oil from rosin of *P. nigra* L. tree were α -pinene (62.22%), Δ^3 -carene (18.25%), limonene (6.46%) and β -pinene (4.55%).

KEYWORDS

Rosin, Essential oil, Pinus brutia, Pinus nigra, Kahramanmaraş, Turkey, Yield, GC-MS

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Session 6-2 - Aromatic Plants

Submission ID: 505

DETERMINATION ON ESSENTIAL OIL RATE AND COMPOSITION OF SOME CISTUS SPECIES IN MUĞLA-ULA PROVINCE

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ABSTRACT

In this study; it was aimed to determine the essential oil percentage and assign on composition of ; *Cistus cretius*, *Cistus laurifolius*'s that are in the family of Cistaceae which are important species of Turkey. These species were provided from Muđla-Ula. Samples were dried in room conditions and hydrodistilled by Clevenger apparatus for 3 h. Thus, essential oil yield was determined as percentage and compounds were identified by GC-MS. It was found that the essential oil yield and the most abundant three componets *Cistus cretius* 0.1%, Carvacrol 32.56%, Cineole 23.73%, Hexahydrofarnesyl Acetone 20,9, %, *Cistus laurifolius* 1.1%, carvacrol 20.53%, cymene 9.50%, farnesol/bergamotene 7.62% were determined according to GC-MS analysis results.

KEYWORDS

Cistus, essential oil, Muđla-Ula, Turkey

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Session 6-2 - Aromatic Plants

Submission ID: 624

**SUBJECTIVE EFFECTS OF LEMON , ROSE AND LAVENDER
ESSENTIAL OILS ON HUMANS: A CASE STUDY FROM DIFFERENT
TWO AGE GROUPS**

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ABSTRACT

Plant volatile oils have been used for different purposes for years, especially in the scientific and commercial areas. Among the major areas of their uses were the cosmetic, pharmaceutical and food industries, and the aroma/phyto therapeutic applications. The lemon, rose and lavender oils were the most commonly used oils and their effects on humans also differed individually. In this study, effects of these essential (volatile) oils on two age groups, 17-24 and 25-40 were thus investigated. The study was conducted on 80 people for one hour and the effects were evaluated using questionnaires. In 17-25 age group, lavender oil caused drowsiness and weakness in 60% and 50% of respondents respectively, and also some mild giddiness, nausea, headache and dizziness. In 25-40 age group it caused giddiness and weakness in 40% respondents, and also gave mild vigor and tranquility. Lemon oil caused drowsiness in 85%, weakness and headache in 50%, and clear sensation in 55% of the respondents from 17-24 age group, while in 25-40 age group it caused clear sensation in 80% of respondents, and gave the mood of tranquility in 70% and happiness in 60%. However, rose oil demonstrated more intense effects on people, causing drowsiness and nausea in 55%, weakness and headache in 50%, and also giddiness, face flush and palpitation in 17-24 age-group-respondents. In 25-40 age group it caused drowsiness and nausea in 40% while it gave happiness and tranquility in 60% of respondents. Study results indicated that effects of different types of volatile oils on humans vary based on the age groups. So, the preference of essential oils in our daily lives is implied to have great importance. Therefore, further studies on the subject should be conducted to better emphasize the choice and use of these oils based on the age groups.

KEYWORDS

Lemon oil, Rose oil, Lavender oil, Subjective, Human

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Session 6-2 - Aromatic Plants

Submission ID: 1684

EVALUATION OF CHEMICAL CONTENT OF ALLIUM VINEALE L. EXTRACT USING SUBCRITICAL WATER EXTRACTION

İBRAHİM TEĐİN¹, BETÜL SADIK², ERDAL YABALAK³, MEHMET FİDAN²

ABSTRACT

Subcritical water extraction method (SWE) has gained great attention in the food and pharmaceutical industry, due to its excellent characteristics for the extraction of valuable ingredients from various matrixes [1, 2]. Subcritical water is known as water that heated between 100-374 °C temperatures and pressurized enough to keep it in the liquid form [3]. Physicochemical properties of SWE, especially adjustable solvent power based on applying temperature make it unique [4-6]. Even, SWE can behave as a non-polar solvent at high temperature [7]. Although various traditional methods have been used as extraction process, they have several disadvantages such as consuming time, low selectivity and releasing large amounts of toxic solvents [2]. Subcritical water extraction offer a reliable alternative which able to overcome these drawbacks. *Allium Vineale L.* has many application areas around the world. Nowadays, *Alliums* is used to produce flavor, aroma and taste as raw material in various food production processes (dehydration, freezing, canning and acidification) [8,9]. Different clinical studies have shown that such plants are responsible for reducing cholesterol and blood pressure, relieving stress, anti-cancer, brain and neurotrophic, liver protection, enhancing immune system and anti-infection [8]. Many studies have shown that *Allium* is of great importance for the prevention and treatment of many diseases due to antioxidant effects [8, 10]. Dried and crushed samples of *Allium Vineale L.* was extracted using the experimental set-up as shown in our previous work [7]. Extracts were collected after specific time under 105 °C and 40 bar. Samples were analyzed by GC-MS according to Wiley7Nist05.L, NIST05a.L, W9N11.L, to determine extracted compounds. Some of these compounds are as follows: 1,3-Dioxolane, 3-Piperidinol, p-Vinylguaiacol, Acetic acid, Cyclobutanol, 2-Aminopropane, 1-Isopropylidiaziridine, Inosine, Butanedioic acid, p-Vinylguaiacol, L-Proline, Trithiapentane

KEYWORDS

Allium Vineale, Subcritical water extraction

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Session 6-2 - Aromatic Plants

Submission ID: 1827

RESIN PRODUCTION BY ACID-PASTE AND BORE HOLE METHOD FROM RED PINE (*PINUS BRUTIA* TEN.) AND MARITIMA PINE (*PINUS PINASTER* AIT.) AND CHEMICAL ANALYSIS OF TURPENTINE

ILHAN DENİZ¹, İSMAIL AYDIN¹, KEVSER ALTINTAŞ¹

ABSTRACT

Resin Production by Acid-Paste and Bore Hole Method from Red Pine (*Pinus brutia* Ten.) and Maritima Pine (*Pinus pinaster* Ait.) and Chemical Analysis of Turpentine The effects of acid paste and borehole method, region, tree species (*Pinus brutia* Ten., *Pinus pinaster* Ait.), tree diameter and altitude on oleoresin and colophane and turpentine yield and chemical composition of turpentine were investigated for 2 years(2015-2016). Turpentines were analyzed by GC-MS. Resin production was made in maritima pine 375 trees and red pine 540 trees. According to the results obtained, oleoresin average yields in acid-paste method for maritima pine were found as 2015 and 2016 respectively 1457-2042,4 gr/tree in Kocaeli and 2200-2497,5 gr/tree in Yalova, whereas for red pine 448-615 gr/tree in Mugla and 723-919 gr/tree in Silifke; as for the borehole method, 290 gr/tree in Kocaeli for maritima pine, whereas for red pine 138.2 gr/tree in Mugla and 580 gr/tree in Silifke. For the maritima pine, the general average of oleoresin yield for 2 year was 1750 gr/tree whereas for red pine the overall average was 676.3 gr/tree. The maritima pine has generally yielded higher oleoresin yields than the red pine. The lower yield of red pine can be due to the fact that the ratio of lead acid/paste is 1/9. The borehol method overall oleoresin average was 290 gr/tree for the maritima pine and 359 gr/tree for the red pine. The yield of oleoresin increased as the diameter of the tree increased, but generally decreased with increasing altitude. Maximum resin yield for both trees was obtained at 0-100 m altitude, and from trees at diameter level of 38 cm and above.

KEYWORDS

Oleoresin, Acid-paste method, Borehol method, Pinus brutia Ten., Pinus maritima

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Session 6-2 - Aromatic Plants

Submission ID: 1925

**GREEN SYNTHESIS OF SILVER NANOPARTICLES USING
CINNAMON EXTRACT AND ITS COMPARATIVE TOXIC EFFECT
VERSUS AQUEOUS EXTRACT AGAINST CALLOSBRUCHUS
MACULATUS (COLEOPTERA: BRUCHIDAE)**

**FATMA NUR ELMA¹, MASOOD HUSSAIN², AHMET AVCI³, EROL PEHLIVAN⁴, SYED TUFAIL HUSSAIN SHERAZI²,
SIRAJ UDDIN²**

ABSTRACT

ABSTRACT Green silver nanoparticles were synthesized using cinnamon extract as reducing agent. The fabricated silver nanoparticles covered with cinnamon extract were characterized by several spectroscopic and optical techniques. UV-Visible spectroscopy was carried on to confirm the formation of silver nanoparticles covered with cinnamon extract (cinnamon-AgNPs) by optimizing various reaction parameters such as concentration of precursor salt, volume of cinnamomum extract, pH value and temperature. FT-IR study was performed to confirm the interactions of cinnamon with silver nanoparticles. In order to study the crystalline nature of silver nanoparticles XRD study was carried out and results indicated the crystalline nature of silver nanoparticles. Size analysis was carried on using TEM. Nanotechnology has been one of the promising new approach for the management of insect pest since the last decades. In this study, the toxic effects of silver nanoparticles (Ag NPs) covered with cinnamon extract were tested against adult stage of *Callosobruchus maculatus* (Coleoptera:Bruchidae). The toxic effect were evaluated for 24, 48 and 72 h with varying concentrations of aqueous cinnamomum extract without Ag nanoparticles and silver nanoparticles covered with cinnamon extract . Results showed that the synthesised silver nanoparticles covered with cinnamon extract showed maximum toxic effect with the highest concentration after 72 h (60.72%). The aqueous extract of Cinnamon extract did not have a significant effect on *C. maculatus*. The results also showed that the silver nanoparticles covered with Cinnamon extract were detected a significant toxic effect against adult of *C.maculatus*. **ACKNOWLEDGEMENTS** The authors pay thanks to TUBITAK for financing this work via BIDEB 2216 Research Fellowship Programme Ref: 21514107-115.02-188888.

KEYWORDS

Callosobruchus maculatus, Cinnamon, Silver nanoparticles, Toxicity

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Session 6-3 - Ethnobotanic

Submission ID: 61

CULTIVATION AND PROTECTION STRATEGIES OF GENTIANA LUTEA

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ABSTRACT

Cultivation and protection strategies of *Gentiana lutea* L. The plant naturally grows in Bursa (Uludağ), Kütahya (Radar, Domuzkertiği, Acısu, Üçtepelere ve Daritepe -fire towers locality) and Ödemiş (Bozdağ), our country. *Gentiana lutea* L., one of our most important endangered species is the species of Gentianaceae family having around 87 varieties and 1650 species. The plant which possesses therapeutic property and economic value is also known with the various names such as yellow herb and bitter root, etc. among the public. In the report prepared by the Traffic being an international institution, it is stated that our country is one of the most significant shelters for this plant and the cultivation studies and the researches to be conducted for *Gentiana lutea* L. in Turkey should be supported. Considering that *Gentiana lutea* L. could not be grown from seed in our country and the presence of difficulty for germination of its seeds, it is of vital importance that it is grown in other ecosystems where it shows natural dissemination and in the ecosystem with the seeds taken from their natural growing environment, the current situation in their natural growing environments are observed. Therefore, a detailed Project study is initiated about *Gentiana lutea* L. They are grown from around 200 individual seeds first time in Turkey through their natural environment as a part of growing studies. The parent material used in this Project study is *Gentiana lutea* L. seeds collected from their natural environments. The roots which are dried in the shade of the plant collected from natural growing environment are used for root analyses too. The performed studies are soil analyses, growing studies, root analyses, the observation related to current situation in Turkey and the inventory studies made in Bursa and Kütahya. Extinction is the process which depends on possibility and many factors. The global warming, climate change and drought experienced in recent years also affects *Gentiana lutea* L. negatively like all vegetable resources. When no efficient protection measures are taken, it is estimated that extinction possibility of *Gentiana lutea* L. will rise more in the forthcoming years. For this reason, *Gentiana lutea* L. should be placed in higher (urgent) threat class. It is recorded by trying to determine the changes in current situation and its speed by way of the observation and inventory studies to be carried out periodically. According to IUCN criteria, *Gentiana lutea* L. is recorded as "endangered (EN)" for Turkey. However the rarity, littleness of current locations and the populations in the area where it is found, the number of plant giving seed in population, observable negative effects of climate change are taken into consideration, taking in CRITICAL (CR) class is offered after this study. But, after the study ends, the observations in the field are also continued and it is observed that substantial increases have taken place in their natural spreading areas. As per the results of the conducted inventory study, natural spreading area of *Gentiana lutea* L. in Kütahya is 99 ha.

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Over the course of pre-survey studies made before and after starting to the study, the small individuals developed from seed, young individuals close to blossoming and flowered fertile individuals are found in Kütahya- Radar, Kütahya-Domaniç and Bursa- Uludađ. This case has demonstrated that the populations' distribution is normal and become promising for protection studies. With regard to search of the chemical substances present within its structure, the roots of *Gentiana lutea* L. collected from each area and dried under the sun are grounded and the weighing of 5 gr is made and extracted and employed in HPLG analyses.

KEYWORDS

Gentiana lutea L, damage, conservation, observations, cultivation, observations.

Session 6-3 - Ethnobotanic

Submission ID: 250

ETNO-BOTANICAL PROPERTIES OF SOME MEDICINAL AND AROMATIC PLANTS USED IN ERZURUM PROVINCE AND USE IN TREATMENT

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ABSTRACT

Because of its different ecological conditions, Erzurum region hosts many plant species. According to Flora of Turkey, there are 1392 taxa in Erzurum province and 294 of these taxa are endemic. The endemism rate of Erzurum province is calculated as 21.1%. In this study, the usage and application forms of plants with medicinal and aromatic characteristics of 20 species which were traditionally used for treatment in Erzurum province were determined. Within this scope, a survey study was conducted with 75 people (23 female, male 52) in 21 villages in 9 provinces of Erzurum (Çat, Khorasan, İspir, Tekman, Oltu, Tortum, Uzundere, Pasinler and Merkez). In the questionnaire study, information about 20 plant species was asked to the subjects and the answers given for each plant species were entered into the database separately in the computer environment. For this reason, a data set of 312 lines of 75 people was created in the database. Therefore, one person gave us information about 4.16 plants on average. In the study, there were 42 people for nettles (*Urtica duoica* and *Urtica urens*), 29 for ryegrass (*Rumex crispus*), 24 for hibiscus (*Malva sylvestris*), 23 for hermit crab (*Polygonum cognatum*) and 23 for hawthorn (*Crataegus orientalis*) have used these plants for the treatment of various diseases. It has also been determined that the locals use the 20 plants used in the study in the treatment of certain diseases. According to the frequency of use of these diseases, infections (33 people), stomach ailments (31 people), cancer (22 people), cough (13 people), intestinal distress (11 people) 10 people) and urinary tract disorders (7 people). In addition, many of these plant species are dried in the villages where the living conditions of winter are very difficult and meet the needs of people's fruits and vegetables. Some species are also used in the treatment of animals in these regions where livestock are the source of their livelihood. *Juniperus communis* has been known to burn animals in their stalls, such as incense, in their stalls, in order to make tar from caterpillars with localized names, and to use animals to cure colds. This work seems to be very important in the context of exploring the ways in which hundreds of thousands of local people use thousands of years to treat diseases.

KEYWORDS

Erzurum, medicinal plants, illness, treatment

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Session 6-3 - Ethnobotanic

Submission ID: 300

AN ETHNOBOTANICAL RESEARCH ON FLORA AND MEDICINAL PLANTS OF TÜRKÖGLÜ (KAHRAMANMARAŞ)

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ABSTRACT

The research area is located in the Kahramanmaraş province and on the C6 square in grid system. This area has a rich and various vegetation structure due to complex physical geographical structure and other environmental factors. Total 742 plant taxa was determined by floristic studies in different period and rate of endemism is 10 %. This study was carried out between 2015 and 2017 and the plants used in medical and aromatic purposes of the native flora were investigated. As a result, it was determined that 77 plant taxa belonging to 42 families for used medically. In terms of species number, the largest families are as following; Labiatae (11), Asteraceae (8), Rosaceae and Fabaceae (5), Brassicaceae and Poaceae (4) . These plant taxa were alphabetically indicated according to their family names, Latin and local names as well as with their used parts and usage purposes.

KEYWORDS

Flora, Ethnobotany, Medicinal Plant, Türkoglu, Kahramanmaraş

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Session 6-3 - Ethnobotanic

Submission ID: 468

ECOLOGICAL CHARACTERISTICS OF AJUGA L. TAXA GROWING IN WESTERN ANATOLIA

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ABSTRACT

In this study, some ecological characteristics of 9 taxa including [*A. orientalis* L., *A. genevensis* L., *A. reptans* L., *A. laxmanii* (L.) Benth., *A. salicifolia* (L.) Schreber, *A. chamaepitys* (L.) Schreber subsp. *chia* (Schreber) Arcangeli var. *chia*, subsp. *chia* (Schreber) Arcangeli var. *ciliata*, subsp. *palaestina* (Boiss.) Bornm., subsp. *glaerosa* P.H. Davis] belonging to the genus *Ajuga* L. spreading in Western Anatolia and used for different purposes colloquially were investigated. In this context, geographical features of spreading area of the taxa were determined. Then a soil pit was dug in each area sampled and soil samples were taken according to the depth steps (0-10, 10-20 and 20-30 cm). Plant samples were taken to determine the leaf, stem and root nutrient contents of the taxa. Data of the nearest meteorological stations to sampling sites were used to determine climatic characteristics. In the laboratory, texture, total lime, organic carbon, pH, EC, N, P, K, Ca, Mg, Na, Fe, Cu, Zn, Mn in soil samples; N, P, K, Ca, Mg, Na, Fe, Cu, Zn and Mn in plant samples were analyzed. The taxa were determined to spread over elevations between 130 and 2307 m, sunny (SE-S-SW-W), shaded (NW-N-NE-E) aspects, inclination 2-34%, and the various slope position including upper, middle, lower slopes and valley bottom. Taxa were found to grow on calcareous and mildly alkaline soils having middle level organic matter and low electrical conductivity and they rarely grew on soils which varied between non-calcareous and neutral-light acid. N (0.50-1.94%), P (592-3000 ppm), K (8815-44490 ppm), Ca (4809-74550 ppm), Mg (973-20443 ppm) Na (88-2108 ppm), Fe (187-13200 ppm), Cu (1-26 ppm), Zn (8-102 ppm) and Mn (25-312 ppm) were found in the leaves, stems and roots of taxa. The type of climate in the locality of the taxa varies between semi-moist and very moist. Although water deficit for *A. chamaepitys* subsp. *palaestina* occurred for a period of 5-6 months, it occurred for a maximum period of 3-3.5 months in the distribution areas of other taxa. Findings are important for cultivation of the taxa belonging to the genus *Ajuga*, which are used as medical and ornamental plants.

KEYWORDS

Ajuga, Ecology, West Anatolia

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Session 6-3 - Ethnobotanic

Submission ID: 1063

**ANATOMICAL PROPERTIES OF MEDICINAL PLANT SIDERITIS
DICHOTOMA HUTER (LAMIACEAE) FROM TURKEY**

İLKAY ÖZTÜRK ÇALI¹

ABSTRACT

The genus *Sideritis* L. is represented by 46 species and altogether 55 taxa, 42 taxa being endemic and this genus named Dađçayı or Adaçayı in Turkey. *Sideritis* L. taxa are annual or perennial herbs or small shrubs, aromatic, pilose or tomentose, with or without glands, rarely glabrous and an endemic plant in Flora of Turkey. The genus *Sideritis* L. is comprised by medicinal and aromatic plants widely used in folk medicine for their anti-inflammatory, antirheumatic, antimicrobial, digestive, diuretic, anti-inflammator, antispasmodic-antibacterial, activities and often used as herbal tea and folk medicine in Turkey. The plant specimens were collected in its flowering period from Amasya on 27.06.2016. The plant materials were identified and deposit at Amasya University. Anatomical studies were carried out on specimens that were fixed in 70% alcohol. The anatomical studies on cross-sections of root, stem, leaf and flower of the plant were presented. The plant has quadrangular stem and collenchyma on the corners of stem. The leaf is monofacial. The type of stomata is diasitic. Besides, *S. dichotoma* has various glandular trichomes on stem, leaf and flower.

KEYWORDS

Sideritis dichotoma, *Lamiaceae*, *Anatomy*, *Endemic*

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Session 6-3 - Ethnobotanic

Submission ID: 1140

ENVIRONMENTAL AND SPECIES INDICATORS OF PISTACIA TEREBINTHUS L.: A CASE STUDY FROM GAZİANTEP DISTRICT

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ABSTRACT

This study was carried out to investigate relationships between the distribution of *Pistacia terebinthus* L. and some site characteristics (elevation, slope, radiation index, climatic variables, parent materials etc.) in the Gaziantep district. Besides, indicator species of the species were investigated in the study area. In accordance with this purpose, presence and absence data of the species were collected from 165 sample plots. Spearman correlation and interspecific correlation analysis were applied to determine the relationships between distribution of target species and environmental variables. According to these analysis results, *P. terebinthus* showed positive correlation with slope degree whereas it has negative correlation with annual precipitation. However, there isn't any significant result between *P. terebinthus* and bedrock formations. Interspecific correlation analysis was also applied to determine indicatory species of *P. terebinthus* in the study area. As a result of this analysis, *P. terebinthus* has positive association with *Crataegus orientalis*, *Euphorbia orientalis*, *Jasminum fruticans*, *Juniperus oxycedrus*, *Quercus coccifera*, *Rhus coriaria* and *Tamarix smyrnensis*. Knowing to the site characteristics and indicatory plants of *P. terebinthus* can contribute crucial information for sustainability, conservation and marketing possibilities of *P. terebinthus* as a non-wood forest product in the district.

KEYWORDS

Gaziantep district, indicatory species, P. terebinthus, site characteristics, slope degree

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Session 6-4 - Antioxidant Effects

Submission ID: 77

DETERMINATION OF TUNCELI RURAL GARLIC (ALLIUM TUNCELIANUM) EFFECT ON THE ANTIOXIDANT ENZYME AND LIPID PEROXIDATION LEVELS ON RAT INTESTINAL

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ABSTRACT

Turkey, like in many plant species, is also a rich country in terms of Allium species. There are about 500 Allium species in the world, of which about 170 of them have been encountered in Turkey. It is reported that about 40% of Allium species in Turkey are endemic [1]. Tunceli Rural Garlic (TRG) is evaluated within the plants that are considered to be protected as the plant is an endemic and has the possibility to be damaged as mentioned in Red Book of Turkey Plants [2]. Wistar albino type female rats were used for the determination of the effect of TRG on the antioxidant enzyme levels. Wistar albino female rats were used to determine the effect of TRG on lipid peroxidation and antioxidant enzyme levels. Group 1, Control group (K); Group 2, DMBA Group (D); Only given 7,12-DMBA; Group 3 (DA-1 Group); In addition to 7,12-DMBA, given dose of TRG 250 mg/Kg/day. Group 4 (DA-2 Group); In addition to 7,12-DMBA, dose of TRG 500 mg/Kg/day. Group 5 (DE Group); In addition to 7,12-DMBA, dose of 200 mg/Kg/(twice a week) of vitamin E. Accepted as significant reduction in catalase enzyme activity in DMBA-induced rat tissues [3]. Accepted as significant decrease a decrease in SOD enzyme activity in DMBA-induced rat tissues [4]. Total glutathione is a compound used by the glutathione peroxidase enzyme to cleanse peroxide radicals. The decrease in GSH levels in DMBA-induced rat tissues is considered to be a significant decrease. Antioxidative substances given to DMBA-induced rats have been reported as a significant increase in oxidative damage resulting in reduced levels of GSH Increasing the amount of MDA in DMBA-induced rats has generally been regarded as a positive result. [5]. Intestinal catalase activity of rats; In the DE group, the decrease compared to the K group was significant ($P < 0.05$). There was a significant increase in DA-1 group according to the DE group. SOD enzyme activity results in intestinal tissues of rats; A statistically significant increase was observed in the DA-1 group compared to the K and D groups. According to my study results, total GSH levels of intestinal tissues of rats; There was no significant decrease in group D compared to group K. There was a significant increase in the DA-1 group compared to the K and D groups. A significant increase was found in the DA-2 group compared with the K, D and DA-1 groups. Intestinal MDA levels of rats; There was a significant increase in group D compared to group K. A significant decrease was found in the DA-2 group compared to the D group. As a result, besides the taste of *A. tuncelianum*, we can say that the antioxidative substances and sulfur components contained in it positively affect the antioxidant enzyme activities and can protect the body tissues against oxidative damage, by regulating enzyme activities and preventing lipid damage, thus preventing diseases caused by oxidative damage.

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KEYWORDS

Allium tuncelianum, Antioxidant Enzym Activity, MDA, TRG

Session 6-4 - Antioxidant Effects

Submission ID: 97

**DETERMINATION OF PHENOLIC COMPOUNDS AND SUGAR
CONTENT, ANTIOXIDANT PROPERTIES AND INHIBITION
ACTIVITIES ON CLINICALLY IMPORTANT ENZYMES OF STEVIA
REBAUDIANA**

NİMET BALTAŞ¹, ZEHRA CAN²

ABSTRACT

The aim of the study was to evaluate some of the bioactive components and total phenolic compounds, flavonoids and tannins, as well as the sugar contents, and the urease and XO enzyme inhibition associated with *Stevia rebaudiana* from Turkey (Rize). The polyphenolic contents of methanol extracted samples were evaluated in three different ways: total phenolic contents, total flavonoid content and condensed tannin. The antioxidant activity was determined using ferric reducing antioxidant power and using the free radical scavenging activity of 2,2-diphenyl-1-picrylhydrazyl (DPPH) radicals and 2,2'-azinobis-(3-ethylbenzothiazoline-6-sulfonic acid) (ABTS) tests. Phenolic compounds were determined by high-performance liquid chromatography. Results of antioxidant activity gave a total phenolic content of 12.303-8.477 mg/g gallic acid equivalent, total flavonoid content of 2.378-1.518 mg/g quercetin equivalent and condense tannin of 3.435-0.713 mg/g catechin equivalent in leaf and flower extracts. Ferric reducing antioxidant power values of the *Stevia rebaudiana* leaf and flower were discovered to be 202.499-116.826 $\mu\text{M FeSO}_4\cdot 7\text{H}_2\text{O/g}$ respectively. The radical scavenging activity values of the DPPH and the ABTS tests ranged between 0.533-0.398 and 6.637-17.382 mg/mL respectively. The inhibitory effect of the *Stevia* leaf extract on xanthine oxidase and urease was also investigated and the concentrations that gave 50% inhibition of maximal activity were found to be 23.51 $\mu\text{g/mL}$ and 9.45 $\mu\text{g/mL}$ respectively. Glucose and fructose were determined to be the sugars in the *Stevia* leaf. *Stevia* leaf may be good alternative in terms of glucose and fructose.

KEYWORDS

Stevia rebaudiana, polyphenol, enzyme inhibition, sugar content, antioxidant

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Session 6-4 - Antioxidant Effects

Submission ID: 457

ANTIOXIDANT ACTIVITY OF REDDELLOMYCES PARVULOSPORUS WITH TOTAL PHENOLIC CONTENT

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ABSTRACT

Truffles are large family comprising of Tuber, Terfezia, Picoa and Tirmania genus, spread geographically in the arid and semiarid lands all over the world [1]. Truffle species are known as the world's most expensive mushroom and they have popularity because of their delicious taste and flavor [2]. Also, truffle species are rich in proteins, amino acids, fatty acids, carbohydrates, minerals, and fiber. In literature survey show that Truffles have various biologic properties such as antioxidant, antibacterial, antitumor, anti-aging, anti-inflammatory, anticancer, antifungal, immunomodulatory and antimutagenic activities [3]. Reddellomyces parvulosporus (G.W. Beaton & Malajczuk) Trappe, Castellano & Malajczuk is a Truffle species which is associated with Eucalyptus tree and growing under soil. The aim of this study was to investigate the antioxidant and total phenolic content of R. parvulosporus collected from Muđla. For this purpose, Dried Reddellomyces parvulosporus was extracted with hexane, chloroform, acetone, methanol and water at room condition, filtered and evaporated under vacuum. The obtained extracts were evaluated using five complementary test systems i.e. β -carotene-linoleic acid, DPPH free radical scavenging, ABTS radical scavenging, cupric reducing power (CUPRAC), metal chelating assays. In addition, total phenolic content of the extracts was determined as pyrocatechol equivalent. Among the extracts, the methanol extract showed the best DPPH• and ABTS•+ scavenging assays with percentage inhibition values of 74.44±0.13 and 89.15±0.71 at 800 μ g/mL concentrations, respectively. The chloroform extract exhibited the highest lipid peroxidation (93.78 ±0.34 %) and cupric reducing power (1.65±0.06 %) activities. In metal chelating assay, the water extract (72.34±0.16 %) indicated the best activity. The highest total phenolic content was calculated in the acetone extract followed by chloroform extract. This study was financed by The Scientific and Technological Research Council of Turkey (TUBITAK-114Z644). References [1] Trappe, J.M. and Sundberg, W.J. Mycologia 69 (1977), 433–437. [2] Wang, S. and Marcone, M.F. Food Res. Int. 44 (2011), 2567–2581. [3] Hamza, A., Zouari, N., Zouari, S., Jdir, H., Zaidi, S., Gtari, M. and Neffati, M. Arabian J. Chem. 9 (2016), 383-389.

KEYWORDS

Reddellomyces parvulosporus, Antioxidant activity, Total Phenolic content

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Session 6-4 - Antioxidant Effects

Submission ID: 1368

ACTIVE PHYTOCHEMICAL DETECTION AND EVALUATION CELL PROLIFERATIVE AND IN VITRO WOUND HEALING ACTIVITY OF THE METHANOL AND WATER EXTRACTS OF AESCULUS HIPPOCASTANUM

TÜLAY AŞKIN ÇELİK¹, ÖZLEM SULTAN ASLANTÜRK¹

ABSTRACT

Aesculus hippocastanum L. (Hippocastanaceae) is commonly known as Horse chestnut, and it is a major amenity tree native to Greece and the central Balkan peninsula and planted across Europe, and today widely distributed and cultivated throughout Europa. Traditionally, the fruits, leaves and bark of *A. hippocastanum* were used in medicinal and cosmetic preparations due to their beneficial effects such as high active oxygen-scavenging activity, cell protective effects in vitro associated with antiaging properties of their antioxidants activity. The research study aimed to extract *A. hippocastanum* fruits using with methanol and water view to determine the phytochemical constituents and determines in vitro effects of these extracts on proliferation and cell migration/wound healing of BJ Human foreskin fibroblast cells. The phytochemicals present in the fruits were determined using standard methods. Methanol and water extracts were subjected to standard phytochemical qualitative screening for the presence or absence of various primary or secondary metabolites. The methanol and water extracts of *A. hippocastanum* fruits have been screened on cell proliferation by using in vitro assay (WST-8 assay) and cell migration/wound healing by using Wound healing assay on BJ fibroblast cells with three different concentrations. Phytochemicals such as flavonoids, tannins, phenols, saponins and anthroquinones were detected except alkaloids that were absent in the methanol and water extracts of *A. hippocastanum* fruits. Result from the performed assay showed that methanol and water extracts of *A. hippocastanum* has not significant cytotoxic effect on BJ cells at any concentration from 10 to 30 µg/ml. Especially, 10 and 30 µg/ml methanol extract concentrations increased proliferation of BJ cells significantly compared with control (121.22 and 112.23 %, respectively). Methanol extracts was found more effective than water extracts on proliferation of BJ fibroblast cells. Crystalin, which was used as standard wound healing agent in experiment. Although crystalline significantly stimulated BJ fibroblast cells migration compared to control, methanol extract and water extract slightly stimulated BJ cell migration. 30 µg/ml methanol extract improved wound healing after 24 h only by approximately 3.81% and 30 µg/ml water extract improved only approximately 4.12 % in BJ fibroblast cells, compared with control group. 10 and 20 µg/ml methanol extract and 20µg/m l water extract delayed cell migration significantly compared with control ($p<0.05$). As a result, methanol and water extracts of *A. hippocastanum* inhibited and/or delayed cell migration and consequently, these extracts haven't wound healing effect on BJ fibroblast cells.

KEYWORDS

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Aesculus hippocastanum; BJ fibroblast cells.; phytochemical screening; proliferation; wound
healing

Session 6-4 - Antioxidant Effects

Submission ID: 1620

**INVESTIGATING OF PHYTOCHEMICALS, ANTIOXIDANT,
ANTIMICROBIAL AND PROLIFERATIVE PROPERTIES OF
DIFFERENT EXTRACTS OF THYMUS SPATHULIFOLIUS HAUSSKN.
AND VELEN. ENDEMIC MEDICINAL PLANT FROM SIVAS, TURKEY**

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ABSTRACT

Today, the use of plant-based natural compounds such as phenolic substances like flavonoids and phenolic acids in the prevention and treatment of disease is increasingly accepted. Thymus species have many pharmacological properties such as anticancer, antiphlogistic, antiviral, antibacterial, and antioxidant. Thymus, a member of Lamiaceae family, is largely used in Turkey as herbal tea, condiments and folk medicine. T.spathulifolius is a rare and endemic species, narrowly distributed in Sivas. In the present study, phytochemical screening, antioxidant, antimicrobial and proliferative activities were carry out. The ethanol (ethanol:su=80:20) extract and fractions prepared from aerial parts of T.spathulifolius were assessed for their phytochemical screening, total phenolic and flavonoid contents, antioxidant, antimicrobial and proliferative activities. Some common and standard tests were conducted for phytochemical analysis. Phytochemical screening tests revealed the presence of coumarins, triterpenes, flavonoids, tannins, volatile oils and carbohydrates. Total phenolic and flavonoid contents of the extracts varied between 98.52–320.29 mg GAE/g extract and 12.08-160.05 mg QE/g extract, respectively. In vitro antioxidant activity were examined with 2, 2-diphenyl-1-picrylhydrazyl (DPPH) and ABTS reducing power, FRAP, and iron chelating tests. The results of activity tests were compared with standards namely BHA and ascorbic acid. Antimicrobial activity was tested against two gram positive, two gram negative bacteria and one fungi. The fractions except for Water fraction was generally more active according to MIC concentration. The fractions were measured for proliferative activity on breast cancer cells and concentration dependent increment in proliferation caused by the extract and fractions were indicative of the presence of proliferative compounds in this extract. The present study demonstrates that herbs of Thymus spathulifolius extracts have significant antioxidant, antimicrobial and proliferative effects. These results indicate that the importance of further bioassay guided isolation of the active constituents from this plant and identify compounds which are responsible for the activity.

KEYWORDS

Thymus spathulifolius , Antioxidant activity, Antimicrobial activity, proliferative activity, phytochemical screening.

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Session 6-4 - Antioxidant Effects

Submission ID: 1621

**ANTI-INFLAMMATORY, ANTIOXIDANT, ANTI-TYROSINASE
ACTIVITIES OF PERSEA AMERICANA MILL.**

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ABSTRACT

The Lauraceae is a tropical or subtropical family and include with evergreen, leathery trees and shrubs. The family has 50 genera and about 2500-3000 species. *Persea americana* Mill. (the avocado) is a member of the Lauraceae with a one-seeded berry fruit. *P. americana* fruits contain steroids, monoterpenoids, sesquiterpenoids, triterpenoids, flavonoids, carotenoids and alkaloids. Bioactivities of *P. americana* has been reported such as antifungal, antiviral, antibakterial and antioxidant. Present study was designed to evaluate the polyphenolic composition as well as antioxidant, anti-inflammatory, anti-tyrosinase potentials of *Persea americana* of different parts (pericarp, pulp and seed) fruits. With different polarity solvents ABTS, DPPH free-radical scavenging activities and lipid peroxidation were analysed to determine antioxidant potentials of *Persea americana*. The anti-inflammatory activity was assessed by investigating membrane stabilizing effects of extracts against heat-induced human red blood cell hemolysis. The anti-tyrosinase activity of the extracts was evaluated by using mushroom tyrosinase as a convenient model system.

KEYWORDS

Anti-inflammatory, antioxidant, anti-tyrosinase, Total phenolic content, Persea americana.

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THE EFFECTS OF RHEUM RIBESAQUEOUS EXTRACT, RESVERATROL AND QUERCETINON HEMATOLOGICAL PARAMETERS AND ERYTHROCYTE FRAGILITY OF CARBONTETRACHLORIDE ADMINISTERED RATS

SEMA KAPTANOĐLU¹, OKAN ARIHAN¹, GÖKHAN OTO¹, SEVGI YÜKSEK¹

ABSTRACT

Aim:Rheum ribes L. is used for medicinal purpose in Turkey and especially in Van. It has various applications in traditional medicinal practices. Rheum ribes L., resveratrol and quercetin has antioxidant activity. This study aims to assess potential protective effect of Rheum ribes L. aqueous extract, resveratrol and quercetin on hematological parameters and erythrocyte fragility in carbontetrachloride (CCL4) administered rats. **Materials and Methods:** In this study 70 male Wistar-albino rats were divided into 10 groups (n=7 in each group). Groups and administrations were as follows: control (saline, i.p.), DMSO (0.3 ml, gastric gavage), olive oil (1ml/kg, i.p.), CCL4 (1ml/kg, i.p.), Rheum ribes L. aqueous extract (100 mg/kg, gastric gavage), resveratrol (100 mg/kg, gastric gavage), quercetin (100 mg/kg, gastric gavage), CCL4+ Rheum ribes L. aqueous extract (same as above), CCL4+ resveratrol (same as above), CCL4+ quercetin (same as above). Except CCL4 administrations were done for 7 days. CCL4 administration was done at 7th day and animals were sacrificed at 8th day. **Results:** Red blood cell count was reduced significantly in CCL4 and DMSO groups ($p<0.05$). Administration of quercetin, resveratrol and Rheum ribes L. extracts prevented this attenuation. Administration of CCL4 and DMSO also reduced hematocrit and hemoglobin levels but they didn't exceed statistical significance. Erythrocyte osmotic fragility was found lower in CCL4 group without statistical significance. **Discussion:** The results of this study showed that CCL4 posed a negative impact on red blood cell count of erythrocytes. Administration of Rheum ribes L.extract, quercetin and resveratrol prevented this impact of CCL4. This finding suggests a protective role of Rheum ribes L., resveratrol and quercetin in rats in this experimental setup.

KEYWORDS

Rheum ribes L., Resveratrol, Quercetin, CCL4, Erythrocyte fragility

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Session 6-5 - Experimental Animal Studies and Other Research

Submission ID: 378

THE EFFECT OF THYMOQUINONE APPLICATION TO ACUTE SWIMMING EXERCISE RATS ON NESFATIN-1 AND BETATROPHIN

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ABSTRACT

Objective: *Nigella sativa* has been used for medicinal and culinary purposes. Different parts of the plant are used to treat many disorders. Thymoquinone (TQ), an active component derived from the medial plant *Nigella sativa*, is a flavonoid used as a treatment and preventive in several conditions. Nesfatin-1 is primarily expressed in adipose tissue and its expression is significantly affected by nutritional status. It was shown that betatrophin, synthesized in adipose tissue and liver is related to obesity and diabetes. In this present study, the aim was to investigate the effects of thymoquinone application to acute swimming exercise rats on serum nesfatin-1 and betatrophin levels. Material and Method: In this study, 32 rats were divided in to four groups of 8 rats each: group 1 (control group; only corn oil applied), group 2 (25 mg/kg/7days TQ in corn oil applied), group 3 (25 mg/kg/7days TQ in corn oil acute exercise applied applied), group 4 (only corn oil and acute exercise applied). Swimming exercise was applied to group 3 and group 4 on the 2nd and 7th days of the experiment by letting them swim in a 80 x 60 x 60 cm pool until they were exhausted. At the end of the 7 days long experiment, rats' blood was taken from their hearts under ketamine anesthesia into biochemical tubes and serum was separated through centrifuge. Nesfatin-1 and betatrophin levels were studied on serum samples using the ELISA method. Result: It was determined in the study that group 1 (600.78 ± 19.63) nesfatin-1 level was significantly higher than group 2, group 3, and group 4 (513 ± 17.97 $p < 0,011$, 422.61 ± 21.15 $p < 0,001$ and 430.13 ± 34.25 $p < 0,001$, respectively). Furthermore, group 2 nesfatin level was significantly higher than group 3 ($p < 0,011$) and 4 ($p < 0,005$). Group 1 serum betatrophin level (8.53 ± 0.39) was significantly higher when compared to groups 2, 3, and 4 (7.28 ± 0.25 $p < 0,027$, 6.84 ± 0.32 $p < 0,016$ and 6.71 ± 0.18 $p < 0,001$, respectively). Conclusion: It was observed that TQ application caused a reduction in nesfatin-1 and betatrophin expressions and acute exercise could intensify this condition. As a result, it could be stated that thymoquinone and acute exercise have a repressive effect on adipose tissue. Keywords: Acute exercise, Betatrophin, Nesfatin-1, Rat, Thymoquinone

KEYWORDS

Acute exercise, Betatrophin, Nesfatin-1, Rat, Thymoquinone

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Session 6-5 - Experimental Animal Studies and Other Research

Submission ID: 400

EFFECTS OF EREMURUS SPECTABILIS BIEB. EXTRACTS ON SKIN DISEASE RELATED ENZYMES

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ABSTRACT

For many years, plants are consumed as a food by human beings as well as being used as an alternative treatment to modern medicine. Because synthetic drugs have the possible side effects and considerably high cost, searching the usage of various plants in the treatment of some ailments become more important. The genus *Eremurus*, one of the important genera of the Liliaceae, are widely distributed on dry and stony grazed hillsides in Central Asia and Middle East, including Afghanistan, Iran, Palestine, Iraq, Syria and Turkey. *Eremurus spectabilis* Bieb. is commonly used as a wild edible vegetable and/or its leaves and roots have been traditionally used in folk medicine to treat some ailments such as hemorrhoids, diabetes, pains of eyes, eczema, jaundice, fungal infection and antihypertensive in these regions. In recent years, collagenase, elastase and tyrosinase inhibition have gained great important in skin disease. In this study, the inhibition activities of ethyl alcohol and ethyl acetate extracts of *Eremurus spectabilis* Bieb. on the collagenase, elastase and tyrosinase enzymes were investigated. It was found that *Eremurus spectabilis* Bieb. exhibit anticollagenase, antielastase and antityrosinase activities increasing in a dose dependent manner. According to these results, *Eremurus spectabilis* Bieb. extracts may be considered as an important source of pharmaceutical and cosmetic area due to their collagenase, elastase and tyrosinase inhibition activities.

KEYWORDS

Eremurus spectabilis Bieb., Skin, Enzyme

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Session 6-5 - Experimental Animal Studies and Other Research

Submission ID: 502

BEHAVIORAL EFFECTS OF HYPERICUM UNIGLANDULOSUM ESSENTIAL OIL INHALATION ON RAT MODEL OF ALZHEIMER'S DISEASE

EMEL AKBABA¹, EYUP BAGCI¹

ABSTRACT

Hypericum (Hypericaceae) species have been attracting interest due to their sedative and relaxing actions. In the current study, rats exposed to Hypericum uniglandulosum essential oil (HYP) at the concentrations of 1.0%; and 3.0%, by inhalation during 15 minutes for 21 continuous days in plexyglass boxes were evaluated on scopolamine model of Alzheimer's disease. Memory-enhancing effects of HYP were tested by well-characterized tasks namely Y-maze test and radial-arm maze test. Furthermore, anxiolytic, and antidepressant effects of the inhaled essential oil were evaluated by elevated plus maze and forced-swimming tests, respectively. As expected, scopolamine administration decreased the spontaneous alternation percentage in Y-maze test, and working memory errors and reference memory errors in radial-arm maze test. HYP 1% and HYP 3% administration in scopolamine-induced rats caused statistically significant increases on the spontaneous alternation percentage in Y-maze task. Number of arm entries do not show any significant differences between scopolamine-alone treated and Sco+ HYP1% and Sco+HYP3% treated rats; thus, essential oil treatment does not change the motor activity in rats. In order to evaluate spatial memory performances further, radial-arm maze test was used. Scopolamine treatment showed an increase on the working memory errors, a type of short-term memory, and reference memory errors, a type of long-term memory, in this test. However, HYP inhalation significantly decreased these values. These results show the spatial memory-enhancing activities of the inhaled HYP in scopolamine-treated rats. In addition, anxiolytic and antidepressant-like effects of inhaled HYP were assessed. Diazepam, an anxiolytic drug, significantly increased the time spent in the open arms, number of open arm entries and number of crossings in the elevated plus maze task as compared to control rats. However, scopolamine-alone treated rats showed decreases in these parameters. HYP 1% and HYP3% inhalation increased these values in scopolamine -induced rats, therefore, acted as an anxiolytic drug. Forced-swimming test was used to evaluate antidepressant-like behavior of rats. As expected, tramadol, known antidepressant agent, increased the swimming time, and decreased the immobility time as compared to control group. Scopolamine-alone treated rats exhibited significant decrease in the swimming time, while increasing the immobility time. Both doses of HYP, but especially HYP1% significantly decreased the immobility time and increased the swimming time as compared to scopolamine-alone treated rats. In conclusion, Hypericum uniglandulosum essential oil inhalation was showed to induce memory-enhancing, anxiolytic and antidepressant-like effects on scopolamine-induced rats. These results suggest that Hypericum uniglandulosum essential oil could be used as an alternative or complementary therapy against neurological diseases related to Alzheimer's Disease.

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KEYWORDS

Hypericum uniglandulosum essential oil, scopolamine, memory, anxiety, depression

Session 6-5 - Experimental Animal Studies and Other Research

Submission ID: 712

THE EFFECT OF ELLAGIC ACID USAGE ON HEMATOLOGICAL PARAMETERS IN RATS

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ABSTRACT

Ellagic acid (EA) is a polyphenolic compound found in nature in a wide variety of fruits and nuts such as raspberries, pomegranate, walnuts and grapes. Ellagic acid is a molecule with a molecular weight of 302.197 g/mol, a density of 1.67 g/cm³ and a melting point of 350 °C. The aim of this study was to investigate the effects of acute and chronic administration of ellagic acid, which is known to be antimutagenic, anti-proliferative and anticancer effects on erythrocyte, leukocyte, thrombocyte, hemoglobin and hematocrit levels in rats. In this study 49 adult male Wistar rats were used. Rats were divided 7 different groups which were control group, acute groups as 10, 50 and 100 mg/kg doses of EA, and chronic groups as 10, 50 and 100 mg/kg doses of EA. All of the substances were administered intraperitoneally. While applying substances throughout 21 days to the chronic study group, to the acute study group was administered 2 hours before the blood samples were taken. Rats were anesthetized with 1.25 g/kg dose urethane intraperitoneally after the administration of EA. In rats, to determine the effects of acute and chronic administration of EA on erythrocyte, leukocyte, thrombocyte, hemoglobin and hematocrit levels, 2.5 ml blood samples were taken from each rat by cardiac puncture method. The levels of blood parameters were manually studied. Kruskal-Wallis test were used for statistical comparisons of groups in terms of erythrocyte, leukocyte, thrombocyte, hemoglobin and hematocrit values, and homogeneous subgroups multiple comparison method were used for determining different groups. The groups were compared in terms of erythrocyte, hematocrit and hemoglobin values, there was no statistically significant difference between the groups (p values = 0.538, p = 0.666 and p = 0.648, respectively). When the groups were compared in terms of leukocyte values, mean number of leukocytes in chronic groups was determined to be higher than the acute group (p < 0.05). While the groups were compared in terms of thrombocyte values, mean thrombocyte counts of chronic groups were statistically higher than the control and acute groups (p = 0,05). Consequently, in this study has been shown that chronic usage of ellagic acid increases leukocyte and platelet counts, but there is no effect on erythrocyte, hematocrit and hemoglobin values.

KEYWORDS

Ellagic acid, Erythrocyte, Leukocyte, Thrombocyte, Hematocrit

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Session 6-5 - Experimental Animal Studies and Other Research

Submission ID: 1000

GASTROPROTECTIVE EFFECTS OF DIFFERENT APPLE (*MALUS DOMESTICA* BORKH.) CULTIVARS EXTRACTS AGAINST ETHANOL-INDUCED GASTRIC ULCER IN RATS

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ABSTRACT

Aim: Gastric ulcer is one of the most common diseases in the world and is a global problem. Aggressive factors that cause gastric mucosal damage are hypochloric acid, mucosal hypoperfusion, free oxygen radicals, and ethanol. Among them, alcohol consumption is the biggest cause of gastric ulceration. Excessive alcohol consumption usually weakens gastric mucosal defence and induces gastric ulcer. The underlying mechanisms of ethanol-induced gastric ulcer have not been fully identified. Today, various herbal medicines are used in ulcer treatment. Apples contain high amounts of phenolic substances and antioxidants. Their consumption reduces the risk of many diseases. The aim of this study is to investigate gastroprotective effects of extracts of different apple cultivars on ethanol-induced gastric damage in rats. **Method:** 64 Wistar albino male rats were randomly divided into 8 groups (n=8/group). Group 1: Control; Group 2: Ethanol (5 ml/kg absolute ethanol was administered to the rats by oral gavage); Group 3: Ethanol + golden delicious [low dose (LD)]; Group 4: Ethanol + golden delicious [high dose (HD)]; Group 5: Ethanol + Granny Smith (LD); Group 6: Ethanol + Granny Smith (HD); Group 7: Ethanol + Starking delicious (LD); Group 8: Ethanol + Starking delicious (HD). Apples (LD=4 ml/kg and HD=8 ml/kg) were administered to the rats by oral gavage for 10 days. On 11th day, the rats were euthanized under anesthesia 90 minutes after ethanol application and then the gastric tissues were obtained. They were stored in 10% formalin until histological studies to be performed. **Findings:** In order to better understand the histopathological evaluation, histopathological damage was scored as - (none), + (little damage), ++ (medium damage) and +++ (severe damage) according to the regularity of the gastric mucosa, the depth of the mucosal injury, and the presence of hemorrhage and necrotic cells. Histopathological evaluation was performed based on the gastric mucosa. In Group 1, it was seen that the gastric pits were regular and the mucosal cells were in normal size and shape. In Group 2, it was clearly seen that the gastric pits were irregular. However, it was remarkable that mucosal cells were necrotized in both the superficial and deep layers of the mucosa. In Group 4, 6 and 8, the gastric pits were regular and histological appearance was generally similar to that of the control group. However, the necrotic cells were rarely seen on the mucosal surface. In Group 3, it was seen that the gastric pits were regular but there were the necrotic cells on the mucosal surface and the hemorrhagic areas in the middle portions of the mucosa. In Group 5, it was seen that the gastric pits were partially regular and there were the intensely hemorrhagic areas

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on the mucosal surface and the necrotic cells in the deep mucosal layer. In Group 7, it was seen that the gastric pits were regular and the mucosa was generally similar to that of the control group but there were occasionally the hemorrhagic areas and necrotic cells on the mucosal surface. In immunohistochemical evaluation, NF- κ B and caspase-3 immunopositivity was scored as - (none), + (little damage), ++ (medium damage) and +++ (severe damage). In immunohistochemical staining performed with NF- κ B and Caspase-3 antibody, Group 2 showed severe immunopositivity and Group 1, 3, 6, 7 and 8 showed mild immunopositivity. Group 4 and 5 did not show immunopositivity. Result: Histological results indicate that oral administration of apple extracts prior to ethanol-induced gastric ulcer reduces gastric mucosal injury. Apples may play an antiulcerative role by reducing NF- κ B and caspase-3 levels. This study was supported by Atatürk University SRP (Project no: 2016/051).

KEYWORDS

Gastric ulcer, Malus domestica Borkh., Gastroprotective effect, Histopathological evaluation

Session 7-1 - Functional Foods

Submission ID: 656

LC-MS/MS ANALYSES AND ANTIMICROBIAL ACTIVITY OF THREE ALLIUM SPECIES

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ABSTRACT

The genus *Allium* is one of the largest species of the Turkish Flora and belongs to the Alliaceae. Onion, garlic and leek varieties are member of this genus. *Allium shatakiense*, *Allium kharputense* and *Allium vineale* are perennial herbaceous plants which are subjected to this study. The aim of this study is to determine the chemical composition and antimicrobial activity of these three *Allium* species. The ethanol extracts of the aerial part and roots of the plants analyzed by LC-MS/MS. Malic acid was determined to be the the most abundant compound in the extracts. A highest amount of malic acid was detected in roots and aerial parts of *Allium vineale* extracts (3303 µg/g extract and 3358.81 µg/g extract, respectively). Vanillin, apigenin and p-coumaric acid are also found to be in chemical constituent of the plants with higher ratio than others. The antimicrobial activity of the extracts was evaluated by minimum inhibitory concentration (MIC) against Gram positive (*Streptococcus pyogenes* ATCC19615, *Staphylococcus aureus* ATCC 25923) and Gram negative (*Pseudomonas aeruginosa* ATCC 27853, *Escherichia coli* ATCC 25922) bacteria and yeast (*Candida albicans* ATCC10231). All the extracts exhibited antimicrobial activity in different power. The strongest antimicrobial activity was recorded by aerial parts of *A. shatakiense* against *S. aureus* (75±0.2 µg/ml MIC value) and *A. vineale* against *E. coli* (75±0.5 µg/ml MIC value). Generally, we have detected that the antimicrobial activity of aerial parts extracts better than the root extracts.

KEYWORDS

Allium shatakiense, *Allium kharputense*, *Allium vineale*, LC-MS/MS, antimicrobial activity

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Session 7-1 - Functional Foods

Submission ID: 1108

ASSESSMENT OF SHIKIMIC ACID WITH DIFFERENT POLARITY SOLVENTS FROM EXTERNAL RED CRUST OF PISTACIA VERA FRUITS BY HPLC

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ABSTRACT

The aim of the present work was to determine the extractable shikimic acid compounds in External Red Crust (ERC) of Pistacia vera Fruits. The ERC samples were obtained from Gaziantep province of Turkey. The samples were extracted by using conventional extraction method with different polarity solvent. For this purpose, water (Polarity indeks (PI) 9), methanol (PI, 6.6), ethanol (PI, 5.2), ethylacetate (PI, 4.3), dichloromethane (PI, 3.4) were preferred by varying polarities for solvent use. The concentration of shikimic acid in ERC were determined both $\mu\text{g/ml}$ and percent amount by using high performance liquid chromatography and ultraviolet detector (HPLC-UV). Consequently, it was found that the concentration of shikimic acid in the ERC were determined for water as %18 and 88 $\mu\text{g/ml}$, methanol as %11 and 64.78 $\mu\text{g/ml}$, ethanol as %17 and 61.77 $\mu\text{g/ml}$, ethylacetate as %13 and 48.23 $\mu\text{g/ml}$, and dichloromethane as 12,88 $\mu\text{g/ml}$, respectively. The results showed that the concentration yields of shikimic acid in the ERC showed differences because of changing polarity. When the polarity of solvents were decreased, concentration yields of shikimic acid also diminished.

KEYWORDS

External Red Crust of Pistacia vera Fruits, shikimic acid, extraction methods, different polarity solvent

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Session 7-1 - Functional Foods

Submission ID: 1504

A COMPREHENSIVE LC-MS/MS METHOD VALIDATION FOR DETERMINATION OF 19 PHYTOCHEMICALS IN SALVIA SPECIES

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ABSTRACT

In this study, a comprehensive LC-MS/MS method is developed for the qualitative and quantitative determination of fingerprint phytochemicals including 7 natural diterpenes, 2 phenolic acids and 10 flavonoids in *Salvia* species which are commonly consumed as tea in public and have industrial value. Additionally, the LC-MS/MS method validation study was also performed to prove the accuracy and precision of the method within the scope of phytochemical screening. The analytes were quantified by a triple quadrupole mass spectrometer working in Multiple Reaction Monitoring (MRM) mode. The fragmentation patterns of the studied compounds using ESI and Collision Induced Dissociation (CID) techniques are reported. The performance properties of the analytical method were determined by using standard solutions, spiked and non-spiked samples. Within the context of method validation, linearity, trueness (recovery), precision (repeatability and reproducibility, LOD and LOQ and expanded uncertainty (at 95% confidence level (k=2)) were determined. Afterwards, fingerprint phytochemical profile of chloroform and ethanol extracts of 6 *Salvia* species (*S. cerino-pruinosa* var. *cerino-pruinosa* [SCC], *S. cerino-pruinosa* var. *Elazigensis* [SCE], *S. pseudoeuphratica* [SP], *S. siirtica* [SS], *S. rosifolia* [SR], *Salvia* *Kurdica* [SK]) were determined using the developed LC-MS/MS method. According to the quantification results; ethanol extracts of the studied species were rich in terms of rosmarinic acid (45911.0 mg/kg extract in SCC), cosmosiin (15406.6 mg/kg extract in SCE), Luteolin-7-glucoside (9049.9mg/kg extract in SK), caffeic acid (11870.1 mg/kg extract in SCE), Astragalin (5112.7 mg/kg extract in SK), apigenin (3900.5 mg/kg extract in SK) and salvianolic acid B (4220.4 mg/kg extract in SCE). Chloroform extract of SP was rich in terms of 6,7-dehdoroyleanone (8215.6 mg/kg extract) and salvianolic acid A (984.2 mg/kg extract).

KEYWORDS

Salvia, fingerprint, phytochemical, LC-MS/MS, method validation

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Session 7-1 - Functional Foods

Submission ID: 1654

DEVELOPMENT AND APPLICATION OF A NEW CUPRAC ANTIOXIDANT DETERMINATION METHOD WITHOUT SPECTROPHOTOMETER

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ABSTRACT

A number of methods have been developed for the determination of the antioxidant capacity of standards having various antioxidant properties and natural and synthetic materials. One of these methods is CUPRAC (copper (II) reducing antioxidant capacity) method, which is becoming increasingly widespread. In recent times, to increase usability of antioxidant assays and to reduce costs of bioactivity studies different materials have been started to be used. For this purpose, in the current study, a modified CUPRAC antioxidant method (based on color measurement without using spectrophotometer) was developed for lower cost and applicability in all places. In new method, drops of reaction mixtures were applied onto a plate and the antioxidant activity value based on the color value was determined by using TLC plate and a free colour measurement program (Image J) was used to obtain a color value. In the study, to compare the two methods (spectrophotometric and dropping), some antioxidant standards (caffeic acid, quercetin, gallic acid, protocatechuic acid, rutin, catechin, ferulic acid, syringic acid, vanillin, benzoic acid and BHT) and plant extracts with different antioxidant activities in the literature (green tea, mint, rosemary, tilia, ginger, ligarba, h. perforatum, rosehip, turmeric, dudihindi, nigella, goji berry and mulberry) were used, and the activity values determined were compared. In the spectrophotometric and dropping methods the μM (C) TEAC value for each sample was calculated by using the standard Trolox graphic. The highest and lowest values of (C) TEAC in spectrophotometric and dropping measurement for the standards were determined in caffeic acid (0.663 and 0.516) and benzoic acid (0.014 and 0.015) respectively. However the highest values of plant extracts were determined in green tea extract (0.737 and 0.538) while the lowest values were measured in mulberry extract (0.021 and 0.037) respectively. In the study, it was determined that the compatibility between the two methods was high ($R^2=0,93$). This result indicate that the CUPRAC antioxidant method can be used safely in determining activities of both pure substances and mixtures without a spectrophotometer in all places. The new method is especially suitable for in situ applications. This work was supported by the Scientific Research Projects Unit of Gümüşhane University (15.F5119.02.01).

KEYWORDS

CUPRAC, TLC plate, Image J, Dropping, Antioxidant

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Session 7-1 - Functional Foods

Submission ID: 1677

BETALAINS IN FOOD INDUSTRY

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ABSTRACT

Betalains are plant derived natural pigments that are presently gaining popularity for use as natural colorants in the food industry. Betalains are vacuolar pigments composed and water-soluble of a nitrogenous core structure, betalamic acid. Betalains have betalamic acid as chromophore and they can be divided into two major structural groups, the red to red-violet betacyanins and the yellow betaxanthins. Betalamic acid condenses with imino compounds or amino acids/derivates. To date, about 78 betalains have been identified from plants of about 17 families under the order Caryophyllales. They are also found in some species of the fungal genera Amanita and Hygrocybe. Betalains were erroneously named in the past «nitrogenous anthocyanins». The search for natural pigments has been driven by growing evidence indicating that synthetic colorants can cause deleterious health effects. Betalains, in addition to anthocyanins, have been proposed as an alternative to address this need. Betalains are relatively more stable at pH 4-6 range and storage at 4 °C significantly reduces pigment loss. Therefore, betalain pigments can be used as colorant in frozen foods, low temperature and short-shelf life foods. Owing to poor stability, its usage is limited to low acidic short shelf-life, and frozen foods. The growing interest of consumers in the aesthetic, nutritional and safety aspects of food has increased the demand for natural pigments such as betalains to be used as alternative colorants in food products.

KEYWORDS

Betalains, natural pigments, Betacyanins, Betaxanthins, Betalamic Acid.

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Session 7-2 - Molecular Biology of Plants

Submission ID: 172

BOTANICAL ORIGIN AUTHENTICATION IN PROCESSED SPICES BY BARCODE - DNA GENOTYPING

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ABSTRACT

All culinary cultures involve recipes with spice seasonings that reflect the common aroma/taste preferences of the society. In addition to the distinctive taste and aroma, several herbal species have been used as remedies since ancient times due to their claimed health benefits. Indeed, scientific evidence supports health promoting properties of spices, raising interest in their consumption, especially in developed countries. As it is the case for other food products, spices are also vulnerable to fraud. Because they are mainly sold in the market in ground or finely fragmented forms, product appearance can be quite deceptive, making spices an attractive target for adulteration. As a result, ground weed seeds and nut shells, economically less valuable plant tissues and waste (such as pericarp tissue) from industrial processing of fruits are commonly used as adulterants in economically valuable spice products. Such fraudulent products not only violate consumer rights but also pose a health threat due to the probable toxicity or allergenicity of the undeclared plant material. Analytical methods that rely on compositional differences are extensively utilized for the authentication of processed plant-based food products. However, compositional traits are under the direct influence of genetic background and environmental conditions. Moreover, the chemical composition of an admixture does not necessarily deviate from that of a genuine product. Because genomic approaches allow the analysis of remnant DNA in a processed product, species composition can accurately be identified independent from seasonal differences and, cultivation, packaging and storage conditions. Barcode DNA sequencing is a commonly utilized food genomics approach for authenticity testing. However, while it works well with single-species products, barcode sequencing often fails with species admixtures. Nevertheless, universal plant barcodes that display interspecific length polymorphisms enable the accurate discrimination of all participant species in an admixture through the detection of amplified fragment length polymorphisms. A total of six commonly used spice species [Black pepper (*Piper nigrum*), rosemary (*Rosmarinus officinalis*), red hot pepper (*Capsicum annuum*), cumin (*Cuminum cyminum*), common thyme (*Thymus vulgaris*), mint (*Mentha piperita*)] were included in this work toward standardizing a DNA-barcode assay that detects adulteration in processed spice products. Olive (*Olea europaea*) and tomato (*Solanum lycopersicum*) samples were also included in analyses as olive leaves and tomato waste are common adulterants in processed thyme and red hot pepper products, respectively. The intergenic spacer between the *trnL* (UAA) 3' exon and *trnF* (GAA) genes in the plastid genome was used as the DNA barcode in order to discriminate the plant species. Barcode choice relies on the fact that the rate of insertions/deletions (indels) in the intergenic spacer is at least as high as that of substitutions, and the indels allow species discrimination even at the intragenetic level. The plastid barcode was amplified from DNA samples of processed spice products and corresponding reference tissue. PCR products were run on a high resolution capillary electrophoresis system in order to determine species-specific barcode profiles.

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While all eight plant species included in the study yielded distinctive barcode profiles, barcode sizes obtained from processed spices matched those of reference samples, indicating the reliability of the methodology. Moreover, the barcode assay proved successful in identifying the species composition when applied on in-house admixtures of different processed spices and admixtures with common adulterants. Our results displayed that it is feasible to detect undeclared plant material in processed spice samples based on plastid barcode DNA length polymorphisms. In practice, any deviation from the reference barcode profile, including barcode size differential and/or alien bands, reveal adulteration with an undeclared plant material in a spice sample. Furthermore, while optional since identification of an alien band in the barcode profile of a sample directly indicates adulteration, precise identity of the adulterant can simply be determined by coupling a sequencing protocol to barcode fragment size profiling.

KEYWORDS

Plastid genome, capillary electrophoresis, traceability

Session 7-2 - Molecular Biology of Plants

Submission ID: 244

DETERMINATION OF GENETIC DIVERSITY OF SAME THYME SPECIES

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ABSTRACT

Origanum (*Origanum spp*) is one of the most prominent endemic plants because of its commercial and medical importance. In our country, these species are reached to the market directly after being picked from the wild. However, since these collections are usually performed without care and knowledge, the species face the danger of becoming extinct. Therefore, in order to avoid their disappearance from the nature, local thyme species need to be compiled and be taken under the protection. For this purpose, in our study, we determined genetic characteristics of native gene sources of the plant through detecting the genetic variations between 28 different thyme genotypes collected from Eastern Mediterranean Region by scanning them with 15 SRAP and 10 ISSR primers. A total of 138 bands were obtained at the end of the study. 131 of these bands were found to be polymorphic bands. In addition to the fact that all markers used in the study showed a polymorphism, thereby presenting the mean polymorphic value as 94.93%, the most allele-producing primer combination was determined as EM17-ME11 with 14 bands, whose average allele number was 4.9. The polymorphism information content (PIC) ranged from 0.04 to 0.99, with a mean PIC value of 0.53. The highest genetic variation among all genotypes (72%) was observed between the species of *Origanum vulgare* ssp. *hirtum* and *O. Majorana* whereas the least genetic variation (13%) was detected between *Origanum syriacum* genotypes. The average genetic difference value of the thyme genotypes was found to be 48%. Moreover, it has been demonstrated that the SRAP and ISSR marker techniques can be used safely in the genetic characterization of the materials collected from nature.

KEYWORDS

Thyme, Origanum spp., SRAP, ISSR, Marker, Genetic diversity

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Session 7-2 - Molecular Biology of Plants

Submission ID: 272

THE MEDICINAL PLANT OF GENUS PARONYCHIA AND THE KARYOTYPE ANALYSIS OF P. ADALIA

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ABSTRACT

The genus *Paronychia* Miller is placed in the family Caryophyllaceae. It contains approximately 110 species of annual or perennial found all over the world except Southern Africa, Southeast Asia. Genus *Paronychia* is known as Algerian tea in the world. In our country, the genus commonly known as et yaran, kepek otu and dolama otu is used as medicinal tea because of relieving inflammation between the hands and toes, aphrodisiac, diuretic and blood purifier. Antimicrobial and antioxidant properties of the genus are known. The chromosome number is $2n = 36$ in many species of *Paronychia*. But there are various chromosome numbers as $2n = 10, 14, 16, 18$ and 28 . In this study, the chromosome number of *P. adalia* Chaudhri was reported for the first time. The chromosome number and karyotype formula are $2n = 2x = 36 = 34m + 2sm$. Total haploid length, centromeric index and karyotype asymmetry were calculated with detailed chromosomal measurements.

KEYWORDS

Paronychia, medicinal plant, chromosome

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Session 7-2 - Molecular Biology of Plants

Submission ID: 1015

THE EFFECT OF GRAPEVINE (VITIS VINIFERA) TENDRIL EXTRACT ON THE PREVENTION OF OXIDATIVE DNA DAMAGE

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ABSTRACT

Reactive oxygen species (ROS), which are involved in several biological functions and alterations, may damage cellular constituents. The result of increase of reactive oxygen species is oxidative stress. The oxidative stress is considered as one of the significant causes of DNA damage which in turn contributes to cell death through a series of intermediate processes such as cancer formation, mutation, and aging. Natural sources such as plant and fruit products have provided us with interesting substances of antioxidant activity that could be recruited in protecting the genetic materials of the cells. Grapevine (*Vitis vinifera*) is a perennial plant that uses tendrils to climb and distribute its shoots over a support; tendrils arise from lateral meristems which are growth regions with proliferating cells. Inflorescence may arise from the same meristems instead of tendrils if a flowering stimulation occurs and according to this the lateral meristem can develop either as a tendril or inflorescence organ. *Vitis vinifera* fruit is mostly used for nutrition purposes, while seeds and leaves have applications in herbal medicine and food supplements. Tendrils are negligible parts of the *Vitis vinifera*, however it is informally reported that tendrils are consumed by eating in some traditions. In this study, antioxidant abilities of two flavonoids, rutin and isoquercitrin as standards and as found in the tendrils of *Vitis vinifera* (var. alphonse) were examined and investigated for the prevention of oxidation of calf thymus DNA in Fenton reaction medium. A total phenolic content of 11.39 ± 0.30 mg Gallic Acid Equivalent (GAE)/g of the plant's fresh weight (FW) by Folin-Ciocalteu and 8.17 ± 0.49 mg Trolox Equivalent (TE)/g FW by CHROMAC assays were reported. Two flavonoid glycosides rutin and isoquercitrin in addition to chlorogenic acid were found in the extract by the HPLC–DAD system analysis. DNA base oxidation products were analyzed using GC–MS/MS by performing separation and quantitative determination. The experiments proved a significant decrease in the concentration of the DNA oxidation products when the extract was used as a protectant against the oxidative stress and by rutin and isoquercitrin standards, apparently with different antioxidant powers. It is believed by conclusion that the extract of *V. vinifera*'s (var. alphonse) tendrils has a good antioxidant activity; hence it is recommended to be used as a part of the daily healthy food list if possible. On the other hand, since the results proved promising benefits of the tendrils, we recommend further studies on the plant part regarding food industries.

KEYWORDS

Grapevine (Vitis Vinifera) tendril, antioxidant, rutin, isoquercitrin, oxidative DNA damage

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Session 7-2 - Molecular Biology of Plants

Submission ID: 1120

EFFECTS ON ANTIBACTERIAL AND DNA PROTECTION OF DYESTUFFS OBTAINED FROM HAZELNUT NUT HUSK

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ABSTRACT

Hazelnut is of great important in agricultural export of our country. It has an annual export of one and a half billion dollars. Every new product that will increase the value of the nut is very important. For this purpose we have made a natural dye substance from hazelnut nuthusk. In recent years, natural dye materials used especially in textile materials are important and those of plant origin are preferred. For this purpose, various activities have been carried out showing the suitability for industrial use of the dye extracts obtained at different temperatures in different solvents than the collected, dried and grinded hazelnut nuthusk samples. Within the scope of our study, the effect of extracts obtained by 50 °C and reflux for 4 hours in acetone, water, ethanol and acetic acid solvent from the hazelnut nut husk of the Düzce region was evaluated on antibacterial and DNA protection. From the extracts obtained, antibacterial activity tests were analyzed by disk diffusion method using 3 different standard bacterial strains. It has been determined that some of the samples show antibacterial properties. It has been determined that the dyestuffs obtained from the hazelnut nuthusk have potential for protection against the effects of UV-C and H₂O₂ on DNA.

KEYWORDS

UV-C, reflux, H₂O₂, DNA

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Session 7-2 - Molecular Biology of Plants

Submission ID: 1556

MOLECULAR AND CHEMICAL CHARACTERIZATION OF SOME LOCAL AND HYBRIDE MATERIAL OF ORIGANUM SP. IN TURKEY

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ABSTRACT

Turkey is a gene center with an endemism rate of 44.2% Lamiace and 65.2% Origanum sp. That considered to be one of the largest oregano exporter in the World and supply 80% of the World demand alone. By means of this research, a number of local and hybride genotypes of Oregano sp. were evaluated to determine the similarities of the genotypes from the plantation established in Haymana İkizce Research and Experimental Farm in 2015 and 2016 growing seasons. Essential oil extraction was performed by hydro distillation. Identification of the essential oil components was made by GC and GC/MS. Essential oil contents varied between 2-4.5% among the tested oregano genotypes. Carvacrol, γ -terpinene and p-cymene were the major essential oil components. Eighty-one universal ISSR primers achieved by University of British Columbia were used to choose the primers which gave polymorphic bands. According to the polymorphic pattern, seven primers were chosen out of eighty-one. The band patterns of the population were scored as present=1 and absent=0 regarding the fragment sizes. Then, the scores were interpreted for clustering by using NTSYS-PC statistical program. A genetic relationship among the genotypes was established by means of the cluster diagram. Significant differences in genetic diversity were found among oregano genotypes. Such differences in genetic diversity of genotypes can be used in breeding programs and crossing works for oregano improvement.

KEYWORDS

Origanum vulgare var. hirtum, hybride Origanum sp., genetic characterization, essential oil components, carvacrol

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Session 7-3 - Education and Legislation

Submission ID: 174

THE PLACE AND IMPORTANCE OF MEDICINAL AND AROMATIC PLANTS IN PHARMACY FACULTIES' CURRICULA

MIRAY ARSLAN¹, NILAY TARHAN¹, SEVGI ŞAR¹

ABSTRACT

From the past to today, mankind frequently benefits from plants in the treatment of diseases. Throughout history plants, which are widely consumed due to their properties such as flavor, appetite, odor and flavor besides treatment, have an important place in the pharmaceutical, cosmetic and food industries. Today, demand for medicinal and aromatic plants used to maintain health and prevent or treat diseases is increasing day by day. In this increasing demand, it is directly related to the pharmacy profession to produce medicinal and aromatic plants in the desired quantity and quality, to make the analysis, to storage and use them correctly at the appropriate doses. In this context, it is also important to include these subjects in pharmacy faculties' curricula. Many different disciplines from analytical chemistry to botanic, from pharmaceutical technology to pharmacy management are considered as a whole in pharmacy education, which has a multidisciplinary structure. A global trend towards natural herbal based products from synthetic-based products increases the importance of medical and aromatic plants. In this respect, these topics have started to be given more place in pharmacy education. When the course contents of pharmacy faculties are examined, it is observed that many elective courses about the profession as well as compulsory courses such as pharmaceutical botanic and pharmacognosy are related to medicinal and aromatic plants. Within the scope of this study, curriculums and course contents of 28 pharmacy faculties in Turkey were examined and courses on medicinal and aromatic plants were determined. In general, it has been determined that the courses related to the subject are in the elective course status and these courses are especially included in the fifth class curriculum. In the study, by taking the distribution of the courses on medicinal and aromatic plants in the curriculums of pharmacy faculties into consideration, various aspects of the subject have been discussed.

KEYWORDS

Pharmacy, Pharmacy education, Pharmacy curriculum, medicinal and aromatic plants

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Session 7-3 - Education and Legislation

Submission ID: 446

DIRECT MARKETING STRATEGIES IN MEDICAL AND AROMATIC PLANTS

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ABSTRACT

Medical and aromatic plants have a serious commitment in the forestry economy to create a market for employment and other industries, with a high added value to supply raw materials to the pharmaceutical, chemical, food, additives and cosmetic sectors that make up their sub sectors. These plants, which are usually collected from nature, are the source of products that consumers make special efforts to buy because of their unique qualities. This has led to an increase in direct marketing initiatives to provide price advantage. It is possible to observe important applications in direct marketing of medicinal and aromatic plants, especially in Europe and USA. On the other hand, it seems that direct marketing strategies for medical and aromatic plants in Turkey have not be effectively used. In this study, it is aimed to discuss some suggestions in terms of examining the direct marketing strategies widely used in medical and aromatic plants in the world with samples and directing direct marketing initiatives in Turkey.

KEYWORDS

Medicinal and aromatic plants, forest products, direct marketing

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Session 7-3 - Education and Legislation

Submission ID: 1787

PHYTOTHERAPY FROM PAST TO PRESENT

SEMRA KOYUNOđLU¹, ASLI CAN AđCA¹, ALI ALKAN¹, HAKKI GÜRSÖZ¹

ABSTRACT

Phytotherapy From Past to Present Semra Koyunođlu, Aslı Can Ađca, Ali Alkan, Hakkı Gürsöz Turkish Medicines and Medical Devices Agency (TMMDA), Vice Presidency of Medicines and Pharmacy, Department of Herbal Supportive and Advanced Therapy Medicines Söđütözü, Ankara-TURKEY. semra.koyunoglu@titck.gov.tr The history of medical use of plants is as ancient as human history in the last 5000 years. The pieces left by many civilized people indicate that plants were used in the treatment of different diseases. Today it is estimated that the number of plant species in the earth range from 250,000 to 500,000. According to World Health Organization (WHO) records, most of the world's population (80-70%) have been preferred traditional medicine for treatment and prevention and also 21000 plant species could be used for their therapeutic properties. In order to safeguard the public health, demonstrating safety, efficacy and quality of the herbal products should be designed by scientific approach and besides reports on side effects, interaction with drugs and posology should be evaluated. Herbal products are classified differently by national authorities. Since there is no global harmonized regulation, many herbal raw materials which have therapeutic effects, are supplied to the market as food supplement. At present, in order to reach the suitable product on the market, the classification of the products on the basis of unit formula and indication is the main topic of authorities. Key words: Phytotherapy, herbal product-medicines interactions References: 1- Ebers Papirüsleri, 2-Materia Medica, 3- Kanun Fit-Tıb, 4-Baytarname, 5-Seyahatname,6-Flora Orientalis,7-Flora of Turkey,8- Baytop, 1990.,9-Özhatay ve ark.,1997.,10- Başer., 1998.,11- Craker and et al., 2005.,12-Khan and et al., 2005.,13-Mised,14-Fitomed ve 15-Sađlık ve İnsan

KEYWORDS

Phytotherapy, herbal product-medicines interactions

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Session 7-3 - Education and Legislation

Submission ID: 1808

LEGAL STATUS OF TREATMENT WITH HERBAL MEDICINES

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ABSTRACT

Law, individual, society and state movements, relations with each other; Is a normative science that is duly issued by the competent organs, is supported by public power, shows how the public should behave in general or not, and regulates all the possibilities for it by the norms in force. Law observes common good and common interest in individual-society-state relations. Legislation is the whole of the existing rules of law. The Turkish legislation system consists of constitution, law, statute, regulation, directive, circular and communiqué from top to bottom. Phytotherapy means treatment with plants. The term was originally used by the French physician Henri Lenclerc (1870-1953) in a medical journal La Presse Medical. To treat diseases, mankind has been benefiting from the plants since ancient times and has also received the countermeasures. Today phytotherapy Pharmacognosy of pharmacy is covered by main science. The biggest difference between phytotherapy applications in the past and today is that the useful parts of plants are now used for therapeutic purposes, not entirely. For example, in order to make use of the essential oil of a plant, once its tea is made and drunk, it is now used alone by extracting essential oil from that plant. This also keeps the patient away from the parts of the plant that may be other useless but side effects. Today, phytotherapy is the most developed country in Germany. Method: The purpose of this declaration is to evaluate the legal status of herbal treatment in our country in the context of legislation. Findings: The legal regulations of herbal products in our country are carried out by the Ministry of Food and Livestock. Legal applications for herbal medicines differ from country to country. For example, in the European Union (EU) countries, plant products are regarded as herbal medicines and are sold as prescription or non-prescription medicines in pharmacies. In the European Union member countries, it is necessary to comply with the pharmacoponografographies of herbal drug or drug preparations which are included in herbal remedies. The circulation of pharmaceutical products in the EU countries is monitored by various legal regulations. Member States of the European Union are based on the European Pharmacopoeia (EP) in their work towards plant products; When necessary, ESCOP and WHO Monographs. The first legislation on treatment in our country is "Regulation on Traditional and Complementary Medical Practices" issued on the Official Gazette on 27 October 2014. It is stated in this regulation that a certified doctor or dentist may apply such treatment. In the same regulation, it is stated that the issues related to licensing and sales of medicinal and herbal medicines to be used in the practice of phytotherapy will be regulated by Turkish Medicines and Medical Devices Authority. The registration procedures for traditional herbal medicinal products in this institution are made according to the provisions of "Regulation Regarding Regulation of Traditional Herbal Medicinal Products" dated 06.10.2010 and numbered 27721. According to a survey, 44 phytomedicines licensed by the Ministry of Health were identified in Turkish pharmacies in 2012. On the other hand, there are no general provisions in the Turkish Criminal Code regarding

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herbal product and / or herbal drug exploitation, but there are general criminal sanctions. For example, in the Turkish Criminal Code numbered 5237, the crime of making or selling drugs in a way that puts the lives and health of the people at risk is organized in the third section titled "Crimes Against Toplumlar" in the third section titled "Crimes Against Public Health". According to this provision; "(1) Up to five years in prison and forensic punishment shall be granted to any person who produces or sells medicines in such a way as to endanger the lives and health of persons. / (2) If this crime is committed by a physician or pharmacist or within the scope of a profession and art performed on the basis of official script, the punishment to be imposed shall be increased by one third ". Conclusions: Treatment of herbal products or herbal medicines is a new issue in our country. There are not enough certified physicians and licensed products of the Ministry of Health. There is no provision in the Turkish Penal Code concerning the abuse of this matter. With the increase in the number of certified physicians and licensed medicines in the process, it is expected that the relevant legislation will be developed.

KEYWORDS

Herbal product, Herbal medicine, Certified Physician, Certified Dental Chair, Phytotherapy

Session 7-3 - Education and Legislation

Submission ID: 1867

EVALUATION OF ACTIVITIES RELATED TO MEDICINAL AROMATIC PLANTS ABOUT CRIMINAL LAW

MEHMET AYKANAT¹, BEKİR BOĐA¹

ABSTRACT

Activities related to medicinal aromatic plants are concerned with multitude of areas of law. There isn't enough regulations in Turkish legal system. For this reason, general provisions are used in legal evaluations. There isn't direct regulations about medicinal aromatic plants in Turkish criminal law. But some activities related to criminal law. First activity is cultivation of some plants. The cultivation of some plants is limited. Penal sanctions are envisaged for those who don't comply with this limitation. Another prohibition is related to plant smuggling which is called bio-smuggling. The use of plants for therapeutic purposes also goes into the topic of medical criminal law. Using people as a test subject in research prohibited. This prohibition also applies to research on plants.

KEYWORDS

criminal responsibility, medical criminal law, bio-smuggling

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Session 7-3 - Education and Legislation

Submission ID: 1881

THE JUDICIAL REVIEW OF PRODUCTION, IMPORT, EXPORT AND MARKETING OF MEDICINAL AND AROMATIC PLANTS

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ABSTRACT

There are few legal regulations directly related to medicinal aromatic plants. For this reason, legal gaps can be mentioned about issues such as production, import, export and marketing. The legal framework for medicinal aromatic plants has been regulated by by-laws. Nearly all of these by-laws have been legislated by the Ministry of Food, Agriculture and Livestock, the Ministry of Health and the Ministry of Forestry and Water Affairs. Circulars are being prepared for issues that need to be updated. General regulations concerning the subject may also apply. There are also regulations about a single plant, like hemp. The legislation on the issue is disorganized.

KEYWORDS

Medicinal Aromatic Plant, Legislation, Production, Marketing

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Session 7-4 - Distribution of Medicinal and Aromatic Plants

Submission ID: 175

AN ENDEMIC MEDICAL PLANT OF TAURUS MOUNTAINS, FRITILLARIA, IS IT POSSIBLE MAKING CONTRIBUTION TO LOCAL ECONOMY?

FULYA OZTAS¹, HAYDAR HAYDAR OZTAS²

ABSTRACT

Turkey shows a notable diversity of plants, which is reflected in its richness of plant life. In this study, a brief property of *Fritillaria* sp. Taurus Mountains (Mostly Ermenek Region) Southern Anatolia (Turkey) is presented. The Turkish flora includes about 3000 endemic plants and their 1000 are used as medicine and spice. These plants are very important from both economic and environmental view point that some of them are used as flavoring agents, spices, perfumes, cosmetics, and pharmaceutical and biological agents. One of these plant is *Fritillaria* sp. which wildy grows in highland areas of Taşeli area (Ermenek, Sarıveliler, Başyayla and Taşkent). It is well known that the traditional Chinese medieval some sort of *Fritillaria* sp. the most important herbs that relieve cough and reduce sputum. The cultivation is *Fritillaria* sp. is expensive and difficult because their growth pretty. They used to grows slowly and needs a long production cycle. But *Fritillaria* sp. extracts are used in traditional Chinese medicine under the name chuan bei mu, and in Latin, *bulbus fritillariae cirrhosae*. Especially *F. cirrhosa* and *F. verticillata* are used in cough remedies. It reduces airway inflammation by suppressing cytokines, histamines, and other compounds of inflammatory response. Also, the *Fritillaria* sp. bulbs are known for their remarkable efficacy on moistening lung to arrest cough. So far in practice there are total 5 different *Fritillaria* species that in use for remedies. The *Fritillaria* sp. contains chemically fritimine, sipeimine, songbeisine, sonbeinine, sucrose, stearicacid, palmiticacid, and β -sitosterol, dela-vlne, delavinone, chuanbeinone, delafrine, delafrinone, peimisine, imperialine, and fritiminine. In this study, in the sight of the known properties of *Fritillaria* sp., it is going to discuss "how the *Fritillaria* sp. could use for economically and medically proposes, in order to supply more income to local people?" The local people mostly not know about their endemic *Fritillaria* sp., and their usage for medical and other aims.

KEYWORDS

Fritillaria sp., endemic, Ermenek, medical usage, economic

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Session 7-4 - Distribution of Medicinal and Aromatic Plants

Submission ID: 386

CONSUMPTION AND USAGE OBJECTIVES OF MEDICINAL AND AROMATIC PLANTS

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ABSTRACT

Medicinal and aromatic plants are used in many areas such as food, health, perfumery, paint, cosmetics and body care. While the usage areas of medicinal and aromatic plants are expanding day by day, the cultivation, harvesting, storage, marketing and consumption of these plants are made unconsciously. In addition, consumers do not pay attention when buying medicinal and aromatic plants, to the packaging of these products and the way they are kept until the expiration date. In this study, it was aimed to determine the factors which are effective in the consumption and use of medicinal and aromatic plants in Kayseri province and the primary data were obtained by face-to-face survey with 384 consumers determined by proportional sampling method. Different statistical analysis techniques were used for the purposes of studying the data obtained from the surveys. In the study, descriptive statistics are expressed in terms of averages, frequency and percentage values. The t-test is used to determine whether there is a difference between the two sample groups in terms of averages. In this study, the t-test was applied to the comparison of medicinal and aromatic plants' packaging preferences and ages of individuals and consumption expenditures. As a result of the analyzes made, aromatic plants used for consumption purposes in the region; 82.2% red pepper, 81.5% black pepper, 49.6% mint and medicinal plants; 64.2% peppermint, 61.4% sage, 51.1% lime. It has been determined that most of the medicinal and aromatic plants in the region are consumed in the winter months. The t-test was applied between the ages of the people and the type of packaging they preferred to provide medicinal and aromatic plants. As a result of the test made, the ages of the people and packaging preferences were statistically significant ($p < 0,05$) and as the average age of the people increased, the preferences of the glass jars and paper bag packaging types which are expressed as healthy are increasing. As a result of the t-test between the monthly food expenditures of the people and the package type preferences, as the monthly food expenditures increase, the healthy packaging type preference also increases ($p < 0,05$). Consumers while purchasing spices pay more attention to variables such as product cleanliness, smell, quality and reliability.

KEYWORDS

medicinal and aromatic plant, t-test, consumption, Kayseri.

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Session 7-4 - Distribution of Medicinal and Aromatic Plants

Submission ID: 750

**THE EFFECT OF PLANT AGE ON GERMINATION IN STEVIA
(STEVIA REBAUDIANA BERT.) PLANT**

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ABSTRACT

The aim of this study was to determine germination performance of stevia seeds. In study, two different seeds groups (one was harvested from one-year plants and the other one was harvested from two-year plants) were used as material. The experiment was conducted as a randomized complete design method with five replicates. For each treatment 100 seeds were counted and placed into petri dishes. After that, petri dishes were placed in an incubator with the temperature of 24oC and light. According to results; while first germination (3-4 days) was being observed in seeds harvested from two-year plants. On the other hand, the highest germination rate (45.6%) was recorded in two-year plant's seeds. Results of this study show that plant age is effective on the germination abilities of stevia seeds.

KEYWORDS

Stevia, germination rate, germination time

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Session 7-4 - Distribution of Medicinal and Aromatic Plants

Submission ID: 1411

MEDICINAL PLANT POTENTIAL OF KÜTAHYA PROVINCE

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ABSTRACT

This study carried out between 2014 and 2016 was done to identify the medicinal plants spreading at flora of Kütahya and were revealed species that is to the medicinal value. In the determination of medicinal plants; both Commission E, Pharmacopoeia and various monographs were used, as well as species used local people with field studies were identified. As a result of the research; 137 genera and 161 taxa belonging to 56 families could be seen included in the potential medicinal plant class. The families to be the highest number of taxa are; Lamiaceae (22 taxa), Asteraceae (20 taxa) and Rosaceae (16 taxa), respectively. According to the results obtained in the study, it were determined that the plants were mostly used for gastro-intestinale, diuretic and influenza. As using, It has been observed that infusion and decoction methods are the most used method. With this study, plants that have to medical values and spreading in Kütahya were identified. These plants seen contributed to the pharmaceutical sector by making a significant contribution to the country's economy.

KEYWORDS

Medicinal plants, Flora, Medicine, Kütahya.

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Session 7-4 - Distribution of Medicinal and Aromatic Plants

Submission ID: 1496

CONSUMED NATURAL PLANTS FOR PEOPLE TO SURVIVE IN SEYDİŞEHİR AND SURROUNDING VILLAGES DURING WORLD WAR II

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ABSTRACT

The aim of the study is to determine the natural plants used as a nutrient for people who lived in Seydisehir and its villages following the days of difficulties and famine brought by the World War II. The research was conducted in the center of Seydişehir and its 26 villages in 2016. In the study, face to face interviews were made with 103 people living in the studying area. As a result of the study, 23 natural plants which grow in Seydişehir have been obtained. Especially the use of the different parts of the three types belonging to the genus *Quercus* L. is very common. The flour obtained from the fruits of the species called "Fink" (*Vicia sativa* L.) and *Pyrus* is the most important nutrient survivor for local people.

KEYWORDS

Famine, Seydisehir, Natural plant

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Session 7-4 - Distribution of Medicinal and Aromatic Plants

Submission ID: 1864

**CHARACTERISATION OF ECONOMICALLY IMPORTANT
MEDICINAL AND AROMATIC PLANTS BELONGING TO THE
LAMIACEAE FAMILY DISTRIBUTED IN THE RIZE PROVINCE,
TURKEY**

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ABSTRACT

Regarding biodiversity the Black Sea region belongs to one of the richest regions of Turkey. Totally 2239 species are present in the East Black Sea region, 514 of them are endemic and the endemism ratio is ca. 23 %. More than half of the plants distributed at the East Black Sea region are present in the Rize province. 70 % of the plants are of medicinal and aromatic value. 4 *Mentha* species, 3 *Origanum* species, 3 *Thymus* species, 2 *Salvia* species, 2 *Stachys* species and 1 *Calamintha* species were collected from 19 different localities in Rize during 2015. A field nursery was established using collected material. Traits like plant height, number of branches, stem diameter, leaf area, dry drog weight, fresh drog weight, dry drog yield, fresh drog yield, seed weight and essential oil yield were determined. Principal Component Analysis was performed to assess the diversity regarding with the investigation of characters. Based on obtained data large diversity could be determined. Collected materials can be used as genetic resources for further investigations.

KEYWORDS

Lamiaceae, medicinal and aromatic plants, characterization

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TRANSCRIPTOMICS AND METABOLOMICS ANALYSIS OF TWO MEDICINALLY IMPORTANT PLANTS BRASSICA NIGRA AND BRASSICA JUNCEA

ABDÜLREZZAK MEMON¹

ABSTRACT

Several Brassica species are not only being used as a vegetable, oil or herbal spices but many of them are used as medicinal plants for treatment of rheumatism, neuralgia and spasms. Hot water poured on bruised seeds makes a stimulant foot bath, good for colds and headaches. Brassica nigra and Brassica juncea are two well-known species in Brassicaceae which are not only being used for oil production but also reported to be good medicinal and heavy metal accumulator plants. In the last decade, the tremendous developments in molecular biology and the success of genomics have highly encouraged studies in molecular genetics, mainly transcriptomics, for the identification of the functional genes implied in metal tolerance in plants. These studies have already succeeded in the identification of hundreds of genes that largely belong to the metal-homeostasis network. In this presentation I will describe recent advances in understanding the genetic and molecular basis of the metal induced gene expression in Brassica species. The heavy metal accumulating species Brassica nigra has received attention due to its possible use for phytoremediation in heavy metal-polluted soils. Our data showed that ~ 20000 µg Cu g⁻¹ DW was accumulated in the shoots of B. nigra when grown at 500 µM Cu. The expression γ-ECs and PCS was also increased 11 and 6 fold respectively in shoots when plants were subjected to high Cu concentration. Microarray analysis showed several hundred fold up regulation of metal related genes including the genes involved in glutathione pathway, metal ATPase and ABC transporters in B. nigra when treated with 500 µM Cu. We also carried out metabolomic studies with metal treated accumulator and non- accumulator ecotypes of B. nigra by using HPLC-MS-MS in order to identify metabolomic pattern in accumulator and non-accumulator ecotypes. Our aim is to identify the metabolites which are upregulated and/or down regulated with Cu treatment in both ecotypes. In this communication I will discuss the strategies for exploring these immense and valuable genetic and biological resources for phytoremediation of heavy metal pollutants from the environment and the use of these plants for medicinal purpose.

KEYWORDS

*Medicinal plants, metal accumulators, transcriptomics, metabolomics, phytochelatin*s

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Session 7-5 - Experimental Animal Studies and Other Research

Submission ID: 353

SPECTROPHOTOMETRIC INVESTIGATION OF INTERACTIONS OF SOME PLANT-DERIVED NATURAL FLAVONS WITH HUMAN SERUM ALBUMIN PROTEIN

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ABSTRACT

Plant-derived natural bioactive compounds and their semisynthetic derivatives are the most consistent sources to be benefit for the treatment of diseases. It is important to quantitatively determine the interaction of these natural and semi-synthetic molecules with the human serum albumin protein (HSA), which is present in many tissues, organs, blood plasma and body fluids of the human body and which is actively involved in the transport of drug substances, and it is important that these processes be determined before in vivo clinical trials. Interactions of some rare and new natural flavon compounds such as eriodictyol 7,4'-dimethylether, isoorientin, genkwanin, homoorientin-6''-4-O-methyl-myo-inositol, dihydrokempferol 7,4'-dimethylether and 7,5'-dimethoxyisoethyne, which is medicinal aromatic plant origin, with human serum albumin (HSA) proteins were investigated by two-dimensional (2D) and three-dimensional (3D) fluorescence spectrophotometry. For fluorescence measurements were selected as the pH value 7,4 and the working temperature 25°C. In these parameters, the binding constants of target molecules to human serum albumin protein were calculated as 4,798x10³ M⁻¹ (eriodictyol 7,4'-dimethylether), 24,694x10³ M⁻¹ (isoorientin), 0,636x10³ M⁻¹ (genkwanin), 59,979x10³ M⁻¹ (homoorientin-6''-4-O-methyl-myo-inositol), 5,461x10³ M⁻¹ (dihydrokaempferol 7,4'-dimethylether) ve 38,124x10³ M⁻¹ (7,5'-dimethoxyisoetin). In addition, 3D fluorescence measurements showing the interactions of flavon compounds with human serum albumin protein were also compared. Analysis results of fluorescence studies have shown that flavon compounds, especially containing quantitatively excess hydroxyl group, interact better with human serum albumin protein.

KEYWORDS

Flavon, medicinal aromatic plant, fluorescence, human serum albumin protein phenolic compound

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Session 7-5 - Experimental Animal Studies and Other Research

Submission ID: 1306

EVALUATION OF VAUCHERIA BORIALIS IN TERMS OF FOOD AND DIET

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ABSTRACT

Algae are natural nutrients that live in aquatic environments and have high biological activity. There are many bioactive components in the structure of these organisms. In this study, the potential use of *Vaucheria borealis* in nutrition and diet was investigated. GC analysis showed that it has a very rich potential for palmitoleic acid (C16: 1) and total unsaturated fatty acid (UFA). Palmitoleic acid causes the regulation of fat and glucose metabolisms in the body. In addition, it was observed that HDL-cholesterol enhancer effect. It is a natural source of skin health, ease of digestion, weight control and protection from diabetes. As a result of the study, it has been concluded that *Vaucheria borealis* may be a natural source of nutrition and diet. Reference: 1. Chirag A. Patel, Kalyani Divakar, Devdas Santani, Himanshu K. Solanki, Jalaram H. Thakkar, 2012, Remedial Prospective of *Hippophae rhamnoides* Linn. (Sea Buckthorn), Journal of Nutritional Biochemistry Volume 12, Article ID 436857, 6 pages

KEYWORDS

Vaucheria borealis, Algae, Nutrition and dietary, Palmitoleic acid (C16:1)

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ANTICHOLINESTERASE ACTIVITIES FROM AQUEOUS EXTRACT OF DIFFERENT PLANT PARTS OF ERICA MANIPULIFLORA

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ABSTRACT

Erica species are generally spread along the coasts of Turkey. There are five Erica species in these regions, namely; *E. arborea*, *E. manipuliflora*, *E. bocquetii*, *E. sicula* subsp. *Libanotica* and *E. spiculifolia* salisb. Among these species, *E. manipuliflora* is commonly found in Muđla and southwest part of Turkey. Erica species are called as "funda", "püren" or "tree heath" locally in Turkey and contain biologically active compounds such as flavonoids, coumarins and triterpenoids. Since ancient times, these species have been used as herbal tea and folk medicine by local people in Turkey. In folk medicine, they are used for a diuretic, antiseptic and anti-inflammatory purposes. Inhibitions of Acetylcholinesterase and butyrylcholinesterase related with Alzheimer's disease. In this study anticholinesterase activity of aqueous extracts of leaves, flowers and aerial parts of *E. manipuliflora* have been investigated spectrophotometrically. The aerial parts extract of *E. manipuliflora* among the extracts (70.10%) showed the best inhibitory activity against AChE enzyme at 200 µg/mL concentrations. The extracts of leaves and flowers showed 44.42%, 49.91% inhibitions against acetylcholinesterase enzyme at 200 µg/mL concentrations respectively. The flowers extract of *E. manipuliflora* (80.41%) exhibited the best BChE inhibitory activity at 200 µg/mL concentrations. At the same concentration, the galantamine showed 82.23% inhibitory activity. Leaves and aerial parts extracts showed 15,75%, 31.62% inhibitory activity against BChE respectively. Hence, aerial parts of *E. manipuliflora* may be useful as a moderate anticholinesterase agent, and flowers of *E. manipuliflora* may be useful as the butyrylcholinesterase agent.

KEYWORDS

Erica, *Erica manipuliflora*, *acetylcholinesterase*, *butyrylcholinesterase*, *enzyme inhibition*

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Session 7-5 - Experimental Animal Studies and Other Research

Submission ID: 1781

EFFECTS OF RED PEPPER (CAPSICUM ANNUUM L.) ON EGG YOLK COLOUR

SUZAN YALÇIN¹, SAKİNE YALÇIN², İLYAS ONBAŞILAR³

ABSTRACT

Egg yolk colour is an important criteria for consumers. The desired colour varies among and within countries. Carotenoids are sources of red and yellow pigments which are important in egg yolk colour. Birds can't synthesize these carotenoids and therefore natural ingredients such as corn, alfalfa meal, red pepper or synthetic pigments must be found in poultry. Diets based on cereals other than corn require natural or synthetic pigments to achieve desired yolk colour. The red pepper as a good egg yolk colorant contains small amounts of red pigments and large amounts of yellow carotenoids. Red pepper (*Capsicum annuum* L.) is abundant in Turkey. Red pepper contains 1500-2500 mg/kg total carotenoids. Most of the carotenoids in total carotenoids are keto-carotenoids, such as capsanthin and capsorubin. Besides main role of keto-carotenoids as a pigment, they are also recognized as antioxidants and inhibitors of cancer cells. Yolk pigments are relatively stable and normally are not changed or lost with cooking. Although egg yolk color suitable for consumers is obtained by using corn at 60% level in laying hen diets, dark yellow eggs are also obtained by adding red pepper to the diets.

KEYWORDS

Red pepper, Egg yolk, Pigment, Colour, Carotenoids

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EFFECT OF SYZYGIUM AROMATICUM L. EXTRACT ON THE MODULATION OF GABAERGIC SYSTEM AND DETERMINATION OF ITS GABAERGIC ACTIVE COMPOUNDS

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ABSTRACT

γ -Amino butyric acid (GABA), a physiologically important amino acid acting as major neurotransmitter in the brain, plays an important role in regulating activity of the excitatory neurotransmission. GABA, which binds as a ligand to GABAA/B/C-receptors, is formed by glutamat decarboxylase from glutamate and metabolized by the GABA-transaminase (GABA-T) and succinat semialdehyde dehydrogenase (SSADH). The GABAergic system is of great importance in the treatment of neurophysiological disorders and a target for various groups of medications, among others for sedatives, anxiolytics, muscle relaxants, antidepressants and antiepileptics (anticonvulsants). Because of adverse effects associated with some of these drugs, there is a great interest in natural products which can exhibit the corresponding neurophysiological effect in the organism by interacting with the GABAergic neurotransmission. Thus, several foods or food ingredients are able to modulate the GABAergic system in different ways such as the inhibition of the GABA-degrading enzymes (GABA-AT and SSA-DH) and the enhancement of GABAA receptor activity. It has been shown that *Syzygium aromaticum* L. (clove buds) is a potent inhibitor for GABA-degrading enzymes [1] and a potent specific GABAA-receptor modulator [2]. In this study, effect of *Syzygium aromaticum* L. extract on GABAergic system and its GABAergic active compounds were investigated. The aqueous clove extract was fractionated by semi-preparative high performance liquid chromatographic (RP-HPLC) with UV/Vis detector and obtained fractions were examined electrophysiologically for possible GABAA receptor-modulatory effects. To analyze electrophysiologically the effect of the extract and its fractions on GABAA receptors, GABA-mediated chloride ion currents via the human GABAA $\alpha 1\beta 2$ heteropentameric receptor expressed in *Xenopus leavis* oocytes were measured using two-electrode voltage-clamp (TEVC). To further characterize the components in the most active fraction, ultra-high performance liquid chromatographic with diode array detector (UHPLC-DAD) and gas chromatography-mass spectrometry (GC-MS) were applied. Based on UV/Vis-spectra, mass spectra and TEVC, eugenol was detected in the aqueous clove extract and identified as GABAergic compound. [1] Sahin S., Villmann C., Pischetsrieder, M., Modulation of GABAergic Effect by Plant Extracts EUROFOODCHEM XVII, 7.-10. Mai 2013, Istanbul [2] Sahin S., Villmann C., Pischetsrieder, M., Modulation of Synaptic GABAA-Receptor Activity by Food Extracts 7th International Conference and Exhibition on Nutraceuticals and Functional Foods, 14.-17. Oktober 2014, Istanbul

KEYWORDS

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GABA, Syzygium aromaticum L, electrophysiologically, eugenol, GC-MS



Session 8-1 - Local Use of Medicinal and Aromatic Plants

Submission ID: 209

**A MACRO FUNGUS IN THE TRADITIONAL MEDICINE:
GANODERMA LUCIDUM (CURTIS) P. KARST.**

AYHAN KARAKAYA¹

ABSTRACT

Ganoderma lucidum is in the family of Ganodermataceae (Polyporaceae) of the class of Basidiomycetes of the fungi kingdom. It takes its name after, lucid/us in the Latin, meaning bright and clear due to the brightness of the upper part of its mantle. *Ganoderma lucidum* is a macro fungus species that has a high commercial potential in the world, used intensively especially in alternative (folk) medicine. However, there are issues related to the alternative use of *Ganoderma lucidum*. The macro fungus was identified in our study entitled "Determination of Macrofungi of Kocaeli Region" within the boundaries of Kocaeli province between 2006 and 2008. As members of same genus and members of the Ganodermataceae family; *Ganoderma adspersum* (Schulz.) Donk and *Ganoderma applanatum* (Pers. Ex Wallr.) Pat. macro fungi species were also identified during field observations of the study.

KEYWORDS

Makrofungus, Ganoderma lucidum, traditional medicine, Kocaeli.

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Session 8-1 - Local Use of Medicinal and Aromatic Plants

Submission ID: 266

**PLANTS USED IN TRADITIONAL TREATMENT IN PAZAR
DISTRICT (TOKAT-TURKEY) AND THEIR PROPERTIES**

SİBEL ULCA¹, GÜLCAN ŞENEL¹

ABSTRACT

The aim was to reveal the local names of the plants spreading around Pazar (Tokat, Turkey) and its surroundings, the purpose for which they were used in the region, the ones used in local therapy and their usage patterns. During this period, 128 plant species were examined. Field study was carried out over a period of approximately two years (2015-2017). In addition, the relative importance value of the species was determined and informant consensus factor (FIC) was calculated for medicinal plants included in the study. In our study, a structured and semi-structured interview method was used and interviewed with 265 people. As a result of the surveys; Demographic characteristics of the participants, types of medicinal plant used by the people of the region, preparation techniques, usage patterns and frequency were determined. It has been determined that local people benefited from 38 families and that family members such as Asteraceae Brassicaceae, Rosaceae, Lamiaceae, Fabaceae and Cucurbitaceae were more beneficial in local treatment.

KEYWORDS

Traditional Therapy, Ethnobotany, Pazar

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Session 8-1 - Local Use of Medicinal and Aromatic Plants

Submission ID: 312

SYNERGISTIC EFFECT OF CARTHAMI FLOS AND PERSICAE SEMEN AS A HERBAL PAIR IN EAST-ASIAN MEDICINE

SU HYE LIM¹, EUN SANG JEON²

ABSTRACT

East-Asian medicine (EAM) is defined as a traditional medicine, used for health maintenance and treatment of various diseases using acupuncture, moxibustion, cupping and herbal medicines with a long history. The concept of herbal pair is one of fundamental principles in prescription composition. Herbal pair is a mixture of two herbs and plays an important role in clinical treatment efficacy. There are six patterns of herbal pair; mutual reinforcement, assistance, mutual detoxication, mutual inhibition, mutual antagonism and incompatibility. Carthami flos and Persicae semen have been used as a herbal pair to improve blood circulation in EAM for a long time. They belong to a pattern of mutual reinforcement among six patterns. Carthami flos exhibits vasodilator, anticoagulant, antithrombotic, hypolipidemic, emmenagogue and stimulant properties and its main components are carthamin, safflower yellow and hydroxysafflor yellow A. Persicae semen has vasodilating, anticoagulant, antithrombotic, laxative, antitussive and expectorant effects and its major compound is amygdalin. Previous studies proved that two herbs as a pair exert synergistic effect on cardiovascular diseases when they are used together, compared with the effect of a single herb. Two classic formulas, Silsosangami and Dohongsamultang, used as antithrombotic therapeutic agents, contain Carthami flos and Persicae semen as active ingredients. However, their biochemical mechanism of synergistic effect is unknown yet. This study aims to provide a foundation for understanding of herbal pairs and synergistic effect of Carthami flos and Persicae semen as a herbal pair, which are frequently used together in EAM.

KEYWORDS

Carthami flos, Persicae semen, Herbal pairs, Synergistic effect, East-Asian medicine

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Session 8-1 - Local Use of Medicinal and Aromatic Plants

Submission ID: 515

**DETERMINING THE FACTORS AFFECTING THE MEDICINAL-
AROMATIC PLANT CONSUMPTION OF INDIVIDUALS (THE CASE
OF ERZURUM CENTRAL COUNTIES)**

RÜVEYDA KIZILOĐLU¹

ABSTRACT

Medicinal and aromatic plants are used as medicines to prevent diseases, maintain health, or improve diseases. Demand for these plants in world markets is increasing every other day. Especially, the emergence of side effects of synthetic and chemical medicines has increased the use of medicinal plants. This study aimed to determine the medicinal and aromatic plant consumption of individuals living in the urban areas in the central counties of Erzurum city (Aziziye, Palandöken, and Yakutiye) and the factors affecting the consumption. In the study, proportional sampling method, 95 % confidence interval, and 5 % error margin were employed. According to 2016 TURKSTAT data, the total population of Erzurum central counties was 417.385 people. The sampling of the study consisted of 384 individuals, which was found by calculating the proportion of the central counties within the total and homogeneously distributing it to the districts. The data of the study were collected through a questionnaire. The mean age of the interviewed individuals was found to be 35.19. 63.80 % were male, 73.70% were married, and 58.85% had children. In the study, the factors affecting the consumption of medicinal aromatic plants were determined using binary logit analysis. A number of questions were asked to determine the level of awareness and demonstrate the likelihood of consumption by conscious individuals (with the help of statements defining the medicinal aromatic plants correctly or incorrectly) by assuming that individuals will consume at least one of the medicinal aromatic products which are already found abundantly. Thus, conscious individuals (responding correctly) and individuals with low consciousness level (responding incorrectly), which is the dependent variable of the model, were identified. That is, 61.20 % of the individuals were determined to be conscious. The age, gender, marital status, and educational level of the individuals, employment of the spouse, monthly income, number of households, having children, the existence of heart disease, blood pressure disorders, cholesterol, diabetes, kidney disorders, and using medicinal aromatic plants for any disorder instead of medical medicines were all used as explanatory variable. As a result of the analysis, while individuals' gender and having children were found to have a negative effect at 1 % significance level, the marital status and the number of households had a positive effect. That is, women were 16 % more likely to consume medicinal aromatic products than men. On the other hand, single individuals were 24 % more likely to consume medicinal aromatic products than married individuals. Individuals with children were expected to consume such products 24 % more than those with no children at all. The employment status of spouses of individuals who were found to be significant at 5 % level was found to be negatively correlated with consciousness level in terms of medicinal aromatic plant consumption. So it can be said that the individuals whose spouses were unemployed were 13 % more conscious in terms of medicinal aromatic plant consumption than those

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whose spouses were employed. As a result of the research, it can be stated that while the consciousness level of individuals in the region was not very low in terms consumption of medicinal aromatic plants, women, and individuals living alone tended to consume these products more. The study also found that income and education level were not statistically significant in the consumption of the products in question.

KEYWORDS

Consumption, Preferences, Medical Aromatic Plants, Awareness Level, Binary Logit

Session 8-1 - Local Use of Medicinal and Aromatic Plants

Submission ID: 1321

AWARENESS OF MEDICINAL PLANT AND AROMATIC OIL BY THE HOUSEWIVES: A MODEL OF BOLU CITY

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ABSTRACT

Introduction: Housewives often use medicinal and aromatic plants during their daily lives. In retrospect, medicinal and aromatic plants, which have become indispensable even for dinner tables, are applied as the primary way of improving health. Medicinal and aromatic plants which take place in every individual's life, occasionally are used by infusion, ointment or other methods. **Purpose:**The aim of the study is determine the housewives knowledge on about medicinal and aromatic plants, who are used frequently in daily life. **Method:**The study was carried out with community dweller housewives in the city center of Bolu. As a data collection tool, a questionnaire form was used which investigated the individual's status and usage of medicinal and aromatic plants. The 10 medicinal and aromatic plants which were the subject to the questionnaire are selected randomly out of 84 medicinal and aromatic plants that are commonly used in Turkey. **Results:** 78 women 47.76 (range 18-78 years) was involved in the study . Five of the ten medicinal and aromatic plants the effects of which are well known by the housewives are pomegranate juice (77.6%), lavender (70.1%), daphne (68.7%), turmeric (68.7%) and fennel (67.2%) plants. Two herbs that are least-known by the housewives are quassie amara (17.9%) and olibanum (22.4%) plants. The correct response rates for the medicinal effect among the medicinal and aromatic plants ,as are indicated to be known by the housewives for their effects, are senna (67.6%), anise (61.4%) and olibanum (46.7%) plants are found to be correct. 43.3% of the participants stated that they used medicinal and aromatic plants occasionally; 83.6% of them stated that they used the medicinal plants in brewed form, and 49.3% of them used medicinal plants together with food. Medicinal and aromatic plants are mostly used for influenza (82.1%), disease prevention (56.7%) and pain (53.7%). They usually prefer to use them consulting the herbalist (62.7%) or health staff (44.8%); whereas they expressed their knowledge of medicinal and aromatic plants via television (61.2%), neighbor / friend environment (52.2%), internet (50.7%) or family elders (43.3%). **Discussion:**Although housewives often state that they use medicinal and aromatic plants, they are not aware of the efficacy of medicinal and aromatic plants as well as showing the correct response rate is low. Especially when it is thought that they are used for influenza, pain or prevention of disease , the possibility of the wrong treatment has become remarkable . Considering the main reason for this is the matter of getting misinformed about medicinal and aromatic plants, which is provided via television, friend/neighbor or the elders of the family, it is suggested that those who are professional on medicinal and aromatic plants convey proper information on television programs and design the websites where the proper information sources can be accessed .

KEYWORDS

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medicinal and aromatic plants, housewives, Awareness



Session 8-1 - Local Use of Medicinal and Aromatic Plants

Submission ID: 1630

MEDICINAL AND AROMATIC PLANTS SOLD IN ARTVIN HERBALISTS

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ABSTRACT

Artvin has rich flora thanks to its geographical location, geomorphologic structure and influence of various climate types. The vascular plant flora of Artvin is represented by 2727 taxa, 2616 species, 397 subspecies, and 144 varieties belonging to 761 genera and 137 families. The diversity in flora provides a rich sources of medicinal plants. Majority of people living in Artvin traditionally use plants. In this study, the rates of herbalist utilization from local people, medicinal and aromatic plants they bought and purpose of using medicinal and aromatic plants were aimed to determined. Surveys were conducted on the medical and aromatic plants sold in 3 herbalists located in Artvin. The rates of plant utilization, the plants they use and the problems they have encountered and their suggestions were determined. Information regarding latin name, public name, medicinal and other uses, opinion and problems were collected with this questionnaires. Demographic characteristics of participants also recorded. The plants with the most sales are ginger, linden, rosehip, daisy, cinnamon, cherry stalk, celery seed, carob and sage It was determined that local people use more medicines and they prepare their herbal medicines by themselves, others sell them from herbalists. Native people used medicinal plants most frequently for the treatment of respiratory tract problem, intestinal disorders, dental diseases, ache, urinary disorders and blood pressure disorders, especially used as an attenuator products. Many participants stated that herbal medicines are natural and useful however, complained about the unsupervised people working in herbalists, unlabelled and not fresh products. it appears that most herbalists do not have sufficient knowledge about the properties of these medicinal and aromatic plants in Artvin.

KEYWORDS

Herbalist, Ethnobotanic, Artvin, Medicinal, Aromatic

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Session 8-2 - Aromatic Plants

Submission ID: 351

BRASSINOSTEROID MODIFIES GROWTH AND SECONDARY METABOLITE PRODUCTION IN LAVANDIN (LAVANDULA INTERMEDIA)

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ABSTRACT

Lavandula is a plant species belonging to the family Lamiacea and has 39 different species originating from the Mediterranean. It is one of the most popular plants used since ancient times as medicinal, aromatic and ornamental plant in the world. In addition to being a valuable ornamental plant with scented and decorative flowers, its essential oil obtained from flowers is an important oil for aromatherapy, cleaning products, perfumes, massage oils and cosmetics due to their antiseptic and antifungal properties. Lavandula oil has also antimicrobial, antibacterial, anti-depressive, sedative and dermatologic activities. To get secondary metabolites with high quality and quantity, some exogenous treatments could be applied successfully in plants. Brassinosteroids (BRs), new generation steroid phytohormones, play significant roles in increasing different secondary metabolites. The objective of this study was to determine the effect of foliar application of 24-epibrassinolide (24-eBL), a brassinosteroid analogue, on growth and secondary metabolite production in Super A lavandin cultivar (*Lavandula intermedia*). For this aim, 24-eBL at four different concentrations (0, 0.75, 1.5 and 2.25 mg l⁻¹) was applied to six- year old lavandin plants twice. The first application was done at the beginning of the budding phase and the second application was done 10 days after the first application. As a result of this study, 24-eBL significantly increased fresh and dry stem flower weights, dry stemless flower weight, essential oil and total phenolic contents compared to the control plants. 24-eBL modified also essential oil composition. Linalool, linalyl acetate, camphor, borneol, 1,8 cineol, geraniol and lavandulyl acetate were determined as main components of lavandin oil. 24-eBL applications were not effective on linalool accumulation. Linalyl acetate and 1,8 cineol increased with 24-eBL application while the highest contents of camphor, borneol, geraniol and lavandulyl acetate were obtained from the control oil. It was determined that 1.5 mg l⁻¹ of 24-eBL was the most suitable concentration providing the highest dry stemless flower weight, essential oil, phenolic content and linalyl acetate content. To conclude, 24-eBL may be promising compound for use in lavandin cultivation.

KEYWORDS

Lavandula intermedia, 24-epibrassinolide, essential oil, total phenolic content

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Session 8-2 - Aromatic Plants

Submission ID: 425

CHEMICAL COMPOSITION OF SOME MEDICINAL AND AROMATIC PLANTS

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ABSTRACT

Medicinal and Aromatic plants participating remarkable role in primary health care of the peoples over the world. Forest is a main source for collection of the traditional medicinal plants. Uses of medicinal and aromatic plants as a traditional medicine are followed by around 80% peoples in the World. The occurrence of essential oils, or volatile oils, is very widespread in the plant kingdom. As their second name implies, they are volatile in steam. They are accumulated in oil cells, in secretion ducts or cavities or in grandular hairs of plants.. An essential oil is a mixture of chemical compounds, commonly containing 40 to 80 monoterpenoids, sesquiterpenoids and diterpenoids, and many in relative small proportions. In this study, volatile chemical constituents of juniper (*Juniperus communis*), pine oil (*Pinaceae*), myrtle (*Myrica minor*), orange (*Citrus sinensis*), thyme (*Thymus vulgaris*), lavender (*Stoechas lavender*), sage tea (*Salvia officinalis*), lemon (*Citrus*), rosemary (*Rosmarinus officinalis*), French lavender (*Lavandula stoechas*), eucalyptus (*Eucalyptus globulus*), and laurel (*Laurus nobilis*) have been investigated and analyzed by GC/MS. The result showed that, the major components in essential oils were monoterpenes hydrocarbons, α -pinene (1,62 – 90,09%), limonene (71,7 - 95,7%), monoterpene phenol, carvacrol (71,5%) and oxygenated monoterpenes, camphor (4,85 – 57,25%), 1,8-cineole (3,9 52,17%), eucalyptol (48,68 – 59,28%), linalool (43,37%) and linalyl acetate (33,6%).

KEYWORDS

Medicinal, Aromatic, Plant, Essential oil, Bioactive compounds

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Session 8-2 - Aromatic Plants

Submission ID: 453

ANTIOXIDANT ACTIVITY AND ESSENTIAL OIL COMPOSITION OF SIDERITIS STRICTA BOISS. & HELDR

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ABSTRACT

The *Sideritis* genus, a member of the Lamiaceae family, consists of more than 150 species in the world. This species is mainly grown in temperate and tropical regions of the Northern Hemisphere and Turkey and Spain which have the highest number of different species [1, 2]. *Sideritis* species are known as ‘dağ çayı’ and ‘yayla çayı’ and the aerial parts of these species are consumed as herbal and traditional tea in Turkey. This tea is known for its special taste and aroma and usually preferred with honey and lemon to treat stomach ache, indigestion, flatulence, common colds, fever, flu, sore throat, and bronchitis [3]. Nowadays, using of essential oils and extracts obtained from various parts of plants in pharmaceutical, food, and cosmetic industries are increasing. For this reason, in this study, we investigated the chemical composition and antioxidant activity of the essential oil and the hexane, acetone, methanol and water extracts of *S. stricta*. GC and GC-MS were used to analyze the chemical composition of the essential oil of *S. stricta*. In order to determine the antioxidant activity of the essential oil and the extracts of *S. stricta*, lipid peroxidation inhibition by β -carotene-linoleic acid, radical scavenging by DPPH• and ABTS•+, CUPRAC and metal chelating assays were used. A total of twenty-seven compounds were identified in the essential oil and δ -cadinene (18.33 %), cubenol (17.63 %), β -caryophyllene (14.34 %) and caryophyllene oxide (10.46 %) were found to be major compounds, respectively. Acetone extract exhibited the highest antioxidant activity in all tests, excluding metal chelating assay. In addition, acetone, methanol and water extracts indicated higher antioxidant activity than standards in β -carotene-linoleic acid and CUPRAC assays. References [1] Guvenç A, Houghton PJ, Duman H, Coşkun M, Şahin P. (2005). *Pharm. Biol.* 43, 173-177 [2] Loğođlu E, Arslan S, Oktmer A, Şakiyan I. (2006). *Phytother. Res.* 20, 294-297. [3] Gonzalez-Burgos E, Carretero ME, Gomez-Serranillos MP. (2011). *J. Ethnopharmacol.* 135, 209-225.

KEYWORDS

Sideritis stricta, Essential oil, Chemical composition, Antioxidant activity

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Session 8-2 - Aromatic Plants

Submission ID: 1035

ROSMARINIC ACID CONTENTS AND ANTIOXIDANT PROPERTIES OF DIFFERENT OREGANO / THYME SPECIES

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ABSTRACT

Chemically, rosmarinic acid is an ester of caffeic and 3,4-dihydroxyphenyllactic acids and pointed out due to its antioxidative effects and medicinal properties. Rosmarinic acid can be found in many plants but usually rosemary plant is used as the major source. From this point of view, Origanum and Thymus species under Lamiaceae family have special attention for their rich rosmarinic acid contents. In this study, five different commercially important oregano/thyme species, which are grown in Turkey and locally named as “İzmir kekiği” (Origanum onites), “Antalya kekiği” (Origanum bilgeri), “Sütçüler kekiği” (Origanum minutiflorum), “dallı kekik” (Thymus bracteosus) and “tomurcuk kekik” (Thymus vulgaris), have been compared in terms of their rosmarinic acid contents and antioxidative properties. Under the study, oregano/thyme samples were extracted at 40°C by using 3 different solvents (distilled water, ethanol, and methanol). These extracts were subjected to the analyses of total phenolic contents (spectrophotometric by using Folin Ciocalteu assay), antioxidant activity (spectrophotometric by using DPPH radical scavenging assay) and rosmarinic acid contents (chromatographic by using HPLC method). Extraction with different solvents significantly ($P < 0.05$) affected the rosmarinic acid contents of the samples. In all samples, water extracts had the lowest rosmarinic acid contents while the methanol extraction provided the highest values. In methanol extracted samples, Origanum minutiflorum had the highest rosmarinic acid content (70.97 mg/g), followed by Thymus bracteosus (64.99 mg/g), Thymus vulgaris (56.56 mg/g), Origanum bilgeri (41.32 mg/g) and Origanum onites (32.98 mg/g). Total phenolic contents and antioxidant activities of all samples, extracted by distilled water, were found to be minimum while the methanolic extracts of the samples had the highest total phenolic contents and antioxidant activities. In methanol extracted samples, Thymus vulgaris had the highest total phenolic content with the value of 59.97 mg/g dry matter while Origanum minutiflorum had the lowest value of 34.29 mg/g dry matter. Methanolic extract of Thymus vulgaris had also maximum antioxidant activity with the value of 0.19 g/mg DPPH whereas water extract of Origanum minutiflorum had the minimum antioxidant activity by 0.34 g/mg DPPH.

KEYWORDS

Thyme, Rosmarinic Acid, Antioxidant Activity, Extraction

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Session 8-2 - Aromatic Plants

Submission ID: 1169

MORPHOGENETIC, ONTOGENETIC AND DIURNAL VARIABILITY IN ANTIMICROBIAL ACTIVITY OF PURPLE CONEFLOWER ESSENTIAL OIL

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ABSTRACT

This study was conducted to designate morphogenetic, ontogenetic and diurnal variability in antimicrobial activity of purple coneflower essential oil in a two-year study. The samples of leaf, root-bulb-stalk, flower and seed were used to specify morphogenetic variability. The leaf and root-bulb-stalk samples were taken at three stages (pre-, full and post-flowering), while the flower samples were picked up at full flowering and the seed samples were gathered at harvest maturity. To clarify ontogenetic and diurnal (9:00 am, 1:00 pm and 5:00 pm) variability, whole plant samples were taken at pre-, full and post-flowering stages. A total of 10 microorganisms, including 7 bacteria, 1 fungus and 2 yeast species, have been studied to determine antimicrobial activity of essential oils using disc-diffusion and minimal inhibition concentration methods. The highest inhibitory effect of leaf and root-bulb-stalk essential oil was observed from pre-flowering samples. In terms of ontogenetic variability, essential oils of pre-flowering samples generally produced higher antimicrobial activity compared to post-and full flowering. There were no significant differences among antimicrobial activities most of the essential oils extracted from whole plant samples taken three times a day. None of the essential oil extracted from different plant parts at different growth stages and sampling hours showed antimicrobial activity against *Aspergillus niger*. The present study reveal that antimicrobial activity of purple coneflower oil significantly vary based on plant parts and growth stages.

KEYWORDS

Disc-diffusion, minimal inhibition concentration, purple coneflower, volatile oil

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Session 8-2 - Aromatic Plants

Submission ID: 1920

TRITERPENOID SAPONINS FROM CEPHALARIA TAURICA AND THEIR BIOLOGICAL PROPERTIES

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ABSTRACT

Cephalaria taurica Szabo. narrow spreaded endemic plant [1], which is belong to Caprifoliaceae family, lives along the Mediterranean region of Turkey. Many scientific researches about isolation and structural determination procedures on these species showed that they have different types of molecules such as triterpenoid, flavonoid, iridoid and alkaloid glycosides. Because of this wide range of chemical composition *Cephalaria* species have many important biological activities [2-4]. In this study, we aimed to investigate pure triterpenoid saponins from *C. taurica* and their biological properties. Our researches started with the extraction procedures. For that reason, methanol, n-butanol, water and n-hexane were used as extraction solvents. Vacuum Liquid Chromatography (VLC) on n-butanol fraction followed by a two-step silica gel Medium Pressure Liquid Chromatography (MPLC) separation procedures and many open column chromatograph (CC) applications were carried out. Totally ten triterpenoid saponins were isolated from the aerial parts of *Cephalaria taurica*. According to our literature findings, two of them are new saponins and other eight compounds are known triterpenoid saponins which have hederagenin aglycone. The compounds were characterized using NMR spectroscopy (1D and 2D), mass spectrometry (HRESIMS) and chemical methods. Our future plan is to investigate possible cytotoxic and immunomodulatory activities of these two new saponins. References 1. Davis, P.H. Flora of Turkey and The East Aegean Islands, University Press, Edinburgh, Scotland, 1972. 4:585-597. 2. Sarikahya, N.B.; Kirmizigul, S., J. Nat. Prod. 2010.73:825-830. 3. Sarikahya, N.B., Phytochem. Lett. 2014. 8:149-155. 4. Tabatadze, N.; Mshvildadze, V.; Dekanosidze, G.; Zviadadze, L.; Elias, R.; Ollivier, E.; Faure, R.; Balansard, G., Bulletin of the Georgian Academy of Sciences, 2005. 171:296-299.

KEYWORDS

Cephalaria taurica, saponin, biological activity, phytochemistry

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Session 8-3 - Medicinal and Aromatic Plants in Veterinary Health Care

Submission ID: 658

IN VITRO ANTIOXIDANT AND ANTIVIRAL ACTIVITIES OF SILYMARIN AGAINST BOVINE EPHEMERAL FEVER AND BLUE TONGUE VIRUS

BURAK DİK¹, IRMAK DİK¹, OđUZHAN AVCI¹

ABSTRACT

The primary aim of this study was to evaluate the effects of Silymarin on thiobarbituric acid reactive substances (TBARS) and antioxidant activity levels using Vero cell lines infected by Bovine Ephemeral Fever Virus (BEFV) and Blue Tongue Virus (BTV). It was also determined the antiviral against both viruses and cytotoxic effects of Silymarin. Silymarin is a member of the flavonolignans, which are natural phenols composed of flavonoid and lignan. Silymarin is being used as a general medicinal herb and has been described as anti-inflammatory, immunomodulatory, anti-lipid peroxidative, anti-bacterial, antioxidant and antiviral. BTV is an orbivirus of the Reoviridae family and affects all ruminants. The clinical signs of the disease vary with the viral strain, animal species and breed. It also causes thrombo-hemorrhagic fevers mainly in sheep and occasionally in cattle. BEF is a vector borne viral disease of cattle and the pathogenesis of the disease is complex. It causes high morbidity, economic losses and a variety of complications resulting from the disease. A stock solution containing 20 mg of silymarin was dissolved in 1 mL distilled water. Silymarin (400 µg/mL) was prepared by diluting the stock solution. Several concentrations of Silymarin were placed in contact with the Vero cell lines, which were then incubated in 5% CO₂ at 37°C for 48 h. After the incubation period, Silymarin was tested for cytotoxic activity. Its cytotoxic dose was determined at 100 µg /mL concentrations. The CPE inhibition assay demonstrated that 25 and 50 µg/mL of Silymarin significantly inhibited BEFV. In contrast, different concentrations of Silymarin didn't show CPE inhibitory activity on BTV. Silymarin's total antioxidant activity and the oxidative stress marker TBARS were determined by commercial ELISA kits after Vero cells had been infected with BEFV and BTV. Silymarin was found to be an effective antioxidant in different doses as [25 and 50 µg/mL, (P <0.05)], but at these doses, it only caused a decreased in level of TBARS levels (P >0.05). In conclusion, Silymarin can be used for preventing lipid oxidation in pharmaceutical products and retarding the formation of reactive oxygen species. It can be evaluated as an antiviral and antioxidant in the in vivo treatment of BEFV in the future.

KEYWORDS

Silymarin, Bovine Ephemeral Fever, Blue Tongue Virus, antioxidant

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Session 8-3 - Medicinal and Aromatic Plants in Veterinary Health Care

Submission ID: 1239

EFFECT OF THYMOQUINONE ON PROLIFERATION OF BOVINE PERIPHERAL BLOOD MONONUCLEAR CELLS*

UÇKUN SAIT UÇAN¹, ZAFER SAYIN¹, ASLI SAKMANOĐLU¹, ALI USLU¹

ABSTRACT

Nigella sativa is a medicinal plant that is widely used and known with its various therapeutic effects all around the World. Thymoquinone (Tq) is the most important component of this plant and has positive biological effects on various cells of the mammals. Among these effects, immune modulator effects are considered to be promising potentials for future adjuvant design. In this study, the effect of Tq on the large ruminat immune system was investigated in vitro. The effects of different Tq concentrations on survival and proliferation of bovine peripheral blood mononuclear cells were investigated by cell culture and ELISA methods in the presence of various mitogens (Con A and PWM). Tq showed a blastogenic effect on peripheral mononuclear cells of cows when added to culture medium at a concentration of 50 µg/mL, just like known mitogens do. For 5 days proliferation with 107 cell/mL density in presence of 50 µg/mL Tq in the cell cultures caused a degree of blastogenetic response of 0.485 ± 0.06 ($P < 0.01$). The mitogenic responses for Con A and PWM were $0,399 \pm 0,084$ and $0,397 \pm 0,049$, respectively. The combination of Tq with either of both mitogens (Con A or PWM) did not lead to further increases in the blastogenetic responses. The mechanism of Tq's mitogenic effect on the immune cells is completely in dark at present. These results support our hypothesis that Tq would be a candidate for being as a component of a novel adjuvant or even a promising immunostimulant for therapeutic purposes in future. *This research was supported by Selçuk University (BAP No: 16401107).

KEYWORDS

Thymoquinone, bovine, blood, mononuclear cells, proliferation.

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Session 8-3 - Medicinal and Aromatic Plants in Veterinary Health Care

Submission ID: 1254

EFFECTS OF PUNICA GRANATUM PEEL POWDER ON PERFORMANCE OF LAYER HENS

TAHIR BALEVİ¹, UÇKUN SAIT UÇAN², UĞUR USLU³, OĞUZHAN KAHRAMAN¹, ABDULLAH ÖZBİLGİN¹

ABSTRACT

Egg productivity, daily feed consumption, feed intake ratio, damaged egg ratio, some parameters on egg quality, mortality and effect on immune humoral response measured during feeding layers with ratios containing different amounts of Punica granatum. A number of 60 Hy-line layers aged 28 week used in the study. The trial will be conducted at the Hümeyra Özgen Research and Practice Farm, Faculty of Veterinary Medicine, Selçuk University. Firstly, Punica granatum was provided from local market and peel of the fruit was dried using an oven following depeeling. Dried peel was then powdered using a grinder and added to the ratios. The trial conducted at the cages each of which will be placed 3 layers at the Hümeyra Özgen Research and Practice Farm, Faculty of Veterinary Medicine, Selçuk University. At the beginning of the trial layers weighted and divided into 4 groups that each include 15 layer with similar body weights. Each group was composed of 5 subgroup including 3 animals per subgroup. Except control group, the layers in the groups fed ratios with 0.5, 1 and 1,5 % peel of Punica granatum. The study last 70 days, first 10 days of that was the prior period to the trial and following 60 days for experimental trial. Egg productivity was determined by noting the egg production records at the same hours of every day. The eggs were evaluated by classification on being either of intact, broken, cracked or abnormal. Feed and water were provided ad libitum in the study. During the trial, remained feed by chickens collected in every 15 days to calculate daily feed consumption and feed conversion ratios for the corresponding period. Additionally, At the beginning and the end of the trial, changes on hens' live weight determined by weighting at these two times of trail period. At the end of the trial, no differences were observed between the groups in terms of some performance values ($p>0.05$). It is concluded that more detailed studies on this particular subject were needed. This study includes a part of the project no:15401148 supported by BAP (Selçuk University)

KEYWORDS

Laying hens, punica granatum, performance

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Session 8-3 - Medicinal and Aromatic Plants in Veterinary Health Care

Submission ID: 1860

USE OF MEDICINAL AND AROMATIC PLANTS IN AQUACULTURE

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ABSTRACT

In terms of aquaculture sector in our country, production of fish and other aquatic products is an important resource that meets the protein requirement in human nutrition and has been growing worldwide for the last 20 years for aquaculture. At present, the most important problems in fish farms are economic losses due to infectious diseases and decrease of feed value due to health problems caused by them. Because of antibiotics used for treatment cause undesirable side effects, that's way addition of antibiotics to feeds for prophylactic purposes after 2006 is prohibited in the EU. In recent years, the use of medicinal plants is an agenda because they are natural and cheap for animal production. The use of herbal products in mention; they can be easily available, they are cheap, minimal side effects, usually in low doses to be effective and affecting the biochemical processes of the cells against pathogens, broad spectrum (bacterial, viral, fungal, parasitic) can be the choice today due to the effects of increased opportunities. For this purpose, the aquaculture industry, the use of a medicinal plant and addition to feed. These products have got such as consists of fish diseases, provide antioxidant property of resistance, general physiological status of fish healing, activate the enzymes, stress prevention, feed conversion and growth performance lead to an increase in features. Our country have got very rich in terms of medicinal and aromatic plants. There are lots of herbal and aromatic flavors our country's various geographical regions, naturally, green tea, rosemary, thyme, sage, St. John's Wort and melissa grass, such as plants, essential oil or extract has been used in the aquaculture industry. In this study, reviewed in this field works in the world and especially in our country.

KEYWORDS

medicinal plants, aquaculture, disease, feed efficiency, growth performance

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Session 8-3 - Medicinal and Aromatic Plants in Veterinary Health Care

Submission ID: 1875

EFFECT OF IMMERSION TREATMENT OF SOY EXTRACT ON SEX REVERSAL IN THE RAINBOW TROUT (*ONCORHYNCHUS MYKISS*, WALBAUM, 1792)

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ABSTRACT

This study explores the possible utilization of soy extract as phytoestrogen on sex reversal in the Rainbow trout (*Oncorhynchus mykiss*, Walbaum, 1792) with immersion treatment. Different concentrations (0.0, 0.10 and 0.20 g/L) of soy extract were tested for their effect on sex reversal in rainbow trout by immersing newly hatched offspring once weekly for 1 months. The experiment was carried out in Kahramanmaraş trout farm of Kılıc Holding Co. in Turkey. The 14 days-old rainbow trout larvae (mean weight 0.123±0.03 g) were randomly removed from the hatching tank, and placed in 1000-l fiberglass tanks (200x100x75 cm). Each tanks comprised 1500 larvae and a total 6000 larvae were used for the experiment. When the fish reached four months, 50 randomly sampled fish from each group were sacrificed. For histological examination, the gonads were fixed in 10% neutral formalin and processed by routine dehydration and paraffin embedding procedures. Cross-sections (4-6 µ thick) were stained with Mayer's hematoxylin and eosin phloxine B solution, examined, and microphotography. At the end of experiment, the highest feminization (69%) was observed at 0.20 g/L soy extract treatment group. Morphological and histological examinations of the gonads in all groups revealed no intersex fish. Histological examination of fish treated with soy extract revealed no damage to the testes or ovaries. In conclusion, these result indicate that the use of higher doses of soy extract are more effective for all-female production of the rainbow trout population.

KEYWORDS

Rainbow trout, Oncorhynchus mykiss, Sex reversal, Soy extract

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Session 8-3 - Medicinal and Aromatic Plants in Veterinary Health Care

Submission ID: 1876

THE INFLUENCE OF LICORICE ROOT (*GLYCYRRHIZA GLABRA*) ON SEX REVERSAL IN GUPPY *POECILIA RETICULATA*

FUNDA TURAN¹

ABSTRACT

The roots and rhizomes of licorice (*Glycyrrhiza*) species have long been used worldwide as a herbal medicine and natural sweetener. Licorice is commonly present in menopausal botanical supplements in the United States. The estrogenic activities of different licorice species are variable and likely depend on the type and amounts of bioactive compounds. This study examined the effects of Licorice root on sex reversal in guppy, *Poecilia reticulata*. Newly born guppy fry (0.014 ± 0.001 mean weight), were randomly distributed into 30 L aquaria at a density of 80 fish per aquarium and subjected to a sex-reversal treatment by immersion of licorise root for 30 days. The licorise root was incorporated into the aquarium water as follows: 0 (control), 0.25 and 0.5 g/ L licorice root. Each of the treatment group was randomly assigned to triplicate groups of fish. The treatment was repeated twice (in the beginning and half way through the experiment) during 30 days. The water of the aquaria was changed entirely every 15 days. A control group was also included in this experiment. Hatchlings were fed ad-libitum three times a day until satiation. After completion of the treatment, they were transferred to larger aquaria. When individuals were 2 months old, the sex of each was determined by external examination, with gonopodium and other morphological characters. In addition, for histological examination of gonads, guppy were fixed in 10% neutral formalin. After fixing the samples, specimens, excluding head and caudal regions were processed for histology using routine dehydration and parafin-embedding procedures. Cross-sections of thickness 4-6 mm, were stained with Mayer's haematoxylin and eosin phloxine B solution examined, and microphotography. At the end of experiment, highest feminization (88%) was observed at 0.5 g/L licorise root group. Morphological and histological examinations of the gonads in all groups revealed no intersex fish. Histological examination of fish treated with licorise root revealed no damage to the testes or ovaries. This study demonstrated successful sex reversal with treatment of licorise root on new-born progenies of *P. reticulata*.

KEYWORDS

Guppy, Poecilia reticulata, Licorice Root, Glycyrrhiza glabra, Sex reversal,

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Session 8-4 - Antibacterial and anti-inflammatory effects

Submission ID: 233

ANTI-INFLAMMATORY EFFECTS OF MORUS NIGRA ON EXPERIMENTAL PERIODONTITIS IN RATS

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ABSTRACT

Background: *Morus nigra* (Urticales Moraceae), usually known as the black mulberry and it is also used in the treatment of various disorders including inflammatory diseases. However, there has been no report on the effect of *morus nigra* on alveolar bone loss in periodontitis. Here, we examined the effects of *morus nigra* on the ligature induced periodontitis in a rat model. Material and Methods: Twenty-four Wistar rats were separated into three groups: control group (C, n=8), experimental periodontitis (PER, n=8), and experimental periodontitis and treated with *morus nigra* (MN+PER, n=8) (50 mg/kg per day for 21 days). A 3/0 silk suture was placed around the mandibular right and left first molars subgingivally; after 21 days, the rats were sacrificed. The detection of the receptor activation of nuclear factor κ B (RANKL) and osteoprotegerin (OPG) were immunohistochemically performed. Results: Immuno-histochemical staining of RANKL activity were found significantly lower and OPG activity were found significantly higher in MN+PER group compared to PER group ($p<0.05$). Conclusions: The present study revealed that systemic administration of *morus nigra* significantly inhibited the regional alveolar bone resorption and contributes to periodontal healing in ligature induced periodontitis rat models.

KEYWORDS

Experimental periodontitis, OPG, RANKL, morus nigra

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Session 8-4 - Antibacterial and anti-inflammatory effects

Submission ID: 313

EFFECTS OF UKRAIN IN RATS WITH NECROTIZING ENTEROCOLITIS

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ABSTRACT

Objective: Necrotizing enterocolitis (NEC) is a common clinical emergency of gastrointestinal system in the neonatal period. Pathological findings are characterized by inflammation and coagulation necrosis. Ucrain (NSC 631570) is a synthetic thiophosphate derivative of alkaloids from the extract of the celandine (*Chelidonium majus* L.) plant. Ucrain is a drug used in treatment of various cancers, however, anti-inflammatory properties are also known. We aimed to evaluate the effects of ucrain on experimental neonatal NEC model. **Material and Methods:** 30 Sprague-Dawley rats pups aged 1-8 hours were separated into three groups. Group I (control group) was not stressed with any factor. Group II was stressed with hypoxia by breathing of 100 % CO₂ for 5 minutes and with exposure to cold at +4°C for 10 minutes. This protocol was performed twice daily for 4 days. Ucrain was used (5mg/kg intraperitoneally) in group III at the end of the each hypoxic and cold stress. Samples from the blood, hepatic and splenic tissue for microbiological and biochemical and histological PCR studies and terminal ileum biopsy for histopathological evaluation were obtained at the end of the 4th day. **Results:** No bacterial growth was detected in the blood, hepatic and splenic tissue cultures in the control group. Bacterial reproduction was detected in 7 rats in group II and in 2 rats in group III. Most of the isolated micro-organism was *Pasteurella aerogenes*. Terminal ileum biopsies were normal in the control group. In group II, histopathologic findings were grade 3 NEC in six rats, grade 2 NEC three rats and grade 1 NEC one rat. In group III, six rats had grade 1 NEC, four rats had a normal histopathological findings. Group 2, TNF- α , IL-6, IL-1 β , i-NOS, PAFR levels were significantly higher than other groups, while the EGFR levels were significantly lower compared to other groups. When evaluating the level of e-NOS was no differences between the groups. **Conclusion:** Data established from the current study suggest that ucrain may exhibit protective effect against NEC and that antioxidant activity primarily modulates this effect. **Discussion:** We believe that ucrain may be protective against necrotizing enterocolitis reducing the inflammatory mediators.

KEYWORDS

Newborn, necrotizing enterocolitis, ucrain.

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Session 8-4 - Antibacterial and anti-inflammatory effects

Submission ID: 369

INVESTIGATION OF THE EFFECTS OF OLEUROPEIN-RICH DIET ON THE NUMBER OF LIVER MAST CELLS IN RABBITS GIVEN ROCURONIUM

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ALTINIŐIK¹

ABSTRACT

Objective: Rocuronium is a steroidal neuromuscular muscle relaxant that is used to relieve endotracheal intubation and mechanical ventilation while maintaining skeletal muscle relaxation during anesthesia. Oleuropein is a phenolic compound derived from green olive leaf and responsible for olive bitter-harsh taste. In different studies it has been shown that; oleuropein have antihistaminic effects and can prevent mast cell discharge. From these studies, when diet principle which based on consumption of phenolic compounds, such as oleuropein, is proven to reduce the anaphylactic mortality and morbidity caused by steroid structured muscle relaxants used in anesthesia, it can be shown that these phenolic compounds may enter into anesthesia procedures as a prophylactic diet and resulting in a more healthy anesthetic process for patients. This substance, which is very common in our country, will contribute to our country in terms of health as well as contribution to economic development. Method: The 14 rabbits used in the study were randomly divided into 2 groups. The rabbits in control group were given standard diet for 15 days. The rabbits in the oleuropein group were given oleuropein-rich green olive leaf extract with the addition of animal water as oleuropein 20mg / kg for 15 days orally. The specially produced extract obtained for study was subjected to standardization in terms of mg / ml oleuropein amount by high performance liquid chromatography (HPLC) method. After 15 days, all rabbits in two groups were given rocuronium from 1mg / kg. After 1 day, animals were sacrificed under ketamine xsilazine anesthesia and the livers of the animals were removed and taken for light microscopical examination. Sections were stained with routine H & E, toluidine blue and tryptase immunohistochemically. Statistical analysis: The data was analyzed using the SPSS package program version 20.0. Mean, standard deviation, median, minimum, maximum were used in the presentation of descriptive data. The Mann Whitney U test was used to compare the variables. For statistical analysis, $p < 0.05$ was considered. Results: There was no statistically significant difference between ALT, AST and Albumin averages of experiment and control groups ($p > 0.05$). The Triptase average of the control group was higher than the Triptase average of the control group and this difference was statistically significant (1169.6 ± 137.5 vs. 775.1 ± 180.0 , respectively $p = 0.003$). The T.Blue average in the experimental group was higher than the control group (1774.4 ± 336.0 vs. 1673.6 ± 291.4 , respectively). However, there was no statistically significant difference between groups in terms of T-Blue averages ($p = 0.482$). Conclusion: In the literature, it has been shown that rocuronium adverse effects, like hypersensitivity and anaphylaxis may limit routine use of this substance. The use of oleuropein for eliminate these effects reduced the number of inflammatory cells and prevented degranulation.

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KEYWORDS

oleuropein, histamine, general anesthezia, anaphilaksia, rocuronium

Session 8-4 - Antibacterial and anti-inflammatory effects

Submission ID: 937

POSSIBLE PROTECTIVE EFFECTS OF CURCUMIN IN LUNG TISSUE ON SEPSIS-GENERATED RATS

EMEL AKTAŞ¹, HILAL YILDIRAN²

ABSTRACT

Objective: Sepsis is a clinical syndrome that is defined as a systematic response to infection. Lung is the primary target organ in sepsis. Advanced treatment strategies are needed for the treatment of sepsis patients. Because of the protective effects of curcumin, an active component of turmeric, is a powerful candidate for current therapies in sepsis. The objective of the present study was to determine the possible protective effects of curcumin on lung tissue of the sepsis induced rats. Method: The 32 rats used for the study were divided into 4 groups and the rats in group 1 (control group) were subjected to abdominal incision after anesthesia under sterile conditions and abdomen was closed. On the rats in the second group (Cur group), only abdominal incision was conducted after anesthesia under sterile conditions and the abdomen was closed. Cur was administered to this group in a daily dose of 100 mg/kg via oral gavage, dissolved in dimethyl sulfoxide, starting 3 days prior to the operation. On the rats in the third group (CLP group), cecal ligation and puncture (CLP) were performed to induce the sepsis model after anesthesia under sterile conditions and the abdomen was closed. In the fourth group (CLP + Cur group), rats were anesthetized and CLP was conducted under sterile conditions and the abdomen was closed to induce the sepsis model. In this group, Cur was administered to this group in a daily dose of 100 mg/kg via oral gavage, dissolved in dimethyl sulfoxide, starting 3 days prior to the operation. All rats in all groups were sacrificed under anesthesia 24 hours after the operation by opening their abdomen under sterile conditions and blood aspiration from their hearts and then rat lung tissues were removed. In histopathologic examination alveolar wall thickness, inflammatory cell infiltration and edema evaluated, and TUNEL was performed. iNOS activity was examined by immunohistochemical evaluation. Results: The inflammatory cell infiltration, edema and alveolar septal thickness scores of lung injury were significantly higher in the CLP group compared to the control and curcumin groups, and statistically significant decreases were observed with curcumin treatment ($p < 0,001$). The numbers of iNOS positive cells in the alveolar and interstitial areas were significantly higher in the CLP group than in the control and curcumin groups, whereas the number of iNOS positive cells in the CLP + Curcumin group was significantly lower than that of the CLP group ($p < 0,05$). TUNEL staining revealed a significant increase in the number of apoptotic cells in the CLP group and a significant decrease in the number of increased apoptotic cells due to CLP after curcumin treatment ($p < 0,001$). Conclusions: The study results suggested that curcumin supplement in sepsis patients has protective effects on lung tissue by decreasing inflammatory cell infiltration, edema, alveolar wall thickness, apoptosis and iNOS activity.

KEYWORDS

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sepsis, curcumin, lung, apoptosis, iNOS

NOT PRESENTED

Session 8-4 - Antibacterial and anti-inflammatory effects

Submission ID: 1316

INVESTIGATION OF THE ANTIFUNGAL AND ANTIOXIDANT PROPERTIES OF THE METHANOL EXTRACT OF CAPPARIS OVATA

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ABSTRACT

In this study, the antioxidant properties of methanol extract of Capparis ovata that belongs to the Capparaceae family was investigated by using various established in vitro such as nitric oxide (NO) radical scavenging activity, reducing power and total phenolic substance analysis. In addition to study was carried out in order to determine the antifungal effect of Capparis ovata, on certain standard fungi strains. To analyze the NO at pH: 7,4 in PBS buffer using 10mM sodium nitroprusside NO radical was produced and added to the medium in various concentrations methanolic Capparis ovata's NO scavenging effect was compared with standart Rutin substance. The inhibit of NO radical by Capparis ovata, depending on the dose, was seen. To investigate the Capparis ovata methanolic's extract capacity of reduction the Fe+3 to Fe+2 which was added to the medium it was compared with Butylated Hydroxytoluene (BHT). Capparis ovata exhibited reduced power activity. The presence of a reducing capacity of a compound is used as a determinant of antioxidant activity. Furthermore, in the study the levels of phenolic compounds of Capparis ovata plant were determined because they were effective on antioxidant parameters. Values of absorbance changes at 760nm were plotted in amounts ranging from 0-100 microgram/ml of pyrocatechol, known as a phenolic standard, were plotted. The amount of phenolic substance in the medium was determined by using the Folin-Ciocalteu reagent. The total phenolic content of the methanol extract of the Capparis ovata was determined as the phenolic substance equivalent to pyrocatechol from the standard pyrocatechol graphic. The value of the curve obtained from the standards was calculated as $r^2 = 0.9995$. As a result, it was determined that 1 mg of Capparis ovata added to the experimental medium contained 19.64 μ gr pirocatechol conjugate. The antimycotic effect of Capparis ovata ethanolic extract against fungus was examined with (MIC) broth macro dilution method with minimum inhibitor concentration. A suspension equal to 0.5 McFarland turbidity in physiological salty water among 48 hour Candida albicans, Candida parapsilosis, Candida krusei and Malassezia pachydermatis strains in SDA medium were prepared in order to prepare the inoculum. RPMI-1640 was used as the medium. Amphotericin B was used as control antimycotic. The results were compared with the control tube and determined with bare eye and

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using 0.5 McFarland Densitometry device (MIC 0-MIC4). They were assessed according to the criteria of MIC 0: No reproduction, MIC 1: 75-80% decrease in the reproduction, MIC 2: 50% decrease in the reproduction, MIC 3: 25% decrease in the reproduction, MIC 4: No decrease in the reproduction. The data obtained from these in vitro models demonstrated antioxidant potential of methanol extract of *Capparis ovata*. Furthermore, according to the results of this study, it was determined that *Capparis ovata* has an important potential as an antifungal.

KEYWORDS

Capparis ovata, Antioxidant, Antifungal, Nitric oxide, Total phenolic substance

Session 8-5 - Clinical Investigations and Rational Use of Medicinal and Aromatic Plants

Submission ID: 672

THE RELATIONSHIP BETWEEN GALACTAGOGUE CONSUMPTION STATUS AND BREAST MILK ADIPONECTIN AND LEPTIN LEVELS

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ABSTRACT

Background/Objectives: Lactating mothers can use various methods as well as consume specific foods or plants for increasing their breast milk. Galactagogues are substances or medicines believed to stimulate maintenance, and augmentation of breast milk production. Herbal teas and some herbs as well as commercial milk-enhancing teas are frequently preferred by mothers in Turkey and around the world. The aims of this study was to determine galactagogues consumption status of preterm and term infants' mothers and to determine the most frequently preferred herbal galactagogues and their relation with breast milk adiponectin and leptin levels. **Subjects/Methods:** This study was carried out in the province of Ankara between the years 2015-2016. Sixty-five voluntary mothers between the ages of 18-35 and their infants (31 preterms; 34 terms) were included the study. General characteristics of the mothers, galactagogues consumption status were determined through a questionnaire. Milk samples (fore milk) were taken from mothers in the period of between 15th and 30th days after birth (mature milk). Enzyme-linked immunosorbent assay (ELISA) was used for the detection of adiponectin and leptin in breast milk. **Results:** The mean age of the preterm mothers was 28.5 ± 4.84 years and 30.5 ± 4.34 years for the term mothers ($p > 0.05$). 35.6% of the preterm mothers and 41.2% of the term mothers used galactagogues ($p > 0.05$). The product with the highest consumption frequency was 'commercial milk enhancing teas' (preterm 81.8%; term 92.9%) among the galactagogues and the median value of daily consumption was 720 ml in both preterm and term infants' mothers ($p > 0.05$). In the second rank, fennel tea (preterm 18.2% and term 42.9%) was found. When the hormon levels of breastmilk were evaluated, there was no difference in preterm and term mother milk using milk-enhancing teas (adiponectin $p = 0.324$; leptin $p = 0.911$). However, milk adiponectin concentration was higher in term mothers who consumed milk-enhancing teas than those who did not consume ($p = 0.001$). **Discussion/Conclusion:** Mothers often tend to traditional methods and herbal teas for increasing their milk. In this study, it was determined that the mothers commonly consumed 'commercial milk enhancing teas' to increase their milk. It is thought that the suggestions made by health personnels and mothers to each other are effective in this situation. In this study, there was no difference between the adipokines contents in the milk of preterm-term mothers using milk-enhancing tea; however, within the group, the concentration of adiponectin in the term mother's milk consuming milk enhancing teas was higher than who did not consume. Leptin reduces energy intake, increases energy expenditure; on the other hand, adiponectin stimulates food intake and reducing energy expenditure. Therefore, it is crucial to investigate in more detail the effects of the consumption of these products on infants. In addition, the effects of commercial milk-enhancing teas on the mothers and their infants in the long term, and the effectiveness, safety, side effects, duration of consumption

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and the interaction with the medicines of the milk enhancing teas are not fully known and further studies are needed.

KEYWORDS

Galactagogue, breast milk, adiponectin, leptin, preterm, term

Session 8-5 - Clinical Investigations and Rational Use of Medicinal and Aromatic Plants

Submission ID: 698

EVALUATION OF HERBAL PRODUCTS USE AMONG ENDOCRINOLOGY PATIENTS IN THE CONCEPT OF RATIONAL USE

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ABSTRACT

Aim: Therapeutic use of plants is as old as human history, but its scientific use in therapy begins with the 19th and 20th centuries. Evidence based and rational use of herbal products requires that patients receive products appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time. In this way, safe use of herbal medicines, which reduces the risk of toxicity and drug interactions while supporting conventional therapy, can be ensured. On the other hand, the common idea as “natural is harmless” and marketing strategies through the media leads to unconscious use of these products. The aim of this study is to determine the prevalence of herbal products use among endocrinology patients and to evaluate the preferred products in the concept of rational use of herbal products. **Material and Method:** The study was conducted with 591 individuals who admitted to endocrinology clinic of Ege University in Izmir between June 2015 and September 2016. Socio-demographic status, medical history, information about the herbal product usage were recorded by a data collection form. All statistical analysis was performed using SPSS version 20 (IBM Corp., Armonk, NY, USA). **Results:** The mean age of the participants was 49.6±19.3 and average BMI was 30.9±7.2. It was found that 90% of participants had at least one chronic disease and 79% of them use their medications regularly. Majority of the participants (62%) took a bright view of using herbal products with therapeutic purpose. The frequency of using herbal products was determined as 45.9%. Among these participants, while 23.2% was using the products in the research period, the other 22.7% was reported they used before. The frequency of herbal product use was higher in individuals with chronic diseases (p=0.027). The average BMI was higher among participants who use herbal products than those who do not use. There were no relationship between frequency of herbal medicine use and age, gender, education level and marital status (p>0.05). Herbal products were mostly preferred to control obesity (39%), insulin resistance/diabetes (22%), thyroid disease (8%), hyperlipidemia (6%) and hypertension (5%). The commonly preferred products was mixed products (24.7%), green tea (9.4%), cinnamon (7%), black cumin (4.9%), dill (4.4%), lemon (3.6%), parley (3.4%) and thyme (%2.9). High number of participants reported that they did not consult their doctor about the products (89%) and did not make a research related with products (72%). While 49% of participants started to use products with the advice of neighbor/acquaintance and %32 with media, using herbal products with the advice of health professionals was very low (5.2%).

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Herbalists (50%) and markets (20%) were the most preferred locations to purchase products. Herbal materials were mostly consumed as infusion (71%), followed by decoction (15%). Additionally, 33% and 58% of the respondents think herbal products may be harmful and can interact with medicines, respectively. Conclusion: In conclusion, it was determined that, the frequency of herbal product use is common among endocrinology patients. However, the products were used uncontrollably and unconsciously without consulting health professionals. We suggest that all health professionals should be educated about herbal therapies and able to inform patients about the rational use of herbal medicines to prevent potential risks due to irrational use of herbal products.

KEYWORDS

herbal products, dietary supplements, endocrine disease

THE EFFECTIVENESS OF GINGER IN THE PREVENTION OF NAUSEA AND VOMITING DURING PREGNANCY

HAVVA ARIN¹, BİRSEN YILMAZ², GAMZE AKBULUT²

ABSTRACT

Nausea and vomiting affects a large part of women in early pregnancy. It is thought that about %50-80 of women have nausea and vomiting in pregnancy in some degree during the first trimester of pregnancy, and for the majority of women, symptoms typically solve by 12-14 weeks gestation. Colloquially known as “morning sickness”, this term is clearly a misnomer since symptoms may occur at any time of the day. Nausea and vomiting are more severe and last longer in a small proportion of pregnant women (0.2-5%). This condition leads to weight loss, deterioration of electrolyte and acid-base balance, dehydration and ketosis. Sometimes hepatic and renal insufficiency may also be seen. Therefore, some pregnancies may remain in the hospital during the first half of pregnancy. The disorder, which is often ignored, seriously lowers the quality of life of the pregnant women and causes emotional trauma. Although not exactly known, hormone levels during pregnancy, upper gastrointestinal system dysmotility, immune system dysfunction, nutritional disorders, Helicobacter pylori (H. pylori) infection and psychological factors play an important role. Methods used in the treatment of the disease can be divided into pharmacological and non-pharmacological. In non-pharmacological treatment methods, the use of various plants, especially in medical nutrition therapy, is common, since pregnant women are cautious about drugs, fearing that their fetuses will be harmed. In a multinational study conducted in recent years, the prevalence of herbal medication in pregnancy was reported as 28%, as well as, the most commonly used plants are ginger (23.5%) and blueberries (22.7%). In 1807, ginger was described by the English botanist William Roscoe and was named Chinchilla officinale. When dried ginger rhizomes are distilled in this oven, 2-3% essential oil is obtained. In addition, rhizomes contain 9% protein, 6% fixed fat, 70% carbohydrate, 6% cellulose and 4.5% ash. Clinical trials have been extensively researched over the past 30 years on the efficacy of ginger nausea and vomiting in pregnancy. Since the methodologies of the studies are not homogeneous, it is not possible to conduct a meta-analysis covering all the studies. In a small meta-analysis involving studies conducted between 1991 and 2009, it was concluded that ~1 g/day of ginger consumption for at least 4 days was more effective than placebo in nausea and vomiting of pregnancy. In another meta-analysis, studies from 1991 to 2011 were examined. The common result obtained in studies using ginger capsules at different doses and frequency, ginger is more effective than placebo in relieving nausea vomiting. Studies comparing ginger and vitamin B6 have also shown that ginger is much more effective than vitamin B6. On the other side, there are also studies showing that vitamin B6 and ginger are not different in alleviating symptoms. Ginger is widely used for relieving nausea and vomiting due to vestibulostatic effect. Although the ginger formulation used in the studies and the overall dose distribution throughout the day are different, the reported dose is 1 g/day. As medicines, herbal products can also cause undesired results, side effects, drug interactions, and pregnancy related

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complications. Based on the evidences, ginger could be a possibly effective option for women with nausea and vomiting in pregnancy, although large standardized trials are necessary.

KEYWORDS

Ginger, Zingiber officinale, pregnancy, herbal medication

INVESTIGATION OF PUMPKIN SEED USE IN THE TREATMENT OF BENIGN PROSTATIC HYPERPLASIA

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ABSTRACT

Investigation of Pumpkin Seed Use in The Treatment of Benign Prostatic Hyperplasia Benign prostatic hyperplasia (BPH) is the main cause of lower urinary tract symptoms (LUTS) in older men. Prevalence of BPH is about 50% in men 51-60 years of age and the ratio increases up to 90% among men in 81-90 years of age. BPH symptoms have negative influences on life quality and restrict daily activities. The recommended medication for BPH treatment is alpha adrenergic receptor blockers which reduces the prostate and bladder neck smooth muscle tone, and 5-alpha reductase inhibitors which reduce prostate volume via epithelial atrophy. Although medicines used for BPH treatment have positive effects on life quality, the adverse effects (including sexual problems) lead patients to herbal medicines with less adverse effects and low cost. In Italy, 50% of the prescribed medications used in BPH is herbal originated. According to a research in USA while 66% of the patients with LUTS related to BPH were using only prescription drugs, 14% of the patients were receiving only phytotherapy and 20% of the patients were using both prescription drug and phytotherapy. In Europe, particularly in Germany, Austria, Italy and France, phytotherapy is often the first-line therapy for the treatment of BPH symptoms. The German commission E monograph reports that pumpkin seed oil is traditionally being used for prostate growth treatment in Europe. Besides pharmacotherapy and surgical treatment, phytotherapeutics are also involved in Canadian, American and European Urology Association guidelines for BPH treatment. According to these guidelines *Serenoa repens*, *Pygeum africanum*, *Urtica dioica* and *Cucurbita pepo* (pumpkin seed) plants can be used for this purpose. In this study, we aimed to evaluate the effect of pumpkin seeds on BPH and LUTS in consideration of current researches. In Europe, pumpkin seeds and pumpkin seed oil have been used for many years in overactive bladder-related micturition disorders and enlargement of prostate gland. The pumpkin seed contains about 50% fatty oil (linoleic acid oleic acid and tocopherol), but it is assumed that active substances of pumpkin seed are Δ^7 -sterols (avenasterol, spinasterol) and Δ^5 -sterols (sitosterol, stigmasterol). In 2014 according to GRANU (The German Research Activities on Natural Urologicals) research, the activities of pumpkin seed, pumpkin seed extract and placebo were evaluated for 12 months in a double-blind, randomized study in 1431 patients with BPH/LUTS. A clinically significant improvement in international prostate symptom score (IPSS) related quality of life (QoL) was observed on pumpkin seed group compared to the placebo group. This study supports the use of pumpkin seed in BPH/LUTS patients. A prospective randomized clinical trial in Iran, published in 2014, compared the efficacy of pumpkin seed oil and prazosin (alpha adrenergic receptor blocker) on 100 patients with symptomatic BPH. In this study, it was stated that pumpkin seed oil reduced IPSS score and increased QoL, but it was emphasized that prazosin was more effective than

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the pumpkin seed oil. The use of pumpkin seed in the treatment of BPH/LUTS has been investigated in a limited number of clinical trials. According to our research, pumpkin seed may relieve LUTS related to BPH, but some of these studies have been criticized for carrying out less than a year and including insufficient number of patients. Due to difficulties in pumpkin seed extract standardization, lack of clarification in mechanism of action, limited number of researches and low quality of studies, current urology guidelines do not provide any specific recommendations for pumpkin seed in the treatment of BPH/LUTS. In conclusion, further researches are needed for pumpkin seed recommendation in standard BPH treatment.

KEYWORDS

pumkin seed, pumpkin seed oil, Cucurbita pepo, benign prostatic hyperplasia (BPH)

Session 8-5 - Clinical Investigations and Rational Use of Medicinal and Aromatic Plants

Submission ID: 1315

THE ANTICANCER ACTIVITY OF PHORMIDIUM PURPURASCENS

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ABSTRACT

In this study, anticancer effects of *Phormidium purpurascens* extracts grown in culture conditions were investigated. Extracts were tested on Vero cells and human uterus carcinoma cells by using the BrdU cell proliferation ELISA method. The antiproliferative effects of *P. purpurascens* were assayed at concentrations of 100, 250 and 500 µg / mL. SPSS® program was used for statistical evaluation of anticancer activity results. The variance analysis results were significant at all concentrations (p <0.01). In the multiple comparison (Duncan) test, *P. purpurascens* showed better antiproliferative effect than DMSO and control group (p <0.01) according to the test results at concentrations of 250 and 500 µg / mL.

KEYWORDS

Cyanobacteria, Phormidium purpurascens, Anticancer Activity, The BrdU Cell Proliferation Assay

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Session 8-4 - Antibacterial and anti-inflammatory effects

Submission ID: 1388

ANTI-MICROBIAL ACTIVITY OF ELAEAGNUS ANGUSTIFOLIA

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ABSTRACT

INTRODUCTION *Elaeagnus angustifolia* L., which is commonly known as oleaster or Russian olive, is a deciduous plant from Elaeagnaceae family. Different parts of *E. angustifolia* plant, especially the fruits, flowers and leaves have been used traditionally in treating a variety of common illnesses such as nausea, cough, asthma, fever, jaundice and diarrhea. According to data, some recent reports have indicated the anti-oxidant, anti-inflammatory, anticancer and some other properties of this plant. This study was performed as to the best of our knowledge; there has been few scientific report on the characterization of antimicrobial effect of *E. angustifolia* extract. The aim of this study was to investigate the in vitro antibacterial and antifungal activity of ethanol and acetone extracts of *E. angustifolia* fruits. **MATERIALS and METHODS** An aqueous ethanol and acetone extracts of *Elaeagnus angustifolia* were prepared and tested for antimicrobial activity against some pathogenic bacteria and fungus *Candida* sp using the broth microdilution technique. The serial dilution was performed as described in the CLSI standards with some modifications. The MIC (Minimal Inhibitory Concentration) was taken as the lowest concentration that inhibited growth after incubation. The test was performed at final concentrations of each extract 12.500; 6.250; 3.125; 1.562; 781; 390; 195; 97; 48.8; 24.4 µg/mL for microdilution. **RESULTS** The MIC values of *Elaeagnus angustifolia* acetone extract for *Proteus mirabilis*, *Candida albicans*, *Enterococcus faecalis*, *Staphylococcus aureus*, *Staphylococcus saprophyticus*, *Escherichia coli* and *Pseudomonas aeruginosa* were 6.250, 3.125, 1.562, 390, 1.562, ≥12.500, ≥12.500 µg/ml and values of ethanol extract for the same strains were ≥12.500, 1.562, 1.562, 3.125, 1.562, ≥ 12.500, ≥ 12.500 µg/ml respectively. According to the results in our study, the highest effect was observed on gram positive bacteria and yeast. **CONCLUSIONS** Result of this study suggests that *Elaeagnus angustifolia* extracts can be effective in all tested microorganisms. Further studies in the effect of different dosages and duration are suggested. Future studies should elucidate the components responsible for antimicrobial activity of these extracts against target cultures.

KEYWORDS

Elaeagnus angustifolia, Antimicrobial activity

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Session 8-5 - Clinical Investigations and Rational Use of Medicinal and Aromatic Plants

Submission ID: 1734

USE OF HERBAL MATERIALS TO ELIMINATE CONSTIPATION

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ABSTRACT

Introduction: Constipation is generally defined as defecation of 3 or fewer per week. Constipation is an important preventable health problem that affects the quality of life of individuals, especially in women, children and the elderly. Physical inactivity, sex, age, low educational level, socio-economic status, trait of sexual abuse, presence of symptoms of depression, use of nonsteroidal antiinflammatory drugs, some diseases are risk factors for constipation. According to the work done, contraception is seen more frequently in women, in children, and in older people. Constipation can be caused by a variety of diseases, constipation as a symptom, which may occur due to conditions that prevent the feces from reaching the rectum or cause it to remain in the rectum for a long time. However, very few of the individuals depend on organic causes. The pathophysiology of constipation is not fully understood and many mechanisms play a role in the development of the disease. The causes of constipation in individuals are multifactorial. Basically constipation is divided into organic and functional causes. Functional constipation constitutes 95% of cases and organic constipation constitutes 5%. For the constipation diagnosis, criteria for defecation, fecal incontinence, presence of fecal mass in the rectum and fecal shape were investigated. Rome I, Roma II and Roma III criteria were developed. It is also possible to use the Bristol scale, which is a question of visual stool. At least two of the Roma III criteria used in the individual may have a presence of functional constipation for a month. These criteria are; 2 or fewer stools a week, stool excretion at least once a week, excessive stool retention, painful and hard stools, stool mass in the rectum, and a mass of stools large enough to block the toilet and an organic cause that can explain all this clinic. Constipation is a frequent problem in the society and clinics and increasing in frequency. However, since they are not usually seen as serious problems, the families do not apply to the health institutions. Individuals seem to have an increase in constipation for reasons such as chronic inactivity, poor fluid intake, inadequate / inappropriate diet, side effects of medications. This increase also shows differences among countries. Cetinkaya and colleagues (2000) found that the rate of women's perceptions of women working in different parts of Ankara is 30.5%, while those over 50 are 39.2%. The incidence of constipation in America is 34% for women and 26% for men. And 42% in the United Kingdom. In the work done in Greece; According to Roma III criteria, the rate of constipation in women was found to be 21% higher than that of males (11%). For adults, fiber diet, fluid intake, physical exercise, regular discharge habits are recommended to relieve constipation. In 2016, 35% of participants stated that they did not consume fruits and vegetables in the study titled "Determination of constipation status of university students living in female student residences" of Arslan and Hisar in 2016. In Ayaz and Hisar's study in 2014, 17% of the women consume fruits and vegetables in order to make constipation. There are a few publications about constipation in our country. The studies conducted are mostly intended to determine the frequency of constipation; It is noteworthy that women who are in risk groups and their

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problems are not addressed. For this reason, the application of plants in the prevention of constipation gains importance. Individuals are thought to be able to avoid the problem of constipation by providing them with plant-based poultry food and taking adequate fluids, being mobile and acquiring regular discharge habits.

KEYWORDS

Constipation, Herbal applications, Public health, Adult health, Health protection and development

Session 9-1 - Traditional Usage

Submission ID: 163

**SOME PLANTS AND THEIR EFFECTS USED IN TRADITIONAL
TREATMENT OF DISEASES AT ÇORUM PROVINCE IN TURKEY**

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ABSTRACT

With this study, it was aimed to determine some plants used in the traditional treatment of diseases by local people in Çorum and to determine their purpose of use and how they are used. To determine this, totally 45 people were interviewed face to face Derinöz, Ađaççamı, Şaphane villages at Oğuzlar province, Kuyucak village at Sidings province, Kutluözü village at Iskilip province, Durucasu and Güvercinlik villages at Osmancık province, in Çorum city. The people, who participated in the survey, were asked to show the plants used in traditional treatment of diseases at the territory; for which diseases and how they are used. Field studies includes June- October months of the year 2016. As a result of this study, 14 families and 18 taxa data are summarized. These are; *Elaeagnus angustifolia* (Elaeagnaceae), *Equisetum ramosissimum* (Equisetaceae), *Carlina oligocephala* var. *oligocephala* (Asteraceae), *Chondrilla juncea* (Asteraceae), *Aesculus hippocastanum* (Sapindaceae), *Prunus spinosa* (Rosaceae), *Pyrus elaeagnifolia* (Rosaceae), *Rubus canescens* var. *canescens* (Rosaceae), *Pinus nigra* (Pinaceae), *Brassica oleracea* (Brassicaceae), *Malva sylvestris* (Malvaceae), *Astragalus* sp. (Fabaceae), *Colutea cilicica* (Fabaceae), *Cucumis sativus* (Cucurbitaceae), *Allium cepa* (Amaryllidaceae), *Juglans regia* (Juglandaceae), *Vitis vinifera* (Vitaceae), *Quercus robur* (Fagaceae).

KEYWORDS

Ethnobotany, Traditional treatment, Herb, Çorum

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Session 9-1 - Traditional Usage

Submission ID: 337

THE EFFECT OF TARAXACUM OFFICINALE (ASTERACEAE) ON DROSOPHILA MELANOGASTER'S DEVELOPMENT BIOLOGY

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ABSTRACT

Taraxacum officinale G. is rich in vitamins and minerals and its used in various food (such as plants, salads and coffee) and alternative medicine. In our study, it was conducted to observe the effect of taraxacum on the survival and development of Drosophila melanogaster Meigen (Diptera: Drosophilidae). In this respect, commercial dry and fresh plants at different concentrations (0.025 to 0.2 g/L) were added to insect diet. The insects survival and development were determined by feeding these phytonutrients. It was determined that development of insects was adversely affected from increasing concentrations prepared with the dry sample. It was observed that dry and fresh samples prepared by brewing had similar effect to the control. According to these results, taraxacum will be used as an adjunct to adult nutrients, and it is necessary to pay attention to the amount of usage by storing conditions

KEYWORDS

Taraxacum officinale, Commercial herbal products, Drosophila melanogaster, Survival Development

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Session 9-1 - Traditional Usage

Submission ID: 438

SOME PLANTS USED AMONG LOCAL PEOPLE IN THE ORTACA (MUĐLA) REGION

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ABSTRACT

This study was carried out between 2005-2007 in order to determine some plants used in the province of Ortaca (Muđla). The study area is located at C2 in Davis Grid system and faces people who have different age and education groups in order to determine the plants used among the people. Were interviewed using participatory observation techniques. During the three-year period, plants were routinely visited at regular intervals and photos of naturally grown plant specimens were taken. It was determined that 38 taxa belonging to 28 families naturally grown in the study area were used by the public. 23 of them are used for medicinal purposes, 19 for food, 3 for spice, 3 for ornament, 2 for food, 2 for religion and 2 for other (spoon-making, agrochemical) purposes. It has sometimes been found that it makes use of a base for several different purposes.

KEYWORDS

Etnobotany, Ortaca, Muđla, Medicinal plants, Flora

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Session 9-1 - Traditional Usage

Submission ID: 1175

DETERMINATION OF THE PHYTOCHEMICAL CHARACTERISTICS OF SOME ENDEMIC AND NON-ENDEMIC ASTRAGALUS L. SPECIES

MELDA DÖLARSLAN¹, EBRU GÜL¹

ABSTRACT

Soil and vegetation characteristics vary depending on climate and climatic conditions in arid, semiarid, and humid areas. Especially in the mountainous areas, the changes of slope and aspect observed in short distances affect the soil properties and also cause differentiation of vegetation forms. Arid and semiarid areas generally have step vegetation, different vegetation types are found in moist areas, soil characteristics, plant species richness-diversity, and the morphological characteristics of the species are differentiated. Astragalus L. species, which generally have high prevalence in high mountain ranges and spreading on steeps and medical use in the national flora, spread in the northern hemisphere and have 2500 species. There are 455 species in our country and about 222 species of these species are endemic and grow only naturally in our country. Different habitat conditions (climate, soil, topography, etc.) that species have, are caused the morphological characteristics of species to change. This study was carried out in Çankırı province and districts of Middle Kızılırmak section of Central Anatolia region and in Ayancık district of Sinop province and it was prepared to determine the change between phytochemical (morphological property, soil) properties of Astragalus L. species which spread in these areas. In the study areas, vegetation sampling was carried out from April to the end of September in the vegetation period of 2016 and soil sampling was carried out in September, the end of the vegetation period. Soil sampling was performed at a depth of 0-30 cm in order to determine the physical and chemical properties (clay-silt-sand content, pH, electrical conductivity (EC), lime content (CaCO₃), bulk density (BD) and soil organic matter content (SOM)). The morphological characteristics of the plant samples were plant height (cm), stem state, stipule length (mm), stipule shape, stipule hair state, leaf length (cm), leaf hair state, leaflet pairs number (piece), leaflet shape, leaflet hair state, inflorescence, peduncle state, peduncle length (cm), bract length (mm), bract shape, bracteole state, calyx type, calyx length (mm), calyx hair state, calyx teeth length (mm), corolla color, pod shape, pod hair state, black hair on pod, hair compression on pod adpressed or pilose and beak state were measured. As a result of evaluating the soil characteristics of the areas where plant taxa were found, the pH, lime content and organic matter content of Astragalus L. species, especially in Çankırı province, varied compared to those in Sinop province. This suggests that the demands of the growing environment are different even in areas where the climate characteristics of the same type of plants are the same. The species found in the province of Sinop show spread on the soil with slightly acidic, moderate calcification and high organic matter contents in the province of Sinop, whereas the species found in the Çankırı province spread on the medium soil with low or very high organic matter content. When we look at the climate characteristics of both areas, Çankırı is included in arid and semi-arid areas with a low average annual precipitation (400-500 mm), while Sinop province is in wet and rainy areas with an average annual rainfall 972 mm. This

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situation naturally creates differences both in vegetation and soil properties. When we evaluate the *Astragalus* L. taxa which are distributed in both areas, we observed differences in the morphological measurements such as plant height (cm), inflorescence (piece), stipule length (mm) and peduncle length (cm) of the taxa spreading in Sinop province. This is due to differences in the development and morphology of *Astragalus* L. species can be explained as the effect of climate characteristics on the soil properties and accordingly the improvement of the conditions of the growing environment.

KEYWORDS

Astragalus sp., Morphology, Phytoecology, Çankırı, Sinop, Turkey

NOT PRESENTED

Session 9-1 - Traditional Usage

Submission ID: 1177

POISONOUS PLANTS IN ABANDONED RED CHALK, CHROME AND MARBLE MINE QUARRY

MELDA DÖLARSLAN¹, EBRU GÜL¹, SABİT ERŞAHİN¹

ABSTRACT

The plants that cover the earth have a great prescription in human life in terms of oxygen availability, nutritional needs and health for survival. In our environment, plant species are grown in different structures and forms. This change in plant species causes the areas of use to vary. Human beings have benefited from their roots, hulls, leaves, flowers, fruits and seeds of natural plants found in the vicinity of this sun for their many purposes in terms of food use, disease treatment, construction and production of tools and equipment's. All these useful purposes have brought economic value to plants. However, in addition to beneficial use of plants, there are poisonous plants in the nature that can harm people and animals. In this context, in Çankırı province of Eldivan province, previously used as a mining quarry, but now in the form of grassland, Plants were sampled in the quarries of 25 m² in 34 different points determined in the red chalk, chrome and marble mines and during the 2014 vegetation period. The study area is located within the A4 square of the Grid system of Davis (1965) in the Iran-Turanion phytogeographic region. As a result of the evaluation of the collected plant samples, 34 genus, 38 species belonging to 15 families of chromium parent material, 58 genus, 72 species belonging to 20 families in marble parent material and 56 genus and 73 species belonging to 22 families constitute the floristic composition of red chalk parent material. As a result of the literature searches, 25 genera and 26 species belonging to 13 families were found to be toxic to the inland people and animals. *This study was supported by Scientific and Technological Research Council of Turkey (TUBITAK) (Project No: 114O707)

KEYWORDS

Mine quarry, Poisonous plant, A4, Eldivan, Çankırı

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Session 9-1 - Traditional Usage

Submission ID: 1919

SPICES USED IN MEVLEVI CUISINE AND THEIR FUNCTIONAL FEATURES

ÜMIT SORMAZ¹

ABSTRACT

Mevlevi period is one of the periods that have been influential on the Turkish cuisine culture, which, in turn, has a significant place for traditional and local foods and beverages, types of foods and culinary culture. In this period when religious themes and motifs were abundant, food, eating, customs and manners of eating were accepted as a form of worshipping as they entailed being thankful and grateful. Since types of foods used domestically and industrially at the present to enrich or season were not available or accessible back then, spices were used frequently when cooking especially for cooking. For this reason keeping and using spices at Mevlevi lodges's crucial. This is a compilation study prepared to define types and functional features of spices used in Mevlevi cuisine in order to comprehend the importance of using them, and to ensure they become widespread. Key Words: Tourism, gastronomy, Turkish cuisine, Mevlevi cuisine, spices.

KEYWORDS

Tourism, gastronomy, Turkish cuisine, Mevlevi cuisine, spices.

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Session 9-2 - Medicinal and Aromatic Plants in Veterinary Health Care

Submission ID: 32

**THE EFFECT OF SUGAR AND OLIVE (OLEA EUROPAEA L.)
PHENOLICS ON DROSOPHILA MELANOGASTER 'S
DEVELOPMENT BIOLOGY**

EDA GÜNEŞ¹, DERYA ARSLAN DANACIOĞLU¹

ABSTRACT

Olive leaves-including medical values- are among the plants used in alternative medicine. In our study, it was aimed to observe the effects of olive (*Olea europaea* L.) phenolics on the survival and development of *Drosophila melanogaster* (Meigen) (Diptera: Drosophilidae) fed with sugar and sugar free diet. For this purpose, the dried olive fruits and leaf extracts (0.8-12 mg/L) at different concentrations were added to the insect sugary diets (0.15-4 M sucrose). Larvae fed with different concentrations of sugar and plant extracts to adult stage was determined the effect on survival and development. It was determined that 12 mg/L phenolic fruit extract and 4 M sucrose are negative impact on the development and survival of insect. It was also found that phenolic fruit-leaf and low sugar concentrations decreased the female sex ratio and increased the male sex ratio. These results demonstrate that low amounts of sugar and olive phenolics may be used as an adjunct to adult nutrients to improve adult characteristics of the insects.

KEYWORDS

Olea europaea, Phenolic, Drosophila melanogaster, Survival Development.

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Session 9-2 - Medicinal and Aromatic Plants in Veterinary Health Care

Submission ID: 60

CULTIVATION OF ONE OF THE IMPORTANT GEOFITTS IN CENTRAL ANATOLIA

AYŞE SERMİN ÖZER¹, RAGIP AKDEMİR², NEŞET ARSLAN³

ABSTRACT

Cultivation of one of the Important Geofitts in Central Anatolia (ÇANKIRI-ELDİVAN example) Sternbergia Geofitts have also an important place in biological variety richness of our country. Bulbous, tuber and rhizome plants are referred to “geofitts” in the general sense. Approximate 800 geofitts, 162 of which is endemic are naturally available in our country. Some geofitts are collected and their domestic and foreign trade are done. In spite of providing foreign currency inflow to country economy with these activities, some species have entered under threat, faced with the danger of extinction because of excess and wrong collections. As a result, mostly irrevocable losses have occurred in the ecosystems where they show natural spreading. Nature protection at global scale and ensuring continuity of these species is basic principle in geofitt trade. In this sense, collection from nature of geofitts should be taken under control and produced. Benefiting from Nature and control of export are fulfilled by “Natural Flower Bulbs Committee” formed in pursuance of related article of the “Regulation on Collection from Nature, Production and Export of Flower Bulbs” which is prepared by Ministry of Food Agriculture and Livestock. Permission for benefiting from nature is given or benefiting from nature is prohibited for some species within the framework of the quota set each year by the Committee. These decisions come into force after publishing in the Official Gazette. Sternbergia candida Mathew Et T. Baytop subject to this Project study is one of the endemics of Baba Mountain where it displays spreading; collection from nature and export of Sternbergia candida is forbidden pursuant to the Regulation on Bulbous Plants in Turkey. Sternbergia being a rare species takes place under endangered species in wild life: END-E (endangered) according to CITES. Globally endangered plant is found in Annex List I of Bern Convention, Annex list 2 of CITES. At first, growing in the different ecosystems having similar properties and the ecosystems of the geofitts, source of income of our country and the conditions of growing should be established. Central Anatolia Region has remained weak in terms of medicinal-aromatic plants and production and evaluation of geofitts. Today, it is known that, contribution of income of forest products on subsistence of forest villagers is insufficient. With growing in the region of the geofitts appropriate to be grown in Central Anatolia Region, it would be possible to mobilize this region which has remained weak from the aspect of herbal product manufacturing and trade. Side income possibility will be provided to locals, so benefit will be maintained for their development. This plant under the group “Bulb Flowers whose export by collecting from natures is forbidden in Export List of Natural Flower Bulbs” was cultivated in open space of Eldivan Nursery in 2004. In the parcels on which control (C), sheep- goat (KB) and cattle-ruminant (BB) fertilizer is applied, bulb development, number of baby bulb, flowering, status of fruit and seed set are established and recorded by years. Productivity is sorted as C, L and S parcels. In

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the observation performed by years, it is seen that vitality of the plant keeps on, its development is very well, gives baby bulb and shoot, form diameter, runs to seed substantially. Test field was emptied completely in 2011, soil was taken to rest. On the bulbs brought to Research Directorate, later diameter measurements are made, taken to rest and following classification as per sizes, made ready for second cultivation. The bulbs cultivated in the area prepared later have also commenced to develop at the ends of 1 year delay. All these data specifies that adaptation to field of the plant is good, may be a source of income for the region in the future.

KEYWORDS

Geofits, exportation, Sternbergia candida, plantation, ecosystem.

Session 9-2 - Medicinal and Aromatic Plants in Veterinary Health Care

Submission ID: 310

EVALUATION OF EFFECTIVENESS OF NIGELLA SATIVA AGAINST CLINICAL ENDOMETRITIS IN COWS

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ABSTRACT

The aim of this study was to evaluate the cure effectiveness for the intrauterine infusion of *Nigella sativa* (NS) in clinically endometritic cows. Clinical endometritis diagnosis was based on the presence of white flakes in cervicovaginal mucus, pH and colour reaction of cervicovaginal mucus to white side test. A total of 20 clinically endometritic cows (10 cows in each group) were randomly divided into 2 treatment groups: an i.u. infusion of 100 mL of methanol extract of NS was given once a day during 3 days in group NS; cows with no treatment belonged to group C. Blood samples were taken from the jugular vein with 10 mL heparinized test tube and silicone (for serum) vacutainer tubes to detect the anti-inflammatory and the antioxidant activity of NS before treatment and one week after treatment. Sampling for bacteriological examination was performed immediately after diagnosis of clinical endometritis and on day 14 after the treatment. After the treatment, there were slight vaginal discharges in 3/10 animals in group NS. *S. aureus*, *E. coli*, *A. pyogenes*, *Streptococcus* spp., *Pasteurella* spp., *Pseudomonas* spp., *Corynebacterium* spp., *Acinetobacter* spp. and *Bacillus* spp. were identified from vaginal swab samples in all cows before treatment and *E. coli* was identified only from two cows in NS group after treatment on day 14. High counts of the bacterial types were noticed in group C in contrast to the rapid reduction of bacterial counts in groups NS after treatment on day 14. Glutathione peroxidase and superoxide dismutase levels increased ($P < 0.05$) and malondialdehyde concentration decreased significantly ($P < 0.05$) in groups NS after treatment when compared to pre-treatment ones. Haptoglobin and serum amyloid A levels of groups NS decreased significantly ($P < 0.05$) after treatment when compared to group C. NS had antimicrobial, antioxidant and antiinflammatory effects in clinical endometritic cows. This study indicates a therapeutic value of NS in clinically endometritic cows. Intrauterine administration of NS might be a promising cure for cows with clinical endometritis in the future. Keywords: *Nigella sativa*, cow, clinical endometritis, treatment

KEYWORDS

Keywords: Nigella sativa, cow, clinical endometritis, treatment

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Session 9-2 - Medicinal and Aromatic Plants in Veterinary Health Care

Submission ID: 318

POSSIBILITIES OF USING AROMATIC PLANTS FOR MITIGATING METHANE PRODUCTION IN DIGESTIVE SYSTEMS OF RUMINANTS

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ABSTRACT

POSSIBILITIES OF USING AROMATIC PLANTS FOR MITIGATING METHANE PRODUCTION IN DIGESTIVE SYSTEMS OF RUMINANTS. Euloge OLOMONCHİ, Ali Vaiz GARİPOĐLU, Recep MERHAP olomonchi@yahoo.fr, alivaizg@omu.edu.tr, recep_merhap_93@hotmail.com Abstract The production of methane by ruminants is the basis of an estimated loss of energy between 10-16% of the total energy. This production contributes in the destruction of ozone. Several methods are used to prevent or to block the production of methane. Among these methods are use of essential oils, halogenated methane analogues, aromatic plants and lipid-rich materials, defaunation of rumen and addition of acetogenic bacteria to the rumen fluid. Polyphenolics are biological compounds contained in aromatic plants. These compounds have antimicrobial (*Eucalyptus camadulens*), antioxidant (*Origanum majorana*), antiparasitic (*Sericea lespedeza*), antiprotozoal (*Cinnamosma fragrans*), antifungal (*Thymus vulgaris*), and anti-inflammatory (*Aucoumea klaineana* Pierre) properties. Thanks to these properties, aromatic plants are able to inhibit the action of methanogenic bacteria, contributing to the prevention of methane production in the rumen. This represents an important step forward in the nutrition of ruminants and in the inhibition of methane production. The purpose of this review is to provide an overview of possibilities of using aromatic plants with the aim of mitigating methane production in rumen.

KEYWORDS

Methane, methanogenic bacteria, aromatic plants

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Session 9-2 - Medicinal and Aromatic Plants in Veterinary Health Care

Submission ID: 447

MEDICINE WITH VARROA PARASITIS IN ORGANIC BEES USE OF PLANTS

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ABSTRACT

Organic production, protecting the ecological balance in nature, not the amount of production with the optimum use of natural resources and energy that keeps quality in the foreground is an alternative farming systems aiming to be healthy and reliable products. Today excessively and unconsciously that food produced with the use of synthetic chemicals used view that threaten human health and the findings are increasing. Therefore; Unwanted residual matter content in the export of honey produced in Turkey is becoming an increasingly problem. Beekeepers in the production of our bee products against diseases and pests, bees release chemical additives in the product with the use of natural products and their negative effects on humans will be eliminated (Őahinler, 1996). Honey bees; honey, beeswax, royal jelly, bee venom, pollen and have a vital role in the natural balance and agricultural production and human health and to produce highly valuable products in terms of nutrition and collection alongside natural and pollination services provided by agriculture made in plants such as propolis (Young, 1996). Therefore, both honey bees and valuable products listed above in order to increase the quantity and quality of crop production products are used all over the world, and obtained significant benefits. However, as in all other agricultural activities, the honey bee pest and disease problems are being experienced. These drugs are used to overcome the problem of honey and poses a threat to human health, leaving residue in the wax (Kaftanođlu and Free, 2000; Salter, R, 2003; Maver, L. and Pokluda, Jr. 2003; Dspni, D et al 1999; Castle, LA et al 2004.; Sabatini, AG et al 1999; Fernandez, MA et al, 1997). Varroa destructor in honey bee (*Apis mellifera* L.) larvae is a dangerous blood sucking parasites that live on the pupa and adult. Main host is known as India bee *Apis Cerena*. More stroller bee honey production order made unconscious *Apis mellifera* has been infected with this parasite (Kaftanođlu, 2000). Previously, Russia and from there spread to Eastern Europe to the Varroa destructor then all continents and has led to the extinction of hundreds of thousands of colonies. The first time Turkey had made in 1977 and soon spread all over the country. Despite taking a lot of measures are still poses a great threat to the colony (KAFTANOđLU et al., 1990; KAFTANOđLU et al., 1992; Kaftanođlu et al., 1995; Enthusiast and Pearl, 1992). In this study, the spring and autumn months in honey bee colonies to great dangers that pose varroa mites struggle with chemical drugs of natural products could be an alternative (tobacco leaf, bay yađrag, Thyme leaves or oil) have been conducted to determine its effectiveness. According to the results of the study, it was determined that the activities performed in autumn in general are higher than those in spring. In addition, it was determined that tobacco application was more effective than other applications in the autumn and spring seasons. Reference Castle, L., Philo, M.R., Sharman, M.: The analysis of honey samples for residues of nitrobenzene and petroleum from the possible use of Frow mixture in hives. Food Chemistry, 2004: 84:4, 643–649 Garcia, M.A., Fernandez, M.I., Herrero, C., Melgar, M.J.: Acaricide residue determination in honey. Bull. Environ. Contam. Toxicol., 1996; 56: 881-887. Genç, F., 1996,

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KEYWORDS

Bees, Varroa, Natural Products

Session 9-2 - Medicinal and Aromatic Plants in Veterinary Health Care

Submission ID: 834

THE EFFECTS OF SOME ESSENTIAL OILS ON CALLOSOBRUCHUS CHINENSIS L. (COLEOPTERA: BRUCHIDAE)

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ABSTRACT

Legumes are one of our main food sources and have an important role in nutrition. During storage, they are exposed to the attacks of some pests and their damage can reach 100%. Besides the commonly used control methods, recently, studies on the use of essential oils of plant origin as an alternative have become very important in the world and in Turkey. It is known that many spices, weeds and their components have insecticidal effects. In this study, fumigant and repellent effects of commercially available (Talya Plant Products) essential oils of mint (*Mentha piperita*), thyme (*Thymus vulgaris*), laurel (*Laurel nobilis*), rosemary (*Rosmarinus officinalis*), myrtle (*Myrtus communis*) and lavender (*Lavandula angustifolia*) on azuki bean beetle (*Callosobruchus chinensis*) that is one of the major pulse bruchids, were investigated. In the study, 100, 150 and 200 µl/l doses of essential oils were used. To determine the fumigant effects in the study, 10 g chickpea were placed in plastic tubes (100 ml) with filter paper impregnated with essential oil at different doses on their caps and 10 azuki bean beetle adults were placed in each tube. For the determination of repellent effects, 1 kg plastic containers (20x30x10 cm) were used. Accordingly, 20 g food coated with 200 µl/l essential oil was placed on one side of each container while the same amount of uncoated food was placed on the other side. Then 10 azuki bean beetle were placed in the middle of the container. Trials were carried out in three replicates, at a temperature of 22±2° C and 60-70% humidity. The trials were carried out in a completely randomized design with four replicates. As a result, differences in the effects of essential oils and their doses on *C. chinensis* were found to be significant ($P < 0.05$). The fumigant effect test results showed that the mint essential oil was the most effective; especially the highest dose (200 µl/l) exhibited 100% effect after 72 hours, which was followed by thyme (87.5%), lavender (75.5%), myrtle (71.88%), laurel (68.75%) and rosemary (65.63%) essential oils. In the repellent effect studies on azuki bean beetles, 100% repellent effect was observed in lavender, myrtle, laurel and rosemary essential oils at the dose of 200 µl/l at 48 hours while 93% repellent effect was observed in mint essential oil and 90% repellent effect was determined in thyme essential oil. In conclusion, essential oils of six different plants used in our study showed a fumigant effect on *C. chinensis* and these essential oils can be considered as an alternative control method against *C. chinensis* and other stored beetles. In addition, essential oils used in the study were found to have repellent effects.

KEYWORDS

Callosobruchus chinensis, essential oil, repellent, attractant.

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Session 9-3 - Some Applications of Medicinal and Aromatic Plants

Submission ID: 71

**EFFECT OF FERULA HALOPHILA EXTRACTS ON CATALASE
ACTIVITY OF GALLERIA MELLONELLA L. (LEPIDOPTERA:
PYRALIDAE)**

RAHİLE ÖZTÜRK¹, OSMAN TUGAY¹

ABSTRACT

Lepidoptera orders belonging to the *Galleria mellonella* L., damaging honeycomb in beekeeping, is an insect pest holometabol economically. Confidence larvae, pollen and great harm to the feeding combs, beehives. *G. mellonella*, and to have a short life cycle and high efficiency, and also to be recognized as an important insect species because it can grow well on a variety of biological and chemical control studies on artificial food. Tuz çakşırı known as *Ferula halophila* Peşmen; Apiaceae belonging to the family, many years, is an endemic plants spread around 60- 90 cm in length and Salt Lake. This species of this plant is a plant halophytes danger category VU (damage), respectively. In this study, grown in laboratory conditions *G. mellonella*'s applied to the larval extracts of *F. halophila*, its effects on catalase activity were investigated. For experimental groups, egg extracts from stock cultures were plunged into mixed nutrient at different doses (20, 40 and 60 ppm) and eggs were fed to the larvae. At the same plant extract ratios, bovine protein isolation was performed to investigate changes in homogeneous protein quantities. The total amount of protein in the homogenates was determined by the Bradford method and protein profiles were extracted by SDS-PAGE analysis of the extracts. The obtained extracts were used for enzyme activity analysis. Catalase enzyme activity, which is particularly effective in the defense mechanism, has been measured in the study. When the results are examined; It has been found that catalase activity is also increased in larvae fed with food containing 20, 40 and 60 ppm extract due to the increase in the concentration of *F. halophila* extract. Last year in pesticides used in pest control, insect physiology and biochemistry on the mechanisms of action are being investigated. In this study, the aphrodisiac effect of some species of the genus known *Ferula F. halophila*'s to assess the effects of insect physiology *G. mellonella* was used as a live model.

KEYWORDS

Ferula halophila, Galleria mellonella, catalase

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Session 9-3 - Some Applications of Medicinal and Aromatic Plants

Submission ID: 914

GREEN BLOOD: "WHEATGRASS JUICE"

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ABSTRACT

The purpose of this study is; to summarize the literature on wheat grass juice produced from young shoots obtained by germination of wheat (*Triticum aestivum* L.) seeds of the Gramineae family in relation to its chemical content, a healthy life and their treatment potential. The naming of wheat grass juice as "green blood" is related to the high chlorophyll content and it is chemically almost hemoglobin-identical. Wheatgrass is described as full food because it contains almost all the nutrients the body needs. The researches on the chemical content of wheatgrass juice have shown that, in high concentrations, chlorophyll and pharmacological enzymes such as protease, amylase, lipase, cytochrome, oxidase, transhydrogenase and superoxide dismutase, bioflavonoids such as apigenin, quercetin, luteolin and with important phenolics such as abscisic acid, ferulic acid, gallic acid, caffeic acid, p-fumaric acid, ellagic acid, benzoic acid, p-hydroxybenzoic acid, syringic acid, quercetin and butylhydroxyanisole and terpenoids and phytochemical compounds such as gamma sitosterol, squalene, caryophyllene, amarines, saponin, tannin, kumarin and which is rich in biotin, choline, folacin, vitamins A, B1, B2, B3, B5, B6, B12, C, E and K and contains calcium, phosphorus, potassium, iron, magnesium, sodium, sulphur, zinc, boron, manganese, molybdenum, selenium and 17 different amino acids. It has been reported that wheatgrass juice can be used for the treatment of thalassemia, leukemia and other cancers and to reduce the destructive effect of chemotherapy, immune system strengthening, antioxidant, antimutagenic effects. Wheatgrass juice can be considered safe in the treatment of skin diseases with the antioxidant effects. Toxins purifying, cholesterol lowering, preventing high blood pressure and cardiovascular system supportive effects are other functions of the wheatgrass. It is recommended as supportive treatment for ulcers, colitis, digestive system disorders, wound and inflammation. It has been determined through studies that wheatgrass can prevent liver and colon cancer by reducing the absorption of aflatoxin, balance blood sugar level, improve reproductive functions and delay aging effects. According to the research it can be said that the wheat grass juice obtained from 6-10 day old shoots is recommended for healthy life with 30 ml daily as a food supplement and 90 ml as a daily dosage for treatment.

KEYWORDS

Wheatgrass juice, chemical content, healthy living, phytotherapeutical potential

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Session 9-3 - Some Applications of Medicinal and Aromatic Plants

Submission ID: 1170

GREEN SYNTHESIS OF SILVER NANOPARTICLES USING CLOVE EXTRACT AND THEIR ANTIBACTERIAL APPLICATION

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ABSTRACT

In the present study, Green synthetic protocol was developed for fabrication of silver nanoparticles using clove extract as reducing/protecting agent. The synthesized silver nanoparticles were characterized by several spectroscopic and optical techniques. UV-Visible spectroscopy was used to confirm the formation of clove extract capped silver nanoparticles (clove-AgNPs) by optimizing various reaction parameters such as concentration of precursor salt, volume of clove extract, pH and temperature. FT-IR study was conducted to confirm the interactions of clove with silver nanoparticles. In order to study the crystalline nature of silver nanoparticles XRD study was carried out and results indicated the crystalline nature of silver nanoparticles. AFM study showed the topography and surface roughness of the biologically synthesized silver nanoparticles. Dimensional analysis was performed using TEM and it confirmed that the synthesized nanoparticles have an average diameter of 12.2 ± 2 nm within size scale range of 8-17 nm. Further, the biologically synthesized silver nanoparticles were tested against Gram (-) and Gram (+) pathogenic bacterial strains. The fabricated silver nanoparticles explored prominent antibacterial effects against all tested bacteria and improvement in activity was found to be dependent on increasing quantity of nanoparticles dosage.

KEYWORDS

Clove extract, Antibacterial effects, Topography, Nanoparticles dosage

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Session 9-3 - Some Applications of Medicinal and Aromatic Plants

Submission ID: 1224

THE USAGE POTENTIAL OF DIFFERENT MEDICINAL PLANTS AS ANTIFUNGAL PRESERVATIVE IN FRUIT DRYING

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ABSTRACT

In this research the potential usage of various aromatic plants as antifungal preservatives on dried fruits was investigated. Therefore, dried nectarine (Bayramiç beyazı), golden delicious apple, sweet cherry, Stanley plum were treated with *Ocimum basilicum* L., *Origanum majorana* L., *Origanum vulgare* L. subsp. *hirtum* (LINK) IETSWAART and *Rosmarinus officinalis* L. Dried fruits were soaked into 80°C hot water which had been treated with aromatic plants for 15 min previously and then dried again. After treatments, dried fruits were inoculated with *Aspergillus parasiticus* DSM 5771 and *Zygosaccharomyces rouxii* ATCC 28253 and the change in fungal load was followed during storage time. In addition to antifungal activity, effects of aromatic plant process on the total antioxidant capacity and total phenolic content, also the textural and sensory properties of the dried fruits were examined. As a result of this study, *Origanum vulgare* L. subsp. *hirtum* has been determined as most effective natural preservative against fungal infections for dried fruits during shelf life. As well, *Ocimum basilicum* and *Origanum majorana* have potential as antifungal preservatives on dried fruits; however they are not as effective as *Origanum vulgare* L. subsp. *hirtum*. However *Rosmarinus officinalis* had limited effects on dried fruits. *Zygosaccharomyces rouxii* known as high tolerable against osmotic stress, led to highest infection rate. Total phenolic content and total antioxidant capacity analyzes showed that immersion of dried fruits in hot water impaired the functional food components. Nevertheless, aromatic plants in immersion process caused the improvement of phenolic content and total antioxidant capacity. *O. vulgare* L. subsp. *hirtum*, *O. basilicum*, *R. officinalis* and *O. majorana* had decreasing effects on phenolic content and total antioxidant capacity respectively. As stated by sensory evaluation, aromatic plants especially *O. vulgare* L. subsp. *hirtum* promoted taste and aroma profile.

KEYWORDS

Aromatic herb, dried fruit, natural preservative, antifungal

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Session 9-3 - Some Applications of Medicinal and Aromatic Plants

Submission ID: 1442

ENDANGERED GALANTHUS SPECIES OF TURKEY AND CONSERVATION STUDIES

SEVİM DEMİR¹, FISUN GÜRSEL ÇELİKEL¹

ABSTRACT

Turkey, which is among the major gene centers of the world and has a special place in plant genetic diversity, has rich genetic resources of geophytes. However, many plant genetic resources, including geophytes, are under genetic erosion because of the environmental and other problems and therefore face with the danger of extinction. IUCN (International Union for Conservation of Nature and Natural Resources) Red List categories are EX (Extinct), EW (Extinct in the Wild), CR (Critically Endangered), EN (Endangered), VU (Vulnerable), NT (Near Threatened), LC (Least Concern), DD (Data Deficient) and NE (Not Evaluated). There are 6 Galanthus species (Galanthus elwesii, Galanthus gracilis, Galanthus koenenianus, Galanthus peshmenii, Galanthus plicatus, Galanthus trojanus) in our country in various categories of IUCN Red List. Some of these species are endemic to Turkey. Lost of these endemic species from our country means that their lost from the world. In addition to their potential usage as ornamental plants, their usage in pharmacology due to the medical properties of the modified stems and in other related industries increase their importance. Therefore, it is very important to protect these genetic resources in the World and to prevent their destruction. In this review, some information about the conservation studies on Galanthus species in our flora that are IUCN Red List categories due to the danger of extinction by various reasons were given and discussed.

KEYWORDS

Galanthus, IUCN, Red List, Geophyte, Genetic Diversity

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Session 9-3 - Some Applications of Medicinal and Aromatic Plants

Submission ID: 1817

HERBAL PREPARATIONS AND MENTAL HEALTH : RISK OF DRUG INTERACTION.

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ABSTRACT

Mental health problems are seen all across the globe, comprise children, adolescents and adults and are increasing in frequency. Psychiatry is unique in medicine, as not only genetics, biology and the environment play a role, but also cultural factors influence onset, progression and therapeutical approaches to disorders. Cultural factors are reflected in diagnostical systems like DSM-V and ICD-10. Medical treatments and psychotherapies have been developed and proven effective for most psychiatric disorders, but unfortunately causative therapies are still lacking for some disorders. On the other hand, cultural habits and traditional healing methods for mental health problems exist and include some herbal preparations. Last but not least, scientific approaches linking herbal action with pathophysiology of psychiatric disorders are under way. Herbal preparations may be administered simultaneously with psychotropic drugs by the medical profession or may be used self-initiated by patients with or without informing their doctor. As with drug-drug interactions, drug-herbal interactions may pose an increased risk for the patient. Therefore the medical interview should include asking the patient about herbal applications and informing the patient about potential risks of common drug-herb combinations. Some drug-herb combinations with heightened risk of unfavourable interaction include: - Cardiovascular risk (venlafaxine + caffeine). - Decreased effect of drug (haloperidol + caffeine/nutmeg). - Drug toxicity if caffeine is stopped (lithium + caffeine). - Drug toxicity if smoking is stopped (clozapine + nicotine). - Epileptic seizure (carbamazepine + sage; methylphenidate + sage; amitriptylin + ginkgo/St.John's wort/sage). - Photosensitivity, severe sunburn (nortriptyline/ phenytoin sodium /risperidone + St.John's wort). - Sedation, impaired driving and workplace safety (benzodiazepines + linden/passion flower; risperidone + lemon balm/passion flower/valerian root). - Serotonin Syndrome, may be lethal (SSRI's like citalopram/fluoxetine/sertraline + ginkgo/St.John's wort). In the process of developing new drugs and herbal preparations, knowledge about interaction principles may help avoid major risk factors by adapting pharmaceutical methods according to medical and cultural requirements. This presentation will start with the principles of drug interaction including pharmacokinetic and pharmacodynamic essentials, which will be followed by information on certain drug-herb combinations, and conclude with suggestions for pharmacovigilance.

KEYWORDS

Mental health, psychotropic drugs, herbal preparations, interaction, pharmacovigilance.

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Session 9-4 - Extraction Studies

Submission ID: 451

ENZYME INHIBITORY ACTIVITY OF EXTRACTS AND ESSENTIAL OILS OF SOME MEDICINAL PLANTS

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ABSTRACT

Plants have been used for medicinal treatments for thousands of years. Hence, the plants are attracted attention by the researchers to find out new and effective agents for different diseases. Alzheimer's disease (AD) is the most common type of dementia. The valid hypothesis being accepted has been the lack of in amount of acetylcholine which is a neuromediator [1]. Inhibition of acetylcholinesterase which is the key enzyme hydrolyses the acetylcholine to choline and acetic acid is used to treatment for the AD. Tyrosinase is a copper-containing enzyme mostly found in plants and animals. Tyrosinase inhibitors are used in the treatment of dermatological diseases related to melanin hyperpigmentation and also have a significant role in cosmetics for whitening and pigmentation after sunburn [2]. Herein, we studied five medicinal plant species namely; *Sideritis albiflora*, *Sideritis leptoclada*, *Sideritis pisidica*, *Sideritis stricta* and *Ferula elaeochytris*. For this purpose, plant species were extracted with hexane, acetone and methanol, respectively at room temperature and essential oils were obtained by a Clevenger apparatus. The in vitro anticholinesterase activity of the extracts from five plants was tested against acetylcholinesterase (AChE) and butyrylcholinesterase (BChE) known as the chief enzymes of AD using Ellman method [3]. Tyrosinase enzyme inhibitory activity was tested by the spectrophotometric method as described by Masuda et al. [4]. The activity results were compared with those of galantamine and kojic acid which are used as standard. Among the all extracts and essential oils, hexane extracts showed high enzyme inhibitory activity against AChE. The hexane extract of *F. elaeochytris* (70.66±1.33 %) exhibited the best activity followed by *S. pisidica* (62.54±0.88 %) and *S. stricta* (58.59±0.25 %). Against BChE, the acetone extract of *F. elaeochytris* and the hexane extract of *S. stricta* indicated the highest enzyme inhibitory activity with percentage inhibition values of 67.70±0.63 and 62.07±0.35 % at 200 µg/mL, respectively. As for tyrosinase inhibitory activity, the methanol extracts of plant species exhibited high activity than other extracts. The methanol extract of *S. albiflora* (42.52±0.74 %), followed by *S. leptoclada* (28.77±1.33 %) showed mild tyrosinase enzyme inhibitory activity. References [1] Grossberg, G.T. (2003). *Current Therapeutic Research* 64, 216-235. [2] Curto, E. V., Kwong, C., Hermersdorfer, H., Glatt, H., Santis, C., Virador, V. J., Hearing, V. J., Dooley, T.P. (1999). *Biochemical Pharmacology*, 57, 663-672. [3] Ellman, G.L., Courtney, K.D., Andres, V., Featherston, R.M. (1961). *Biochemical Pharmacology*, 7, 88-95. [4] Weatherburn, M.W. (1967). *Analytical Chemistry*, 3, 971-974.

KEYWORDS

Medicinal plants, Anticholinesterase activity, Anti-tyrosinase activity

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Session 9-4 - Extraction Studies

Submission ID: 921

NARINGENIN SOLUBILIZING AND PH DEPENDENT RELEASING PROPERTIES OF WATER SOLUBLE P- SULPHONATOCALIX[4]ARENE

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MUSTAFA YILMAZ³

ABSTRACT

Flavonoids that contain flavonones contribute to anticancer activity beyond their antioxidation effect. Among flavanone, naringenin is regarded as a phytoestrogen with weak estrogenic and antiestrogenic activities that inhibits proliferation of colon cancer cells and melanoma cells. Naringenin, found in grape and citrus fruits exhibits an extensive range of pharmacological activities with low or no intrinsic toxicity such as anti-mutagenic, anti-inflammatory, anti-atherogenic, anti-cancer and hepatoprotective. Despite the excellent therapeutic, the poor water solubility and instability in physiological medium hampered its clinical development. In this work we have made an attempt to increase its bioavailability by forming water soluble inclusion complex using water soluble p-sulphonatocalix[4]arene (p-SCX4) at physiological pH and subsequent release at lower pH values. The inclusion complexation behavior, characterization and binding ability of naringenin with p-SCX4 was investigated by means of UV-Vis spectroscopy, FTIR spectroscopy and HPLC. Job's plot method and Benesi-Hildebrand equation was used to find the stoichiometry of complex. Results show that there is 1:1 stoichiometry between drug and p-SCX4 with binding constant value $K = 7.14 \times 10^3 \text{ M}^{-1}$. The solubility factor was increase upto 11 fold while pH dependent release suggest 60 % release at pH 3.5 value.

KEYWORDS

p-Sulphonatocalix[4]arene, Naringenin, Inclusion complex, Solubility, Drug release

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Session 9-4 - Extraction Studies

Submission ID: 1648

NITROGENIZED COMPOUNDS FROM CYTOTOXIC EXTRACT OF GYROMITRA ESCULENTA

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ABSTRACT

The main constituents of medicinal mushrooms are polysaccharides, and lanostane-type triterpenoids and steroids. These class of compounds exhibit cytotoxic activity against cancer cell lines. They also strengthen immune system (immunomodulators). Therefore, the scientist considered mushrooms as sources of medicines. Up to date, various polysaccharide-protein complexes, lanostan-type triterpenoids, steroids, and phenolic compounds indicating anticancer, antioxidant, antiviral, antibacterial, antifungal, anti-inflammatory, immunomodulatory and cholesterol-decreasing activity have been isolated from medicinal mushrooms [1]. *Gyromitra esculenta* (Pers.) Fr. locally known as false moral and eaten by the local people was purchased from local market in Muđla. It was baked in an oven at 200°C for 30 minutes. Then the baked mushroom was air dried under shadow. The dried baked mushroom was extracted with petroleum ether, acetone, and methanol, successively. The obtained extracts were tested against human cervical epithelioid carcinoma (HeLa) and human breast cancer cell lines (MCF-7). Against HeLa cell lines methanol extract (IC₅₀: 37.5 µg/ml) exhibited the best cytotoxic activity followed by acetone (IC₅₀: 48.3 µg/ml) and petroleum extracts (IC₅₀: 50.1 µg/ml). Against MCF-7, however, the methanol extract also exhibited the best activity (IC₅₀: 18.7 µg/ml). IC₅₀ values of remaining extracts were higher than 75 µg/ml. The cytotoxic extract methanol was fractionated to isolate the compounds. The silica gel column chromatography was used for coarse separations while recycle preparative HPLC-UV-RI coupled with C18 column was used further isolation. Thin layer chromatography was used for visualization. Totally 3 nitrogenized compounds (1-3) were isolated and elucidated using 1D, 2D NMR, and MS techniques. Keywords: *Gyromitra esculenta*, Cytotoxic activity, Isolation, Elucidation Acknowledgement: This study is supported by the TUBİTAK with the Project number TUBİTAK-MHRS-KBAG-114Z635. References [1] M. Öztürk, G. Tel-Çayan, A. Muhammad, P. Terziođlu, M.E. Duru "Mushrooms: a source of exciting bioactive compounds" Chapter in Studies in Natural Product Chemistry, vol.45, pp.363-456, Amsterdam: Elsevier

KEYWORDS

Gyromitra esculenta, Cytotoxic activity, Isolation, Elucidation

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Session 9-4 - Extraction Studies

Submission ID: 1689

EFFECT OF SOLVENT TYPE ON CARBONIC ANHYDRASE INHIBITORY ACTIVITY OF PLANT EXTRACTS*

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ABSTRACT

Carbonic anhydrase (CA), is a very important enzyme which regulates CO₂ levels in living organisms. Today, inhibitors of CA are either used in the treatment of various disorders such as cancer, epilepsy, obesity, glaucoma, neurological disorders or under investigation as pharmaceutical active ingredients. In this study 12 plants were extracted using three different solvents (water, %40 acetonitrile and %40 methanol in water) to see the effect of solvent type on the extractable components with possible CA modulating activity, and carbonic anhydrase inhibitory activities of these extracts were determined by using both physiological hydratase activity and non-physiological esterase activity assays. % Inhibition values were determined, and the inhibitory activities of plant extracts obtained with three solvents were comparatively evaluated. The correlation between the two assay methods was low (R² values between 0.48 and 0.725). The overall trend was such that methanol extracts showed the highest CA inhibition (mean %inhibition: 33.80; highest %inhibition: 79.28), while the aqueous extracts the lowest (mean %inhibition: 19.76; highest %inhibition: 38.89). 40% Methanol extracts showed in-between values (mean %inhibition: 24.10; highest %inhibition: 63.01). In conclusion, solvent type affects not only the extraction performance of CA inhibitory plant components, but also the mode of action of inhibitor types with respect to the difference in esterase and hydratase inhibitions. Figure 1. Correlation of %inhibitory activities of plant extracts based on esterase and hydratase methods for three extraction solvents (water, acetonitrile and methanol from left to right). *This study is supported by 2210-C Priority Areas Domestic Master Scholarship Programme of TUBITAK-BİDEB.

KEYWORDS

carbonic anhydrase, hydratase activity, inhibition, esterase activity

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Session 9-4 - Extraction Studies

Submission ID: 1775

STUDIES ON PHYTOSOME FORMULATIONS CONTAINING ALCOHOL-FREE UMCKALIN (PELARGONIUM SIDOIDES)

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ABSTRACT

Pelargonium sidoides has a long-standing tradition in the treatment of diseases, starting with ethnobotanical records from the mid 19th century and followed by the enthusiastic perseverance of Charles Henry Stevens and Adrien Secheyaye in the first half of the 20th century. In this research, different types of phytosome containing alcohol-free umckalin were investigated. For this purpose, 4 different phytosome formulations were prepared by thin film technique using umckalin in various types of phospholipids; Phospholipon 85 G (P 85 G) and phospholipon 100H (PL 100H). The phytosomes were characterized by various methods e.g., determination of zeta-potential and size distribution. Imaging of vesicles by polarized light microscopy (PLM) studies for the characterization of phytosome formulations of umckalin was examined. The optimum phytosome formulation was selected as PL 100H: DCP:CHOL (10: 1: 4) containing umckalin (UP 4) because of its ideal size distribution (<1000 nm) and zeta potential (<-25 mV) . As a part of our future work, we are planning to determine mechanism of actions in animal studies.

KEYWORDS

Pelargonium sidoides, diseases, umckalin, zeta potential

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Session 9-4 - Extraction Studies

Submission ID: 1793

CARBONIC ANHYDRASE HYDRATASE AND ESTERASE INHIBITORY ACTIVITY OF PLANT EXTRACTS CORRELATED WELL

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ABSTRACT

Carbonic anhydrase (CA, EC 4.2.1.1.) catalyzes the reversible hydration/dehydration of CO₂/HCO₃⁻. CA isoforms are involved in many physiological processes such as acid-base balance, respiration, bone resorption, carbon dioxide and ion transport. CA isozymes are important remedial targets to be inhibited/activated for the treatment of disorders such as glaucoma, obesity, cancer, epilepsy and osteoporosis. Clinically used CA inhibitors are usually synthetic compounds and have side effects in humans. So, potent CA inhibitors based on natural products have been sought for. In this study seventeen plant extracts were prepared with three solvents (water, %40 acetonitrile and %40 methanol in water). CA inhibitory activities of plant extracts were determined by using esterase and hydratase activity determinations that are commonly used in the carbonic anhydrase modulators research. Hydratase and esterase inhibitory activities that plant extracts in different solvents exerted correlated very well (Figure 1-3), with R² values of 0.9639, 0.9928 and 0.9689 for water, acetonitrile and methanol extraction solvents, respectively. Results clearly indicate that correlation between CA hydratase and esterase inhibitory activity is very high in all three solvents, giving a clue of the fact that the inhibition mechanism of these extracts are similarly affective for the two activities. This study is supported by 2211-C Priority Areas Domestic PhD Scholarship Programme for TUBITAK-BIDEB.

KEYWORDS

Carbonic Anhydrase, Hydratase, Esterase, Inhibitory Activity, Plant Extracts

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Session 9-5 - Food Engineering

Submission ID: 20

OPTIMIZATION OF TOTAL FLAVONOID PRODUCTION FROM CINNAMONUM ZEYLANICUM BY ULTRASONIC EXTRACTION

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ABSTRACT

Cinnamon (*Cinnamomum zeylanicum*) is a genus of evergreen aromatic tree species with Lauracea family, native to southern and southeastern Asia. Cinnamon is a rich source of vitamins and minerals and is a source of nutrients with high antioxidant power. Polyphenols, which are usually found in fruits, vegetables and spices such as cinnamon, are components that impart antioxidant properties to the material. In particular, gallic acid and quercetin have been noted in recent years for their usefulness in the treatment of cancer diseases. The ability of quercetin to bind free radicals in the cancerous cell without harming healthy cells is the main reason for preferring cancer treatment and elimination of side effects of chemotherapy. Extraction, which is the separation process, is used to obtain these important antioxidants in a pure form. Extraction is the process of separating the desired material from a source by diffusion into a suitable solvent. Optimization must be performed in order to achieve extraction having the highest efficiency as soon as possible. The purpose of optimization is, by applying the minimum number of experiments, to determine the conditions resulting the maximum yield of extraction within the possible shortest time. Optimization are performed in two ways, namely multiple and single optimization. In single optimization; while the other parameters are kept constant at the determined values, the effect on the extraction efficiency is examined by changing the value of a single parameter. In the multiple optimization, the values of the parameters are changed simultaneously and the interactive effects on the efficiency are evaluated. In multi-optimization, Response Surface Method, which is the most widely accepted method of today, is used. A "surface function" can be obtained with this method, and this function can be transferred to the industry directly and is used to determine optimum conditions to achieve maximum extraction efficiency. In this study, the optimal ultrasonic extraction conditions of quercetin equivalent of total flavonoids from cinnamon were determined. Selected parameters for this extraction process were extraction temperature and time, and solid-to-liquid ratio. The batch extraction experiments were carried out in an ultrasonic water bath and the amount of quercetin equivalent total flavonoids in the samples obtained after filtration was determined spectrophotometrically. The quercetin in the samples was analyzed by measuring the color produced at the 415 nm wavelength of the reaction between aluminum chloride and acetic acid-sodium acetate buffer (pH = 4). The total quantities of quercetin equivalent obtained by the calibration curve are optimized by using the Response Surface Method with the aid of Design-Expert program. As a result of this study; it was determined that 12.34 mg of total flavonoid was obtained in a "sweep" mode ultrasonic extraction at 30 ° C for 15 minutes with 1/10 g/ml solid-to-liquid ratio.

KEYWORDS

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Ultrasonic extraction, Optimization, Response surface methodology, Cinnamomum zeylanicum

Session 9-5 - Food Engineering

Submission ID: 177

**ENZYMATIC AND NON-ENZYMATIC ANTIOXIDANT ACTIVITIES,
TOTAL PHENOLIC AND FLAVONOID CONTENTS AND
TYROSINASE İNHIBITION POTENTIAL OF ARTEMISIA ARGYI
FROM ORDU PROVINCE OF TURKEY**

MELEK ÇOL AYVAZ¹, ZEYNEP KOLÖREN¹, ONUR KOLÖREN¹

ABSTRACT

The genus *Artemisia*, one of the largest genera belonging to the family Asteraceae, is widely distributed in Europe, North America, Asia and South Africa. In spite of the harmful effects of some of its species, it has a wide area of usage in different fields, including pharmaceuticals, landscape architecture and agriculture. Some species of this genus are used as famous traditional Chinese medicines for the treatment of malaria, hepatitis, cancer, inflammation and infections by fungi, bacteria, and viruses. *Artemisia argyi*, also known as medical grass, perennial herbaceous plants of Compositae *artemisia*, contains many kinds of bioactive composition such as volatile oil, flavonoids, phenolics, eudesmane, triterpene, polyunsaturated fatty acid, vitamin C and essential amino acids. In previous studies, *Artemisia* species has been reported to exhibit antimalarial, anticancer, antidiabetic, antihepatitis, antiinflammatory, antihypertensive, antibacterial, antioxidant, antimelanogenic and antiviral effects. Kolören et al. firstly reported that the genetic diversity of *Artemisia* species in Ordu province of Turkey in an attempt to validate the formerly reported species from this area, using molecular techniques. Following this study, we aimed to investigate the total phenolic, flavonoid and antioxidant contents, enzymatic and nonenzymatic antioxidant activities based on several different methods (catalase, peroxidase and superoxide dismutase (SOD) activities, DPPH and ABTS+ radical scavenging activities, ferric reducing antioxidant power (FRAP), ferric ion chelating activity, reducing power) and antimelanogenic effect (inhibition potential on tyrosinase activity) of the methanolic extract of *A. argyi* leaves collected from Ordu province by using spectrophotometric analysis. Total phenolic and flavonoid contents of the extract were calculated as 261 mg gallic acid/g dry extract and 29 mg quercetin/ g dry extract, respectively. Total antioxidant activity was also calculated as 367 mg ascorbic acid/g dry extract. Other results (SC50 values for DPPH scavenging and chelating activities were 0.030 and 0.648 mg/mL respectively. ABTS+ scavenging activity and FRAP values were calculated as 1754 and 1650 µmol Trolox/g dry extract respectively. Furthermore IC50 value for SOD activity was 0.053 mg/mL and 0.01 mg/mL concentration of the extract had the 0.108 U catalase activity) showed that the methanolic extract of the *A. argyi* leaves had the considerable antioxidative activity and tyrosinase inhibitor potential (IC50 = 0.49 mg/mL). In addition to these reducing power of the extract was as strong as ascorbic acid. Therefore it is worth to investigate the chemical composition analysis by GC-MS or phytochemical analysis by HPLC for further studies. Furthermore, the study is the first investigation in terms of antioxidative potential of an *Artemisia* species from Turkey.

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KEYWORDS

Artemisia argyi, antioxidant activity, antimelanogenic activity, phenolic, flavonoid

Session 9-5 - Food Engineering

Submission ID: 1597

THE EFFECT OF SUGAR CONTENT OF KOMBUCHA FUNGUS TEA ON THE DEGREE OF POLYPHENOL AND ACIDITY

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ABSTRACT

Kombucha is a slightly sweet, carbonated, acidic drink, produced by fermentation in the medium created from sugar and tea of the mushroom formed with the symbiotic relationship of yeast and bacteria. Mushrooms are the most important content of the tea, known as Kombucha, which is formed from bacteria and yeast. They originated in East Asia and reached Germany via Russia in the early 19th century. The mushroom is formed from a gelatin-like membrane. Kombucha mushroom lives in a nutritional solution of tea and sugar and continuously reproduces within this liquid. The mushroom layer spreads across the whole surface of the tea and has a predisposition for continuous reproduction. Basic metabolites in the fermented drink are known to be acetic, lactic, gluconic, glucaric, glucuronic and usnic acids, and ethanol, glycerol. The tea has a phenolic content of the mushroom of orcinol, antranorin, orsellinic, salazinic, lecaronic acids, butyric acid, malic acid, folic acid, oxalic acid, hyaluronic acid, Vitamins B and C, polyphenol, quercetin, various enzymes and ethyl alcohol. Previous studies have shown that these components are produced by the Kombucha mushroom. Following 9 days fermentation at 25°C, approximately 3,3% total acid, 0,7% acetic acid, 4,8% glucose and 0,6% ethanol have been determined in Kombucha colonies but the production of lactic acid has not been determined. The mean pH has been determined as 2,5-3. Due to several useful substances and antioxidants contained in Kombucha tea, there has been research on its use in the treatment of several diseases. However, no study has been conducted on the effect of sugar content of Kombucha fungus tea on the degree of polyphenol and acidity. In the study, the effect of the amount of sugar in Kombucha tea on the acetic acid, pH and total phenolic substance content was investigated. The acidity level was determined by measuring pH of the tea having different sugar content in the range of 85-755 grams for days 1, 3, 5, 8, 15 and 21 from the starting date of the incubation of the mushroom. The amount of polyphenol by Folin-Ciocalteu method for the same periods and the effect of the amount of sugar on them was examined.

KEYWORDS

Kombucha tea, Kombucha fungus, total phenolic ingredient content, antioxidant, acid grade

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Session 9-5 - Food Engineering

Submission ID: 1744

AN INVESTIGATION OF CAROB FLOUR USAGE AS A FUNCTIONAL COMPONENT IN CAKE PRODUCTION

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ABSTRACT

Carob which is known to be grown in the Mediterranean climate, is grown in the southern coastal areas of our country. Carob fruit, which is often used in the production of molasses, can also be consumed directly. In addition to that, it has been reported that Carob, which is formed into flour by milling, can be widely used especially in bakery products, pastry and confectionery products, and low-calorie snack products instead of chocolate. Since the remaining residue of carob, which was used in molasses production, is rich in cellulose content, and it can also be regarded as animal feed. It has been emphasized that the carob fruits, which was reported to contain high level dietary fiber, sugar and protein content, have high level of vitamin A, B1, B2, B3 and D vitamins, calcium, phosphorus, potassium and magnesium minerals. In this study, it was examined that the effect of using carob flour instead of cacao on the quality characteristics of the cacao cake. For this aim, the carob flour was replaced at different levels (0, 20, 40, 60, 80%) with cacao. The color, ash, volume, weight, specific volume, baking loss, texture and sensorial analysis were performed on the products. In general, it was observed that using the carob flour had statistically significant ($p<0.05$) effect on the investigated parameters. It was determined that the ash content and weigh values of cakes decreased, while the volume, specific volume, baking loss and moisture content values increased with increasing carob flour level in cakes. In addition to this, the hardness, chewiness and gumminess values of cakes decreased with the usage of carob flour, while the cohesiveness value increased. Also the crumb and crust L, a, b colour values of the cakes increased. Colour is one of the most important parameters used by consumers to evaluate the quality of a food product. The L value indicates darkness or lightness of color and ranges from black (0) to white (100). It was determined that the colour of cake crust and crumb became lighter ($p<0.01$) with addition of carob flour instead of cacao. Control cake group had the lowest L values of crust and crumb ($22,71\pm1,25$ and $21,97\pm0,40$ respectively), while the cakes made with 80% carob flour instead of cacao had the highest L values of crust and crumb ($30,99\pm0,49$ and $35,86\pm1,46$ respectively). On the other hand, sensorial analysis showed that this color difference could not be felt in the usage of 20% carob flour. In the light of the data that was obtained from study, carob flour can be used without changing the characteristics of the cacao cakes at a rate of 20-40%.

KEYWORDS

cake, carob flour, TPA, sensorial analysis.

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Session 9-5 - Food Engineering

Submission ID: 1899

COMPARISON OF TOTAL PHENOLIC, FLAVONOIDS CONTENTS AND ANTIOXIDANT CAPACITY OF FOUR ALGAE SPECIES COLLECTED FROM MOROCCAN COAST

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ABSTRACT

Comparison of total phenolic, flavonoids contents and antioxidant capacity of four algae species collected from Moroccan coast Fatiha GRINA¹, Zain ULLAH², Erhan KAPLANER², Boubker NASSER¹, Abderrahman MOUJAHID¹, Abdel Khalid ESSAMADI¹, and Mehmet ÖZTÜRK² 1Laboratory of Biochemistry and Neuroscience-Applied Biochemistry and Toxicology Team, Faculty of Sciences and Technology, Hassan 1st University, Settat. BP 577 Settat-Morocco 2Department of Chemistry, Faculty of Sciences, Muğla Sıtkı Koçman University, Kötekli-48000, Muğla, Turkey fatihagrina@yahoo.fr Phenolic compounds are a group of above 8,000 phytochemicals that received considerable attention for being potentially protective factors against degenerative diseases, mostly because of their potent antioxidative properties and their omnipresence in consumed foods of plant origin. Marine algae are known to contain a wide variety of bioactive compounds, many of which have commercial applications. Natural antioxidants, found in many algae, are important bioactive compounds that play an important role against various diseases and ageing processes through protection of cells from oxidative damage. In this respect, relatively little is known about the bioactivity of Moroccan algae that could be a potential natural source of such antioxidants. So, the purpose of this research is to evaluate the antioxidant activities of four different seaweeds; *C. stricta*, *C. humilis*, *B. bifurcata* and *G. sesquipedal* Collected from Moroccan Atlantic coast. The extracts, obtained by ethanol extraction technique, were subjected to DPPH, ABTS, CUPRAC, β -carotene-linoleic acid and metal chelating activities. Total flavonoid and phenolic contents were determined as quercetin and pyrocatechol equivalents. From the results it was revealed that all extracts have good activities in the following order: *C. stricta*, *C. humilis*, *B. bifurcata* and *G. sesquipedal* in DPPH, ABTS, CUPRAC and β -carotene-linoleic acid assays. In metal chelating assay, however, *Gelidium S* indicated good activity. Although *C. stricta* showed the highest polyphenols contents and *C. humilis* the highest total flavonoid content than the other species. Keywords: Algae species; Antioxidant activity; polyphenols contents, flavonoid content Öztürk M, Tel G, Aydoğmuş-Öztürk F, Duru ME (2014). The cooking effect on two edible mushrooms in Anatolia: Fatty acid composition, total bioactive compounds, antioxidant and anticholinesterase activities. Rec. Nat. Prod 8 (2), 189-194.

KEYWORDS

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Algae species; Antioxidant activity; polyphenols contents, flavonoid content

NOT PRESENTED

Session 9-5 - Food Engineering

Submission ID: 1923

EVALUATION OF SOME QUALITY PARAMETERS OF ORIGANUM ONITES L. AROMATIC WATER OBTAINED FROM DIFFERENT TIMES IN DISTILLATION DURATION AND THE EFFECT OF THESE AROMATIC WATERS ON SOME QUALITY PARAMETERS OF MINCED MEAT DURING STORAGE

HASAN İBRAHİM KOZAN¹, AHMET ÜNVER¹, SELMAN TÜRKER¹

ABSTRACT

Aromatic water in markets are produced from different plant sources called 'kekik' in Turkey. *Origanum onites* L. is called as 'Bilyalı kekik' or 'İzmir kekiği' and is belong to Labiatae family. It is one of the most commercial plant in Turkey. *Origanum onites* L. was distilled with a pilot scale distillation unit. 3 hours distillation is the most applied process duration. But in this study the distillation process was prolonged from 3 hours to 24 hours. The quality change of the aromatic water was analysed from the beginning to the end of the 24 hours process in time intervals as 1 st, 2 nd, 3 rd, 5 th, 8 th, 12 th, 16 th, 20 th and 24 th hours. Free radical scavenging activity (DPPH), pH, oxidation reduction (OR) potential, electric conductivity, and Hunter L*,a* and b* values were measured. Also, sensory evaluation test was applied to detect the correleation possibilities. Thyme waters showing maximum antioxidant activity were observed in 3 hours distillation. The lowest pH, highest OR and EC values were observed at 12 hours. The aromatic water samples obtained from different time periods of distillation were added to minced meat in 0, 5 and 10 percentages in weight basis. Aromatic water added minced meat samples were stored at +4 C0 during storage. The storage time period for these minced meat samples were up to 7 days (beginning, 1 st day, 3 rd day and 7 th day). pH, TBA, moisture content, aW and colour analysis were performed during storage in minced meat samples. Total bacterial load, total mold/yeast load and total coliform bacteria load were counted to evaluate the microbial growth as log CFU/gr. 3 hours of distillation found to have the maximum antioxidant activity, therefore prolongation of the distillation period over 3 hours is not recommended. pH value decreased from 4,43 to very low values as 2.72, till the end of 24 hours of distillation. Acidic taste was also reported by panelists. In addition, the extremely low pH makes it clear that the metals used in production of aromatic waters must be selected carefully. The optimal duration of distillation, rate of addition and storage of minced meat have been optimized to obtain the best antioxidant effect. It has been determined that the most optimal antioxidant effect was achieved by adding 7.16% aromatic water in minced meat by the initial day of storage. The antibacterial activity was increased by the increase of the percentage of the aromatic water in minced meat. Also, addition of distillat from the prolonged distillation was also found to be effective on reduction of total bacterial load and total mold/yeast load in minced meat. The aromatic water addition was not effecive on total coliform bacteria load. As a result, 3 hours of distillat was found to be most effective aromatic water as an antioxidant source on minced meat. Aromatic water addition may be referred to preserve minced meat for reduction of total bacterial load in storage.

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KEYWORDS

Origanum onites L., aromatic water, quality parameters, minced meat, antioxidant activity, antimicrobial effect

Poster Session 1

Submission ID: 1

PROTEIN CONTENTS AND ANTIOXIDANT PROPERTIES OF PLEUROTUS OSTREATUS CULTIVATED IN TEA AND ESPRESSO WASTES

AYŞENUR YILMAZ¹, SIBEL YILDIZ¹, CEYHUN KILIÇ², ZEHRA CAN³

ABSTRACT

In this study, *Pleurotus ostreatus* was cultivated on tea (*Camellia sinensis*) and espresso wastes. Tea wastes were used in two forms; sterilized or non-sterilized. Then, total phenolic, flavonoid, condensed tannin contents, ferric reducing/antioxidant capacity (FRAP) and 2,2-diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging were used as antioxidant determinants and also protein content were investigated in these mushrooms' methanolic extracts. Same measurements were determined in mushrooms' growing media except protein content. The highest protein content (20.89%) was found in non-sterilized tea wastes. The highest total phenolic (1.460 ± 0.012 mg GAE/g), total flavonoid (0.120 ± 0.005 mg QE/g), condensed tannin (0.877 ± 0.011 CE mg/g) scavenging activity of and the lowest free radical DPPH (17.190 ± 0.001 mg/mL) were determined in sterilized tea wastes. Ferric reducing antioxidant power (8.498 ± 0.089 $\mu\text{molFeSO}_4 \cdot 7\text{H}_2\text{O/g}$) were determined in espresso wastes. Additionally, there was no statistically significant difference between the sterilized and non-sterilized substrates for the total yield and biological efficiencies. In this case, it can be said that the kinds of substrates and their usage forms are very important in terms of energy savings especially does not require sterilization like tea wastes. Consequently, tea and espresso wastes can be used as a beneficial source of substrate material for *Pleurotus ostreatus* mushroom cultivation.

KEYWORDS

Antioxidant, espresso wastes, mushroom, tea wastes, total phenolic

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Poster Session 1

Submission ID: 8

ESSENTIAL OIL PRODUCTION AND ANTIMICROBIAL ACTIVITY STUDIES OF CINNAMON PLANTS

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ABSTRACT

Cinnamon (cinnamomum) is the dried crust of some Cinnamomum (Lauraceae) species. There are two main varieties of cinnamon bark, including Chinese Cinnamon (Cortex Cinnamomi cassiae) and Ceylon Cinnamon (Cortex Cinnamomi Olfactory). It has cinnamon, antiperspirant, gas expectorant and antiseptic properties. Apart from that, it is also used as a spice and fragrance. The cinnamon oil obtained by distillation from its shells also has a pleasant odor and taste, in its composition, contains cinnamic aldehyde and ogenol. In our work, we obtained cinnamon oil from cinnamon which we obtained commercially with the water vapor method of distillation. Antibacterial and antimicrobial resistance against bacteria and fungi of *S. aureus* (ATCC 25923), *E. coli* (ATCC 25922), *C. albicans* (ATCC 90028), *C. Krusei* (ATCC 1424) Activity studies were carried out. Cinnamon oil was found to be highly active against bacteria and fungi used.

KEYWORDS

Cinnamomum, Cinnamomum oil, Water vapor distillation

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Poster Session 1

Submission ID: 11

RAPID DISCRIMINATION OF EXTRA VIRGIN OLIVE OILS BY SB-ATR-FTIR AND PORTABLE ATR-IR SPECTROSCOPY

İSMAIL TARHAN¹, HÜSEYİN KARA¹

ABSTRACT

The importance of extra virgin olive oil (EVOO) is mainly attributed to its high content of oleic acid and its richness in phenolic compounds, which act as natural antioxidants (Bendini, et al. 2006:54). On the other hand, EVOO is expensive owing to the hard and time-consuming tasks involved in the cultivation of olive trees, the harvesting of the fruits, and the extraction of the oil. For these reasons, adulterations of EVOOs with olive oils of lower quality or with oils of a different botanical origin are occasionally detected. In this study, single-bounce attenuated total reflectance-Fourier transform infrared (SB-ATR-FTIR) spectroscopy and portable attenuated total reflectance-infrared (pATR-IR) have been developed for discrimination analysis of EVOO from other ordinary olive oil (refined and deodorized olive oil) and vegetable oils (avocado, canola, corn, peanut, soya, and safflower). The partial least squares-discriminant analysis (PLS-DA) was used for classification analysis between EVOO and the other vegetable oils using the wavenumbers of 3000-700 cm⁻¹ for SB-ATR-FTIR and 1780-930 cm⁻¹ for pATR-IR. The results showed that DA was able to classify EVOO and the other vegetable oils on the basis of their IR spectra with no misclassified group obtained. According to the results, SB-ATR-FTIR method discriminated all of EVOOs but including ELOO and Peanut oil. It was seen that ELOO and peanut oil have similar vibrational spectroscopic properties with EVOOs in the infrared region employed by SB-ATR-FTIR. Although this handicap, the method successfully distinguished other vegetable oils from EVOOs. pATR-IR method discriminated all of EVOOs except EVOODan and including ELOO. According to the results, it was seen that limited scan region of the pATR-IR device did not have enough spectroscopic data for discrimination of all EVOOs. Although it's limited scan region, it has shown a good discrimination performance.

KEYWORDS

Discrimination, Extra Virgin Olive Oil, Portable Infrared Spectroscopy, Single-Bounce Attenuated Total Reflectance-Fourier Transform Infrared Spectroscopy

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Poster Session 1

Submission ID: 13

BELIEFS ABOUT THE HEALING EFFECTS OF HERBAL TEAS IN ANKARA

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ABSTRACT

In this study, interviews and surveys were completed with the workers of five "herbal doctor" shops as recognized by the general public. It was aimed at discovering which herbal teas the general public believed to be drunk against respiratory diseases, such as flu, and common cold, alongside menstrual irregularities, sleep deprivation, and emotional problems, such as anger in terms of environmental cultural anthropology. The teas are divided into two as those healing physical and mental diseases. The usefulness of the plants of ginger, turmeric, and thyme are also mentioned. Moreover, the interviews are supported by Turkish popular and folk songs. Teas are regarded as cultural treasures to be protected within the framework of environmental humanities.

KEYWORDS

ginger, turmeric, thyme, herbal teas, Ankara, environmental anthropology, herbal tea as medicine for curing diseases

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Poster Session 1

Submission ID: 14

A COMPARISON OF THE AMERICAN AND TURKISH TEA CULTURES

FAZILA DERYA AGİŞ¹

ABSTRACT

In this study, the herbal teas sold in the United States of America and Turkey will be analyzed in terms of their healing and soothing effects. Herbal teas sold in American tea shops called Teavana and David's Tea will be analyzed in relation with their healing and soothing effects and compared to those sold in Turkish markets, including the herbal tea products of Doğadan, Doğuş Çay, and Lipton. The discourse of their ads will be analyzed. The effects of the herbal teas and the boxes in which they are sold are also compared in terms of the illnesses they cure and the colors and shapes of their boxes that attract customers from cultural perspectives. Briefly, this study will present the folkloric beliefs and cultural herbal tea presentation techniques in the United States of America and Turkey within the framework of environmental social sciences. Anthropological linguistic analyses of the tea advertisements of American and Turkish tea companies will be made in relation with the illnesses these tea types are believed to cure.

KEYWORDS

tea shops, American culture, Turkish culture, tea and health

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Poster Session 1

Submission ID: 18

DETERMINATION OF ESSENTIAL OILS COMPONENTS OF MACLURA POMIFERA (OSAGE ORANGE) FRUIT FROM TURKEY

RIFAT BATTALOĐLU¹, FILİZ YAĐIZ

ABSTRACT

In order to determine the essential oil components of *Maclura Pomifera*, which is the mother country of North America, or pseudo-orange fruit juice, volatile oil components were determined by GC / MS method after the essential oil isolation of the fruit sample was completed. The relative abundances of the chromatograms obtained as a result of the analyzes were compared with the similarity indices of the probable results in the library of the GC / MS for the highest peaks and retention index calculations were made from the retention time. As a result of the analyzes, the structure of 28 volatile oil components in the fruit was clarified. When the components were examined, dodecanal (9.02%), Eugenol (8.36%) and α -humulene (7.84%) emerged as the first three major components. Other compounds are less common than these three compounds.

KEYWORDS

Maclura pomifera, osage oranges, essential oils

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Poster Session 1

Submission ID: 25

LEGAL STATUS OF MEDICINAL AROMATIC PLANTS

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ABSTRACT

Medicinal and aromatic plants have been used for centuries as food, seasoning, medicine, and healing substance. For this reason, the agriculture of some plants such as cumin, poppy and anise has been going on since prehistoric times. Despite the fact that more than 40% of the medicines listed at the beginning of the 20th century were of herbal origin, this proportion decreased to less than 5% in the mid-1970s. The discovery of new uses of medicinal and aromatic plants, and the increase in demand for natural products, particularly since the 1990s, has increased the utilization volume of these plants steadily. According to the World Health Organization (WHO), about 20,000 plants are used for medical purposes. The main commercial centers for herbal drugs in the world are Germany (Hamburg), the US (New York) and Hong Kong (Başer, 1997; Lange, 2006). Due to its geographical location, climate and plant diversity, agricultural potential and large surface, Turkey is one of the leading countries in the trade of medicinal and aromatic plants. That the plants which are the raw material of many herbal products of herbal drugs, phytochemistry, food and additives, cosmetics and perfumery industries located in developed countries are present in the flora of our country, Turkey, is important in this respect. Therefore, these plants are mostly collected in nature and are marketed. Medicinal and aromatic plants are mainly collected in their habitats in Aegean, Marmara, Mediterranean, Eastern Black Sea and Southeastern Anatolia Regions. Collected plants are mostly daphne, sage, rosemary, rosehip and lime. There are many definitions for medicinal and aromatic plants. "Herbal medicines are, substances or products comprising of either processed or unprocessed compounds from one or more plants that have therapeutic properties or that are beneficial to human health." According to this definition, there are 3 types; unprocessed herbal materials, processed herbal materials and medical herbal products. The World Health Organization (WHO), the United Nations Food and Agriculture Organization (FAO), the International Union for Conservation of Nature (IUCN), the European Medicines Agency (EMA), the Global Federation of Medicinal and Aromatic Plants (GOFMAP), the European Herbal Infusions Association (EHIA), The International Trade Center, the European Food Safety Authority (EFSA), the European System of Cooperative Research Networks in Agriculture (ESCORENA Network), the World Wildlife Fund (WWF), the Central Institute of Medicinal and Aromatic Plants-India (CSIR-CMAP), The National Medicinal Plants Board-India (NMPB) are among the main institutions and organizations operating abroad on medicinal and aromatic plants. Although many institutions are involved in the issue of medicinal and aromatic plants in Turkey, the authority in these studies in our country is the Ministry of Food, Agriculture and Livestock. Apart from the Ministry of Food, Agriculture and Livestock, the Ministry of Health and the Ministry of Forestry and Water Affairs are among the institutions which are included in this field the most. Within the Ministry of Food, Agriculture and Livestock, the central (General Directorate of Crop Production, General Directorate of Food and Control, General Directorate of Agricultural Researches and Politics) and provincial organizations (Provincial and District Directorates), related

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institutions (Agriculture and Rural Development Support Institution and Provincial Coordination Offices) and other organizations (National Botanic Garden) are among the institutions that carry out the most of the studies on this issue. The General Directorate of Crop Production, which is in the Ministry of Food, Agriculture and Livestock, is responsible for preparing, having prepared and implementing the application projects related to the increase of the production of medicinal and aromatic plants, diversification of products, and improvement of quality (www.tarim.gov.tr). Under this General Directorate, the Department of Field and Horticultural Crops and the Department of Seed and Seedling are involved in this issue. The Seed Registration and Certification Center operates in relation with Department of Seed and Seedling. The Seed Registration and Certification Center, carries out the registration procedures of newly improved and imported varieties, field and laboratory tests of seeds, certification procedures and cataloging of varieties in accordance with the Seed Act No. 5553 and the Law No. 5042 on the Protection of Breeder's Right to New Plant Varieties, the regulations, written notices, and instructions. On this issue, the Aromatic, Medicinal and Ornamental Plants Unit operates under the Variety Registration Section of the Seed Registration and Certification Center.

KEYWORDS

Medicinal and aromatic plants, notification, institution

NOT PRESENTED

Poster Session 1

Submission ID: 26

THE EXAMINATION OF THE CHANGE IN THE COMPONENTS OF VOLATILE OIL OF THE ETHIOPIAN SAGE (*SALVIA AETHIOPIS* L.) WHICH IS GROWN IN DIFFERENT LOCATIONS

HASAN BASRI KARAYEL¹, MEVLUT AKÇURA², YALÇIN COŞKUN³, YAKUP BUDAK⁴

ABSTRACT

THE EXAMINATION OF THE CHANGE IN THE COMPONENTS OF VOLATILE OIL OF THE ETHIOPIAN SAGE (*Salvia aethiopis* L.) WHICH IS GROWN IN DIFFERENT LOCATIONS
Abstract This study was conducted simultaneously in Çanakkale, Balıkesir and Kütahya locations in order to define the effect of location on the volatile oil components, volatile oil rate and volatile oil quality in Ethiopian Sage (*Salvia aethiopis* L.) plant in 2015 growing season. Field experiments were repeated 3 replications according to randomized block design. The seedlings were planted by a horizontal distance of 30 cm and vertical distance of 50 cm. The volatile oils of the parts of *Salvia aethiopis* L. which are over the soil were examined. These plants' volatile oils were gathered by hydrodistillation method (GC-MS/FID) and the volatile oil rates in three different locations were measured as % 0.53, % 0.21, % 0.20 respectively. The basic components of the volatile oil were determined as follows; β -caryophyllene % 36.22, % 30.46, % 35.96, α -copaene % 15.06, % 16.4, % 6, % 16.58, Germacrene-D % 13.23, % 20.01, % 15.20, β -cubebene % 5.62, % 7.04, % 6.93, α -humulene % 8.68, % 7.40, % 8.54, Caryophyllene oxide % 7.40, % 1.82, % 3.53. The highest volatile oil rate of the Ethiopian Sage was reached in Çanakkale location by a % 0.53 rate. As a result of the study it was found out that volatile oil components are comparatively richer in terpenes and the amount of volatile oil differs according to the ecological factors. Keywords : *Salvia aethiopis* L., volatile oil, β -caryophyllene, GC-MS/FID

KEYWORDS

Salvia aethiopis L., volatile oil, β -caryophyllene, GC_MS/FID

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Poster Session 1

Submission ID: 29

INVESTIGATION ON ANTIMICROBIAL RESPONSES OF SALVIA VERTICILLATA L. SUBSP. AMACIACA AND SALVIA FORSKAHLEI L.

ÖZLEM AYAN¹, ERGİN MURAT ALTUNER², SEZGİN AYAN³

ABSTRACT

The two species that distribute widely and naturally in the Kastamonu province, Turkey and stand out in the ethnobotany of the region are, *Salvia verticillata* L. subsp. *amaciacca* known as the "müsellim" and *Salvia forskahlei* L. known as the "Şalpa", was chosen as the material of this research. In this research; The effect of antimicrobial activity of the flowers and leaves of *S. verticillata* L. subsp. *amaciacca* and *S. forskahlei* L. on different yeasts and bacteria (*Pichia membranifaciens*, *Candida albicans*, *Enterococcus faecium*, *Salmonella kentucky*, *Salmonella typhimurium*, *Staphylococcus aureus*, *Enterococcus durans*, *Listeria monocytogenes*, *Echerichia coli* and *Klebsiella pneumoniae*) has been investigated for different concentrations (250, 300 and 350 ml doses) of solvent (Ethyl alcohol, acetone, ethyl acetate and distilled water). As a result of the research; Anti-microbial activity of *S. forskahlei* were not observed on the yeast of *Candida albicans* and the bacteria of *Salmonella kentucky*, *Escherichia coli* and *Klebsiella pneumoniae*. The antimicrobial activities seen in all other bacteria were affected by solvent differences. In addition, the bacteria of *Enterococcus durans* affected by concentration differences. For the species of *Salvia verticillata* subsp. *amaciacca*; the antimicrobial activities seen in all bacteria except *Salmonella kentucky* and *Staphylococcus aureus* and yeasts were affected by solvent differences.

KEYWORDS

Sage, antimicrobial effect, ethnobotanic, drug, yeast, bacteria, Kastamonu.

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Poster Session 1

Submission ID: 33

OREGANO SPP. ESSENTIAL OIL AS A NATURAL ANTIOXIDANT SOURCE

MUSTAFA KIRALAN¹, HASAN HÜSEYİN KARA²

ABSTRACT

Natural food sources could be used to assure food safety and quality. The preference of natural sources for preservatives is the fact that some preservatives produced from synthetic sources result in some toxic compounds and further health problems. Among the natural sources, the spices, herbs and medicinal plants take the important places. Even, the substances have already been used in the most of foods for ancient years. Of the plants, the oregano takes first place as the plant surveyed by the greatest number of researchers. In the present work, we reviewed the several studies including the natural food antioxidants of essential oils extracted from *Oregano* spp, in which the characteristic active compounds are thymol and carvacrol. In other words, the thymol and carvacrol compounds, the amount of which is strongly dependent upon the species, harvesting season and geographic conditions, are responsible for antioxidant activity of *Oregano* spp. essential oil.

KEYWORDS

Oregano, essential oil, natural food antioxidants

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Poster Session 1

Submission ID: 38

MORUS NIGRA RESTORES EXPERIMENTALLY INDUCED NEUROTOXICITY IN SPRAQUE DAWLEY RATS

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ABSTRACT

Black mulberry (*Morus nigra*) is a common fruit used all over the world. In folk medicine it is used in hypertension, fever and sore throat. We used the carbon tetrachloride (CCl₄) experimental model of reactive oxygen species (ROS)-induced lipid peroxidation and evaluated the antioxidant effect of *Morus nigra* (MN). Over the years CCl₄ has been used as an excellent model for studying experimentally induced neurotoxicity in murine models. In this study, 49 Spraque-Dawley male rats were randomly divided into 7 groups of 7 rats each. Group I: control, group II: CCl₄ dissolved in soybean oil (1 mL/kg/twice a week, ip), group III and group IV: CCl₄+150 and 300 mg/kg MN, group V and group VI: only MN (150 and 300 mg/kg). CCl₄ was administered twice a week to group II, III and IV during the experimental period. CCl₄-treated rats caused a significant increase in serum enzyme levels, such as aspartate aminotransferase, alanine aminotransferase and total bilirubin, and decrease in albumin, when compared with control. Superoxide dismutase (SOD) and glutathione peroxidase (GPx) were measured in the brain. *Morus nigra* pretreated groups restored the biochemical parameters significantly in a dose-dependent manner. Histopathology, haematoxylin-Eosin (H&E), cysteine-dependent aspartate-directed proteases 3 (Caspase-3) and 8-hydroxydeoxyguanosine (8-OHdG) immunohistochemistry were also performed. Caspase-3 activities, and 8-OHdG levels were significantly increased in CCl₄ group. These increases were significantly reversed by *Morus nigra* treatment. While CCl₄ increased the number of apoptotic cells, this increase was prevented in CCl₄+150 mg/kg MN and 300 mg/kg MN groups. Morphometric examination showed that the mean diameter of apoptotic cells was increased with CCl₄ administration while this increase was reduced by both dosages (150 and 300 mg/kg) of MN treatments. Intraperitoneal administration of MN significantly attenuated oxidative stress, prevented apoptosis, and increased antioxidant defense mechanism activity in the tissues versus the control group (P<0.05). Comet assay also postulates that MN treated rats brain shows less DNA damage than CCl₄ treatment rats. Present study concludes the neuroprotective effect of MN in CCl₄ treatment rats by its antioxidant, anti apoptotic and anti-inflammatory activity.

KEYWORDS

Carbon tetrachloride, Morus nigra, Antioxidant enzymes, Neurotoxicity

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Poster Session 1

Submission ID: 39

DETERMINATION OF VOLATILE COMPONENTS AND FATTY ACIDS OF BLACK CUMIN OIL WITH GC MS SPME AND GC-FID

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ABSTRACT

Black cumin is widely cultivated in Mediterranean countries, middle Europe and western Asia. The ancient Egyptians, Greeks and Romans were already aware of the therapeutic properties of *N. Sativa* edible oil and seeds of which are still used in folk medicine, as a spice in various kinds of food. Edible oil also has got volatile compounds. In this study volatiles and fatty acid methyl ester quantitated by Shimadzu (Tokyo, JAPAN) SE 2010 plus, GC MS equipment, for fatty acids PERKIN ELMER autosystem XL (CA, USA) with Varian CP SIL 88 (50 m x 0,25 mm i.d. 0,25 µm film thickness) column. SPME fiber is used (CAR/PDMS) and a holder obtained from Supelco (Bellefonte, PA, USA) were used. The fiber was first conditioned 2 hours at 300 °C. SPME extraction was performed in 20 ml glass vials containing 2 g commercial black cumin cold pressed oil. The sample was kept for 15 min in a 60 °C hot plate for equilibrium between the sample and the air in the vial. Next, the SPME fiber was exposed to the in the vial to adsorb the analytes. After 30 min exposure time, the fibre was retracted into the needle into the GC-MS injector for desorption and analysis of the volatiles. Important volatiles are p-cymene, gamma-terpinene, Thymoquinone and the other volatiles identified. GC MS temperature programme used for was in the range 40–250 °C (59,5min), rising at 4 °C/min, with both injector and detector temperatures 250 °C. Helium at a flow rate of 1.5 ml/min was used as carrier gas for GC MS analyses. GC-MS recordings at EI, 70 eV. Fatty acid methyl esters derivatized with Sodium methoxide 0,5 g in 100 mL methanol. 50 microliter edible oil is added on 750 microliter derivatisation solution for 24 hours at room temperature. After derivatisation 1 mL hexane is used for extraction, upper phase injected to GC-FID. Supelco 18919 37 fatty acid mix is used to determine with retention time. C18:2n6 Linoleic acid, C18:1n9c (Oleic acid), C16:0 (palmitic acid), C21:0 (Heneicosenoic) were determined % 50,92 and % 29,36, % 11,60, % 2,60 also trace amounts of other fatty acids determined. As a result Black Cumin commercial edible oil, has rich unsaturated fatty acids and medicinal volatile components.

KEYWORDS

Black cumin oil, aroma compounds, fatty acid methyl esters, GC MS, FID, SPME

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Poster Session 1

Submission ID: 40

DOĐAL ANTIMİKROBİYAL KATKILARIN UNLU MAMÜLLERDE KULLANIMI

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ABSTRACT

Gıdalarda bozulmayı önlemek ve mikroorganizmaları inhibe etmek amacıyla ısı ve ısı olmayan işlemler, ışınlama, dondurma, kurutma gibi prosesler kullanılmaktadır. Uygulanan bu prosesler gıdalarda besinsel özelliklerini ve fiziksel özelliklerinde kayıplara sebep olmaktadır. Natural and gıda endüstrisinde doğal ve sentetik gıda katkı maddeleri kullanılmaktadır. Kullanılan bu katkı maddeleri ile gıdalar fiziksel kimyasal yada besinsel özelliklerini uzun süre koruyabilmektedir. Gıdalarda mikroorganizmalardan kaynaklanan bozulmaları önlemek ve raf ömrünü artırmak amacıyla koruyucu olarak sorbatlar, propiyonatlar, benzoatlar, nitrit ve nitrat bileşikleri, sülfidler kullanılmaktadır. Fakat bu kimyasal katkı maddelerinin az miktarlarda kullanımı bile insanlarda değişik problemlere yol açmakta, baş ağrısı, nefes problemleri, kaşıntı oluşturabilmekte ve başta kolon ve pancreas kanseri olmak üzere her çeşit kanseri tetiklemektedir. Hatta bazı koruyucu katkı maddelerinin dünyada kullanımı yasaklanmıştır. Koruyucu katkı maddelerinin başka maddeler ile etkileşimi de söz konusu kanserojenik maddelerin oluşumuna sebep olabilmektedir. Özellikle sodyum benzoatın gazlı alkolsüz içeceklerde kullanılması, içecek içerisinde bulunan c vitamini ile etkileşime girmekte ve kanserojenik benzen adı verilen bir madde oluşmaktadır. Bu sebeple doğal olarak üretilen tıbbi aromatik bitkilerin gıda maddelerinde koruyucu madde olarak kullanımının artırılması, bu bitkilerden elde edilecek ekstraktların gıdalarda koruyucu olarak kullanılmasının araştırılması gerekmektedir. Gıdalarda koruyucu kimyasal katkı maddeleri yerine kullanılacakları arasında bitkilerin yaprak, çiçek, tomurcuk, kök, tohum, ve meyve gibi kısımlarında elde edilen bitki ekstraktları ve uçucu yağları, gelmektedir. Kekik, defne, nane, semizotu, dereotu ve roka yapraklarının gibi bitkilerin de güçlü bir antimikrobiyal etkisinin bulunduğu, biberiyenin ise mayalara daha fazla etki ettiği bildirilmiştir. Kafein içeren kakao ve kahve bitkilerinin de antibakteriyel özellik gösterdiği bilinmektedir. Rezene ve adaçayı uçucu yağlarının da gram pozitif ve gram negative bakteriler üzerinde antimikrobiyal etkileri yapılan çalışmalarda tespit edilmiştir. Yapılan bir çalışmada biber ekstraktlarının *Listeria monocytogenes*'in gelişimini önemli ölçüde inhibe ettiği belirlenmiştir. Tarçından elde edilen uçucu yağın antifungal etkiye sahip olduğu bildirilmiştir. Endüstriyel olarak üretilecek ve uzun süre depolanması planlanan unlu mamüller üretiminde kimyasal koruyucuların kullanılmaması amacıyla daha ileri çalışmaların yapılması gerekliliği ortaya çıkmaktadır. Özellikle sodyum benzoat ve potasyum sorbat unlu mamüller endüstrisinde en fazla kullanılan koruyucu katkı maddeleri olup, bu katkıların yerine tıbbi ve aromatik bitkilerin kullanım olanaklarının araştırılması gerekmektedir. Özellikle mayalı unlu mamüllerde kullanılan *Saccharomyces cerevisiae* mayasını kötü yönde etkilemeyecek şekilde olmasını da göz ardı etmemek gerekir.

KEYWORDS

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Antimikrobiyal, tıbbi ve aromatik bitki, koruyucular, unlu mamüller



Poster Session 1

Submission ID: 41

QUANTITATIVE DETERMINATION OF COMPONENTS IN THYME AND ROSE AROMATIC WATER WITH GC- MS METHOD

MUSTAFA YILMAZER¹, SERMIN GÖKSU KARAGÖZ¹

ABSTRACT

There are several methods that are used to extract and concentrate the aromatic components from plant materials. Steam distillation is one of these methods ,distillation is a method of separating componenets based on differences between boiling point of molecules. With steam distillation we can get the essential oil and some water soluble components ;this called is aromatic water . In Isparta region, Oregano and Rose aromatic waters are most produced by companies. This waters are useful for health ,if the active ingredient quantity is enough. Oregano water most common components' are Carvacrol, Thymol , Cymene , Rose water most common components' Phenethyl alcohol , citronellol and the others. In this study some aromatic waters quantitated by Shimadzu (Tokyo, JAPAN) SE 2010 plus, GC MS equipment, with Restek 5 MS (30 mx 0,25 mm i.d. 0,25 µm column .Carvacrol and Phenethyl alcohol standarts of calibration curves' R2 values at least 0,998 with this method the quantitation of carvacrol and phenethyl alcohol mg/L is analytical sufficiency is obtained. We can analyse the of commercial aromatic waters if the diluted or not . In the most of literature, it is seen that the results are mostly given as percent of volatiles of total volatiles, which have not been studied quantitatively.

KEYWORDS

Aromatic water (hydrosol), distillation,GC MS analysis, Quantitative

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Poster Session 1

Submission ID: 42

INVESTIGATION OF CHANGES IN ESSENTIAL OIL COMPONENTS OF TWO SAGE (*SALVIA OFFICINALIS* L., *SALVIA FRUTICOSA* MILL.) CULTIVATED IN DIFFERENT LOCATIONS

HASAN BASRI KARAYEL¹, YALÇIN COŞKUN², MEVLUT AKÇURA², YAKUP BUDAK³

ABSTRACT

INVESTIGATION OF CHANGES IN ESSENTIAL OIL COMPONENTS OF TWO SAGE (*Salvia officinalis* L., *Salvia fruticosa* Mill.) CULTIVATED IN DIFFERENT LOCATIONS Abstract This study was conducted simultaneously in Canakkale, Balıkesir and Kütahya locations in 2015 to determine the effect of different locations on the essential oil components, volatile oil ratio and quality of two island tea species (Common sage: *Salvia officinalis* L. and Anatolian sage/Greek sage: *Salvia fruticosa* Mill). The field experiments were set up in 3 replications, according to the design of randomized blocks. The seedlings were spaced 50 cm apart and 30 cm apart. Volatile oil analyses of *Salvia officinalis* L. and *Salvia fruticosa* Mill. was carried out in the herbal material. Volatil oils of these plants were obtained by hydro-destination (GC_MS / FID) and the volatile oil ratios at approximately three loci were *Salvia officinalis* L. %0.99, %1.23, %1.85 and *Salvia fruticosa* Mill. % 4.10, %2.72 and %1.9 respectively. The main constituents in the volatil oil were determined as α -thujone %26.35, %38.39, 29.84%, β -thujone %29.20, %12.26, % 9.07, Camphor %5.60, %13.90, %23.24, 1,8-cineole %7.75, %7.81, %6.57, Viridiflorol %5.55, %4.38, %2.65, Thujone, %2.42, %5.38, %1.48, [beta]-thujone, %1.43, [beta]-hydroxystearin of *Salvia officinalis* L., 1,8-cineole %49.60, %33.36, %56.05, Camphor, %22.21, %17.51, %6.62, %3.47, %2.57, Borneol, %1.19, %1.65, %1.39 of *Salvia fruticosa* Mill. *Salvia officinalis* L. and *Salvia fruticosa* Mill. the best volatile oils were obtained at %1.85 Kütahya and %4.10 at Çanakkale locations. At the end of the study; it was found that the volatile oil components were richer in terpenes and the amount of volatile oil varied depending on the ecological factors. Keywords: *Salvia officinalis* L., *Salvia fruticosa* Mill., Essential oil, GC-MS/FID

KEYWORDS

Keywords: *Salvia officinalis* L., *Salvia fruticosa* Mill., Essential oil, GC-MS/FID

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Poster Session 1

Submission ID: 43

THE LYCOPENE AS A NUTRACEUTICAL COMPONENT

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ABSTRACT

Lycopene, is found naturally in ripe tomato fruit and tomato-based products, watermelon, rosehip and pink grapefruit, is one of the carotenoid compounds and gives them a characteristic red pigmentation (Dündar ve Okcu, 2014:241; Bramley, 2000:233). Tomatoes and tomato-based products are the best source of lycopene in the human diet (Stahl ve Sies, 1996:4). In ripe tomatoes, lycopene is the most abundant carotenoid, comprising approximately 80 to 90% of those pigments present, while other carotenoids (α -carotene, β -carotene, lutein, and β -cryptoxanthin) are found negligible amount (Shi ve Le Maguer, 2000:3). Nevertheless, the lycopene content of the concentrated tomato products is generally lower than expected because of losses during food processing (Stahl ve Sies, 1996:4). The bioavailability of lycopene differs according to product. Lycopene from processed tomato products seems to be more bioavailable than from raw tomatoes. For examples, lycopene from tomato paste are shown to be more bioavailable than from fresh tomatoes. Additionally, the release of lycopene from the food matrix increases due to processing, presence of dietary lipids and heat induced isomerization from all trans to cis conformation and so, lycopene bioavailability also increases (Rao ve Agarwal, 2000:564). A diet rich in carotenoid-containing foods is connected with a number of health benefits (Clinton, 1998:35). The high antioxidant activity of lycopene is mostly responsible for its beneficial properties. However, previous studies are reported that other mechanisms such as intercellular gap junction communication, hormonal and immune system modulation and metabolic pathways may also be affected on health effect of lycopene (Rao ve Agarwal, 1999:305). A direct benefit of lycopene has not been proven yet, but the interaction between lycopene with other compounds found in lycopene-rich food is very important (Giovannucci, 1999:328). The epidemiological studies showed that the consumption of lycopene-rich products in diet is beneficial for many diseases such as cardiovascular diseases and several human cancers (prostate, lung, stomach, pancreas, colon and rectum, esophagus, oral cavity, breast, and cervix) (Dündar ve Okcu, 2014:241; Giovannucci, 1999:317). The complex interactions among multiple components in lycopene-rich products are thought to contributing these health effects (Giovannucci, 1999:317).
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KEYWORDS

cancer, lycopene, tomato-based products.

Poster Session 1

Submission ID: 45

GARLIC (*ALLIUM SATIVUM*) AS AN ALTERNATIVE TO ANTIBIOTICS IN FISH CULTURE

SUAT DİKEL¹

ABSTRACT

Abstract: The wide-ranging use of antibiotics and medicaments has resulted in chemical residue and resistant pathogens in cured fish. Chemical residue not only pollutes the environment, but also threatens consumer's health. In contrast, garlic as a recognized natural antibiotic that causes no environmental or physical side effects has shown to be effective for the treatment of many diseases in humans and animals. In fish culture operations, garlic promotes growth, improves the immune system, stimulates appetite, and reinforces the control of fungal and bacterial pathogens. In addition to this, garlic used as an aromatics and lengthener of shelf life of fish meat. This article emphasis on the application of garlic in prevents of fish and the expectations of using garlic preparations in fish culture.

KEYWORDS

Garlic, Antibiotic, Aquaculture

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Poster Session 1

Submission ID: 46

EFFECTS OF DIETARY GARLIC (*ALLIUM SATIVUM*) POWDER ON GROWTH, FEED UTILIZATION AND IN SURVIVAL OF HYBRID TILAPIA FINGERLING UNDER GREENHOUSE CONDITIONS

ALP ÖZGÜVEN¹, SUAT DİKEL²

ABSTRACT

The effect of different concentrations of garlic (*Allium sativum*) supplement in fish diet on growth parameters of hybrid tilapia (*Oreochromis niloticus* x *O. aureus*) fingerlings was investigated. Fish (2.57 ± 0.01 g) were separated into three experimental groups of 0% (controls), 1.0%, and 2% concentrations of garlic in diet and fed at 2% body weight per day. At the end of the experimental feeding period, it was observed that garlic supplemented diet did not have any significant effect on weight gain of hybrid tilapia fingerlings when compared to fish in the control diet. However, final fish weight of high level garlic added group was higher ($8,09 \pm 0,84$ g) than the others ($7,41 \pm 0,64$ and $7,30 \pm 0,54$ g) respectively ($P > 0.01$). But Fish fed different higher concentrations of garlic in diet showed significantly differences in FCR of among the groups ($P < 0.01$). In conclusion %2 dietary supplementation of garlic in diet can be recommended for getting to better FCR in overwintering of hybrid tilapia fry under the greenhouse conditions.

KEYWORDS

Garlic, Tilapia, Herbal additives, Overwintering

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Poster Session 1

Submission ID: 47

DIFFERENT EVALUATION OPPORTUNITIES; TESBI (STYRAX OFFICINALIS L) SHRUP

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ABSTRACT

Humans have benefitted from plant and living creatures in nature for protection or curation from disease and harmful before industrial revolution. Medicine and pharmacy sectors intensively started to use artificial products for reason with industrialization of sciences. But, because it is recognize that this side effect of usage of artificial products and again, people start to searching ways which is back to nature. Intensively it has been worked on good farming and organic farming to nutrition; medicinal and aromatic plants for therapies and diseases, personal care products, nutritional support foods. Before modern era , plant of medicinal and aromatic uses is almost 100%, this percentage is decrease to 5% with modernization. Nowadays, this percentage again is oncoming to 30% for the good of medicine and aromatic plants. At the point of continue of the process, it is not prophecy that this percentage's will increase to declare. Scientifically it is known as "Ayı fındığı" but its name is "tesbi" in east Mediterranean district. It commemorated as medicine and aromatic plant in history, it has many potential which can benefit in the different areas. Tesbi plant which is unappreciated as forestry industry danger of extinction because of extreme cutting and animal feeding. Tesbi is a perennial shrub. Its seed has 47% oil. Tesbi can use lots of area such as plant leaf can use for feeding goat, bee forage due to honewort, landscape gardening due to beautiful flowers, renewable energy due to high oil rate , erosion control works due to plant can easily grow in dry zone and if plant is grow in massive forestry area, It can create seriously employment .Cultivation and breeding of plant which is believed to cure against prostate diseases can contribute to protect of biodiversity.

KEYWORDS

Tesbi, Medicinal and Aromatic plants, Styrax L.

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Poster Session 1

Submission ID: 48

QUANTITATIVE DETERMINATION OF HEAVY METALS IN SOME COMMONLY CONSUMED HERBAL MEDICINES IN KANO STATE, NIGERIA

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ABSTRACT

Evaluation of heavy metals in twelve commonly consumed herbal medicines/preparations in Kano State, Nigeria was carried out. The samples comprised of five unregistered powdered medicines, namely, Zuwo, (ZW); Rai Dorai, (RD); Miyar Tsanya, (MTS); Bagaruwar Makka, (BM); and Madobiya, (M); five unregistered liquid herbal medicinal concoctions for pile (MB), yellow fever (MS), typhoid (MT), stomach pain (MC), sexually transmitted diseases (STDs); and two registered herbal medicines; Alif Powder (AP) and Champion Leaf (CL). The heavy metals evaluation was carried out using Atomic Absorption Spectroscopy (AAS) and the result revealed the concentrations (ppm) ranges of the heavy metals as follows: Cadmium (0.0045 – 0.1601), Chromium (0.0418 – 0.2092), Cobalt (0.0038 – 0.0760), Copper (0.0547 – 0.2465), Iron (0.1197 – 0.3592), Manganese (0.0123 – 1.4462), Nickel (0.0073 – 0.0960), Lead (0.185 – 0.0927) and Zinc (0.0244 – 0.2444). Comparing the results obtained in this work with the standards of the World Health Organization (WHO), the Food and Agricultural Organization (FAO) and permissible limits of other countries, the concentrations of heavy metals in the herbal medicine/preparations are within the allowed permissible limits range in herbal medicines and their use could be safe.

KEYWORDS

Herbal medicines, Registered, Unregistered, Kano State,

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Poster Session 1

Submission ID: 50

EFFECTS OF USING AROMATIC AND MEDICINAL PLANTS ON THE DEVELOPMENT, WELFARE AND PRODUCTION OF ANIMAL

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ABSTRACT

Along with the increasing world population and developing technologies, the use of synthetic chemical substances has become widespread in plant and animal production, which is the basis of food products production, in the fight against diseases and increasing productivity. However, it is becoming increasingly important to raise the level of prosperity in society, to increase sensitivity towards the environment, to maintain a healthy and sustainable production and a comfortable life without damaging the nature of mankind. There is an increasing tendency to use medicinal and aromatic plants instead of antibiotics and growth regulators which are used in crops and animal products, risks of leaving waste products in products and health problems in users, instead of these additives. The use of plant-based materials that lasted until 4000 BC gained importance and became increasingly widespread, with increased sensitivity to both humans and animals and even plants. Especially after the prohibition of the use of chemical antibiotics and additives in animal breeding, many studies on the use of increasingly plant-derived substances have a lot of information on both positive and negative aspects. In this study, the use of medicinal and aromatic plants or their extracts in livestock, the main source of quality nutrient production, will examine the development of animals, their health and the effects on yield.

KEYWORDS

medicinal and aromatic plants, animal welfare, product quality, animal development

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Poster Session 1

Submission ID: 53

ECONOMIC, SOCIAL AND ECOLOGICAL PROPERTIES OF SOME WILD PLANTS WITH MEDICAL AND AROMATIC POTENTIAL

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ABSTRACT

Unless extraordinary events happen, world population will continue to rising. Growth which is bring urbanization and industrialization pressure on fertile land and this lands are declining steadily. 795 million people can't even take essential nutrients in the current situation. Not only growing population but also environmental degradation is restrict people living space and needs. Because of decreasing water source and cultivated area, creating crop pattern is getting more important under this circumstance. There are 12,476 plant taxon in our country, 4,080 of them are endemically grow in Turkey. The number of trading medicinal plants in our country is approximately 400. Especially plants growing in arid areas such as Cocklebur (*Xanthium strumarium* L.), Prangos (*Prangos ferulacea* (L.)), Poppy (*Papaver rhoeas*), Tesbi (*Styrax officinalis*) and Myrtus (*Myrtus communis*) can use in different areas (herbal medicine, plant chemicals, food and additives, cosmetics and perfumery etc.). In studies on Cocklebur (*Xanthium strumarium* L.) plant shows antitumor, antibacterial, antifungal, antitussive, anti-inflammatory, hypoglycemic, antimitotic, antioxidant and insecticide effects. Prangos (*Prangos ferulacea* (L.)) containing coumarin, flavonoids, alkaloids and monoterpenes. Because of the compounds, plant is using in traditional medicine in many years. Poppy (*Papaver rhoeas*) is a mild sedative. Especially the petals have rhoeadic and papaveric acids and all parts of plant contains rhoeadine alkaloids. Extracts obtained from various components of Tesbi (*Styrax officinalis*) have been found to have antioxidant, antimicrobial, hemorrhoid and antifungal effects. While the Myrtus (*Myrtus communis*) foliage contains tannin, volatile oil and bitter substances, the fruit of the plant contains tannin, essential oil, sugar and organic acids (malic and citric acid). In this study, information will be given herbal and economic characteristics of these plants as well as their medical properties.

KEYWORDS

Poppy, Myrtus, Cocklebur, Tesbi, Medical and Aromatic plants

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Poster Session 1

Submission ID: 54

**PROPERTIES OF ANTIOXIDANT AND ANTI-INFLAMMATORY
ACTIVITY OF ŐEVKETİ BOSTAN (CNICUS BENEDICTUS L.)
CULTIVATED IN AEGEAN REGION FROM TURKEY**

ZEHRA CAN¹, NİMET BALTAS², HİLAL EBRU AKIR³, SEVGİ KOLAYLI³

ABSTRACT

The aim of this work was to evaluate the anti-inflammatory, antioxidant and gastro-protective activities of *Cnicus benedictus* L., a type of milk thistle cultivated in Turkey. The total phenolic content (TPC), total flavonoid content (TFC), ferric reducing antioxidant power (FRAP) and the 2,2-diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging activity was measured to determine antioxidant capacity. The anti-urease and anti-xanthine oxidase activities were used to determine the gastro-protective and anti-inflammatory potential of the plant extracts, respectively. The TPC was 337.40- 635.10 mg of gallic acid equivalents (GAE)/100 g and TFC was 41.05 -119.12 mg of quercetin equivalents (QE)/100 g in the root and leaf extracts, respectively. The root and leaf extracts of *Cnicus benedictus* L., were exhibited different inhibition values against both of the enzymes. The inhibition effect of the both enzymes were calculated as IC₅₀ (mg/mL) in terms of 50% inhibition of the enzymes. The xanthine oxidase activity of the leaf and root was 18.53 and 19.75 mg/mL and the urease activity were 2.29 mg/mL and 11.53 mg/mL, respectively.

KEYWORDS

Antioxidant; Cnicus benedictus L.; anti-urease; anti-xanthine oxidase

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Poster Session 1

Submission ID: 56

CAROB FLOUR AND INVESTIGATION OF CHEMICAL AND FUNCTIONAL PROPERTIES

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ABSTRACT

Carob (*Ceratonia siliqua* L.) is a perennial plant belonging to the Fabaceae family. It is referred by different names in many countries. In Turkey, it is referred by carob and horn names. Carob is grown in Mediterranean countries like Spain, Portugal, Italy, Morocco, Greece, Turkey, Algeria, Syria and Palestine. Carob is a valuable food item used in food industry, in the production of molasses and various provender as well as direct consumption. Amounts of components of carob vary due to the climate and harvesting condition of the location where it is grown. In general, carob contains 4-6% protein, 0.2-0.4% fat, 2-3% ash, 5-6% cellulose and 62-67% total sugar. Carob flour is obtained by the following steps; classification of carob, washing, drying, rough grinding, roasting the pulp, peeling and sieving. In this study, in the obtained flour, it is determined that 32.87% is total dietary fiber, 83.03% is total carbohydrate, 3.09% is ash, 0.31% is fat and 6.03% is protein. It is aimed to make use of carob flour, which is rich in mineral material and total dietary fiber and has low fat content, in the production of various functional foods. Carob flour with different usage areas is economically important and has a very important position in both food industry and other industrial areas. Grinded and floured form of it can be used in the production of functional food items and ice-cream, cakes and sugary foods. It is predicted that if carob flour is used in grain products instead of wheat flour in different portions, it will contribute to functional product diversity and can be used as food additive. In addition, since carob flour has high total dietary fiber will help human body, nourished by foods containing this flour, feel full and will help to reduce the speed of digestion and prevent constipation, will help digestive system function healthy and properly.

KEYWORDS

carob, flour, functional product, food industry, total dietary fiber

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Poster Session 1

Submission ID: 62

DETERMINATION OF ANTIOXIDANT ACTIVITY OF THE BEECH MUSHROOM (PLEUROTUS SP.)

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ABSTRACT

This study was investigated the total phenolic substance content and the content of antioxidants in the fungi obtained from 15 growing media prepared by adding Pleurotus ostreatus fungi with various additives (poplar, beech, oak, linden and alder) of 5 different tree species (20% tea wort and 20%). Total polyphenol content of total phenolic substance content and FRAP and DPPH tests for antioxidant activity were performed. The total amount of phenolic substance was determined to be in the range of 1.016-4.772 mg / g. When the FRAP value of the extracts was examined, the value of 2.245-8.902 $\mu\text{mol FeSO}_4 \cdot 7\text{H}_2\text{O}$ / g DPPH was found to be 4.650-22.922 mg / mL. According to the results, it has been confirmed by studies that fungi have antioxidant activity that is not just a food source. These results suggest that tea waste is an important industrial waste that can be used in mushroom cultivation and that the produced mushroom is similar in quality and quantity to alternative crops.

KEYWORDS

Antioxidant; Pleurotus sp.; phenolic

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Poster Session 1

Submission ID: 63

THE FLOUR OBTAINED FROM SOY PLANT AND ITS PROPERTIES

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ABSTRACT

Grain pieces include many nutrients in them. The flour obtained from these is a product consumed by majority of the world. However, during the processing of the grains there become some nutritional element are lost. For this reason, flours of different plants are started to be added as additives as alternative to flours of grains like wheat, barley, oat etc. Developmnet of various nutritious and functional products by mixing different flour additives has been started. In this study, the steps of flour production from soybean and properties of soy flour are mentioned. Soybean is a member of "Leguminosae" family and cultivated form *Glycine max L.* is grown every year. Generally being yellow, soybean can also be purplish, black, green and dark brown. The seeds of soybean can have a spherical shape or oval. Soybean is rich in vitamin, mineral and nutrient values. It includes protein, fiber, magnesium and calcium in high amounts. Soybean seeds contain 35-45% protein, 30% carbohydrate, 18-24% oil, 5% mineral (280 mg/100g Mg-15,7 mg/100 g Fe), vitamin and significant amino acids. Soy flour is obtained by the following steps; cleaning of soybeans, separation of shells, aparting beans, extraction of oil by hexane and removing from their systems, roasting and pulverization. Soy flour is a rich food source in protein (59.16%). Soy flour is used to decrease the cost in many foods, to provide food supplement and to extend shelf life. In bakery products, soy flour has effects like humidity adsorption, decreasing cooking time and oil absorption. Havin high amounts of protein, soy flour can be used also in meat and meat products. In accordance with this, nutritional and functional properties of foods can be increased by supplements of flours obtained from plants that are deficient in foods. Therefore, it is considered that different plants used in food industry can provide products with added value in terms of economy as well as preventing the diseases caused by malnutrition.

KEYWORDS

Soybean, soy flour, functional properties, mineral, protein, fiber

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Poster Session 1

Submission ID: 67

A VIEW TO AROMATHERAPY COURSES IN TURKEY IN ETHICAL ASPECT

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ABSTRACT

Aromatherapy is a therapeutic use of fragrant plants containing essential oils. Essential oils have spasmolytic, irritant, antiseptic, antifungal, antiviral and antimicrobial properties. Because of this wide range of curative treatments aromatherapy is a part of the complementary medical practices. In our country, the "Legislation of Traditional and Complementary Medical Practices" published in 2014 allowed doctors to be legally enforced. However, the Ministry of Health does not yet implement an independent training program for doctors authorized for the application of aromatherapy. The physicians must learn aromatherapy in aromatherapy lessons of phytotherapy-courses. Essential oils, which are the main element of aromatherapy, can have toxic effects if not used carefully. For this reason, it is very important for physicians to be educated enough about which diseases they use for which volatile oil, which doze, how long. On the other hand, there is some private institutions, who provide aromatherapy trainings to non-health workers, although the regulation give the authority of treatment with aromatherapy only to doctors and dentists. According to principles of medical ethics, the first responsibilities of the therapists to their patients is "do not harm". It is certain that the Ministry of Health approved training, which both doctors do not include as much detail as possible, and the people who are going to try aromatherapy training and maybe even treat the patient when it is not a physician will cause harm to the patient. This study aims to evaluate the aromatherapy education in our country in terms of medical ethics.

KEYWORDS

Aromatherapy, Ethics, Aromatherapy Education

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Poster Session 1

Submission ID: 68

THE RED ELIXIR OF THE TURKS "HARDALIYE"

SELÇUK MUSTAFA SEÇEN¹

ABSTRACT

Fruits are known to be effective especially in the prevention of some diseases by the influence of antioxidant nutrients such as polyphenol. Grape is also contains biologically active antioxidant polyphenols in its composition. Flavonoids such as catechin, quercetin and anthocyanins, or resveratrol are the most commonly detected polyphenols in the structure of grape and grape products. Many clinical trials on humans have found that grape drinks have antioxidant properties, suggesting that this effect is due to polyphenols in the composition of the grape. Hardaliye is a fermented, non-alcoholic drink which is the main raw material is grape. Hardaliye basically obtained by fermentation of grape, cherry leaves and mustard seeds about 5-10 days. Allyl isothiocyanates present in mustard seeds are produced by the enzymatic cleavage of glucosinolates, which are a group of sulfur compounds, and produce large quantities of mustard own flavor. Allyl isothiocyanates found in mustard seeds can reduce the formation of alcohol by inhibiting yeast activity. Therefore, mustard used in Hardaliye production is known to be effective in reducing the formation of alcohol. It is assumed that the production of Hardaliye in Kırklareli and Trakya region is approximately one and a half century old. . In our country, the production of Hardaliye is limited only to the people of the Trakya region. It is known that Hardaliye is obtained from fresh grapes and has phenolic compounds such as resveratrol because of its fermentation process, and therefore has antioxidant properties. Some properties of the Hardaliye allow for consumption by larger masses as a functional beverage. When compared to other fermented beverages in the food market; Hardaliye is suitable to be consumed by children because it does not contain alcohol. It is suitable to be consumed by hyperlipidemic individuals because of the lack of oil. It is suitable to be consumed by individuals with lactose intolerance due to the lack of milk. It is suitable to be consumed by blood pressure patients because it does not contain salt and also it is suitable for vegetarians. It is thought that Hardaliye may have hypolipidemic and hypotensive properties due to the influence of grape polyphenols in its structure and thus may positively affect cardiovascular risk parameters. The presence of high levels of potassium, calcium, magnesium and iron minerals in the grape bark suggests that the Hardaliye may have an effect on the serum mineral levels of humans. Based on various research results on grape drinks, it is expected that Hardaliye will not cause an anthropometric measurement such as body weight or a negative change in other biochemical parameters such as fasting blood sugar and insulin.

KEYWORDS

Hardaliye, Phenolic Ingredients, Grape, Allyl isothiocyanate

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Poster Session 1

Submission ID: 73

DETERMINATION OF SOME BIOTECHNICAL PROPERTIES OF CHERRY LAUREL FRUITS

HALİL İBRAHİM KALYONCU¹, EBUBEKİR ALTUNTAS¹, BURHAN ÖZTÜRK²

ABSTRACT

The physical, chemical and mechanical properties of cherry laurel (*Prunus laurocerasus*) were determined in this study. The biotechnical properties of the cherry laurel fruits should be known in the design and development of machines for harvesting and post-harvest applications, especially for classification, transportation, storage and processing etc. The fruit mass, geometric mean diameter, surface area, volume and fruit densities, puncture and compression tests and friction coefficients, total soluble solid content, pH and titratable acidity of cherry laurel fruits were determined. The geometric mean diameter and surface area values of cherry laurel fruits were as 18.8 mm and 16.7 mm², whereas, the puncture and compression forces were as 0.32 N, 27.5 N; static friction coefficient for rubber friction surface was as 0.91, respectively. The total soluble solid content and pH were as 15% and 3.9, respectively. The colour characteristics values (L, a, b) were as 15.6, 18.9, and 26.9, respectively. Measurement data of the physical, mechanical and chemical properties of cherry laurel fruits will be important engineering data for the design and development of the machines and systems to be used in harvest and post harvest technological applications.

KEYWORDS

Cherry laurel, physical, mechanical, colour characteristics

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Poster Session 1

Submission ID: 74

THE EFFECTS OF LAVENDER ON ANXIETY

HAYRİYE ALP¹

ABSTRACT

The genus *Lavandula* is native to the lands surrounding the Mediterranean Sea and southern Europe through northern and eastern Africa and Middle Eastern countries to southwest Asia and southeast India. It includes more than 30 species, dozens of subspecies, and hundreds of hybrids and selected cultivars. The main constituents of lavender are linalool, linalyl acetate, 1,8-cineole B-ocimene, terpinen-4-ol, and camphor. However, the relative level of each of these constituents varies in different species [1, 2]. Lavender oil, obtained from the flowers of *Lavandula angustifolia* (Family: Lamiaceae) by steam distillation, is chiefly composed of linalyl acetate (3,7-dimethyl-1,6-octadien-3-yl acetate), linalool (3,7-dimethylocta-1,6-dien-3-ol), lavandulol, 1,8-cineole, lavandulyl acetate, and camphor. Whole lavender oil and its major components linalool and linalyl acetate are used in aromatherapy. The major components of lavender oil were identified as 51% linalyl acetate and 35% linalool measured by gas chromatography and gas chromatography-linked Fourier Transform Infrared analysis(1,3) . Most commonly lavender is recommended for oral administration. However, it is also being employed in aromatherapy (inhalation of lavender; [4, 5]), aromatherapy massage, dripping oil [6], and bathing [7]. Unlike many other essential oils used in aromatherapy, lavender oil is often applied undiluted to the skin. The study of Jager et al. [8] suggested that essential oils and their components are rapidly absorbed through the skin. Several animal experiments suggest anxiolytic, sedative, analgesic, and anticonvulsive and neuroprotective properties for lavender (9). It was shown that lavender possesses an anticonflict effect in mice . Continuous exposures to lavender essential oils for 7 days significantly inhibited anxiety- and depression-like behaviors tested by elevated plus-maze and forced swimming tests in rats . Lavender oil produced significant antianxiety effects in the Geller conflict and the Vogel conflict tests in mice. Linalool, a major constituent of lavender oil, produced significant anticonflict effects in the Geller and Vogel tests; findings that were similar to those of lavender oil . Effects of lavender oil were compared with chlordiazepoxide, as a reference anxiolytic, on open-field behavior in rats. Lavender oil exhibited antianxiety properties similar to those of chlordiazepoxide . Anxiolytic effect of lavender was also compared with diazepam in elevated plus-maze test in the Mongolian gerbil. Exposure to lavender odor showed an anxiolytic profile similar to diazepam in female gerbils .

KEYWORDS

lavender, effect, anxiety

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Poster Session 1

Submission ID: 75

USE OF ANTIOXIDANT PLANT EXTRACTS DURING CANCER TREATMENT

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ABSTRACT

Our country is very rich in terms of antioxidant plant variety. Antioxidants are the agents for removing organ and tissue damages in the body. (1) Carotenoid content of plants is closely related to plant species, amount of light and nitrogen (N) it receives, structure of soil and applied agricultural processes, genotypes of plants and fruit maturity (2) Carotenoids; 1. Terpenoids a) Orange carotenoids; Alpha carotenoids and beta carotenoids in fruits and vegetables. B) Red carotenoids, astaxanthin with lycopene salmon and carrots in tomatoes and grapefruit. C) Yellow carotenoids; Avocados, spinach, eggs, mayonnaise, citrus fruits. Carotenoids neutralize free radicals. Antioxidants (phytochemicals) are technologically formulated and presented for use in lycopene, elagic acid, polyphenols, flavonoids, isoflavin, anthocyanins, glucosinates, ginkgo biloba, dietary fiber, olive leaf, black grape seed extract, green tea, blueberry, camel . It is thought that grape seed extract and raspberry and black water are effective in increasing the antioxidant capacity of cancer patients receiving chemotherapy. It is stated that chemotherapy is effective in the treatment of mouth injuries (aft) during periods of immunosuppression and immunosuppression. Case A 54-year-old male received lymphoproliferative cancer at the lymph node biopsy in the right neck region of the ear, nose and throat specialist who applied to the right eyelid after falling. There was an anterolateral myocardial infarction at history. Nazofaenks cancer stage 4 was diagnosed in the 3rd health care establishment. On physical examination diplopia and 3rd cranial nerve paralysis were present. In the magnetic resonance imaging study, there was a tumoral formation covering the skull base. Decision of the medical oncology council decision and the application of 6 cycles of chemotherapy and radiotherapy were taken. During the chemotherapy and radiotherapy sessions, he lost about 20 kg because his mucositis formed in the mouth deteriorated. Only grape juice, grape seed extract, blackcurrant extract, ginkgo biloba capsules have been started. Gideal supplements have been used throughout the chemotherapy process. The patient's mouth wounds improved in a short time as the antioxidant capacity was increased. After epithelialization, the feeding was regulated. Result The patient was exposed to oxidant stress during heavy chemotherapy and radiotherapy applications. Regulation of feeding in cancer patients is very important. The ways of coping with the complications of chemotherapy and radiotherapy are affecting the treatment process of the disease positively. The patient has successfully completed the treatment for approximately 12 years without recurrence. The remission period is ongoing.

KEYWORDS

antioxidant,extre, grape seed

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Poster Session 1

Submission ID: 76

DETERMINATION OF SOME PHYSICAL PROPERTIES OF ALLSPICE (PIMENTA DIOICA) FRUIT

EBUBEKİR ALTUNTAŞ¹, MÜBERRA ERDOĞAN¹

ABSTRACT

Allspice is the dried fruit of the *Pimenta dioica* plant. In this study, some physical properties of Allspice were determined. The physical properties of allspice fruit are to be known for design and improve relevant machines and systems for harvesting and post harvest treatments (transporting, storing, handling and processing). The geometric mean diameter, surface area, volume, true and bulk densities and static friction coefficient values of allspice fruit and seed were determined. The geometric mean diameter values of the fruit and seed of allspices were as 7.97 mm ve 4.18 mm, whereas, the surface area values were as 2.11 cm² ve 0.553 cm², respectively. The fruit masses of fruit and seed of the allspices were as 0.18 g and 0.065 g, whereas, the true densities of fruit and seed of the allspice fruit were as 897.72 kg/m³ ve 1892.3 kg/m³, respectively. The measured physical properties of allspice fruit will serve to design and improve the relevant machines and systems used in harvest and postharvest treatments.

KEYWORDS

Allspice, geometric, volumetric properties

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Poster Session 1

Submission ID: 78

PHYTOTHERAPHIC PLANTS IN THE MERSIN-ADANA HERBALMARKETS

AYŞE EVEREST¹, ELİF AYŞE ERDOĞAN ELİUZ²

ABSTRACT

This study presents the result of a second research on the popular medicinal plant species in the traditional markets in Mersin and Adana. This work done for the first time in 2005 was carried out again in 2012-2015. The purpose of our study is to underline the ethnobotanical richness of the region and compare with other cities of Turkey and international literature. The informants were collected by interview with herbalists and customers in herbalmarkets. A total of 175 species belonging to 57 families were reported and the plants were listed with their local and latin names. As a result, local people have used various plant species to treat many ailments and the data indicated that these herbs have used especially for disorders of immune system (18.96 %), gastrointestinal-digestive (18.10 %), analgesic-anodyne-emollient-sedative (15.05 %), urinary system (10.04 %), heart-blood (9.06 %), disorders of arthritis (6.62 %), respiratory system (5.19 %), skin disorders (4.25 %), cancer (4.05 %), gynecological (3.59 %), mental and neurological disorders (1.76 %). We documented the traditional ethnobotanical data inherited by local people living in Adana-Mersin region. These plants were widely preferred by local people to use treatment of many ailments.

KEYWORDS

Herbalmarkets, phytotherapy, Mersin, Adana (Mediterranean Region)

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Poster Session 1

Submission ID: 79

USE OF DIZAZONIUM SALT MODIFIED GLASSY CARBON SENSOR ELECTRODE IN APIGENIN DETERMINATION

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ABSTRACT

Nutraceuticals and functional foods are used to describe food or food compounds that provide health benefits over basic nutrition. While nutraceutical describes both food and food ingredients, both conventional and different (tablets, capsules, etc.), functional food refers to traditional food forms [1, 2]. The concept of functional food describes the foods which provide health benefits. The foods we eat should be nutritious for qualified and a longer life. Functional foods are obtained by adding some functional ingredients to food such as phenolics, antioxidants, dietary fiber, oligosaccharides, probiotics, prebiotics, vitamins, polyunsaturated fatty acids, sulfur-containing compounds, phytoestrogens and plant sterols [3]. When functional compounds are classified according to their chemical structure, phenolic substances are also included in this group. Phenolic substances are very important secondary metabolites found in plants. Some of the important substances in this group are anthocyanins, coumarins, flavonoids, tannins and lignin. Flavonoids and derivatives are large polyphenol compounds which are found in many fruits, vegetables, and certain beverages that have various healthy biochemical and antioxidant effects. Apigenin, which is abundant in chamomile tea, is the most important flavonoid derivatives found in parsley. Apigenin, like in other antioxidant species, is found in colorful fruits and vegetables. Apigenin is a very potent anti-cancer compound. This advantage has a high selectivity for cancer cells that are opposite to non-cancerous cells and provides protection against cancerous cells [4, 5]. In many studies Apigenin has been shown to have a preventive or slowing effect on many types of cancer, including colon cancer, leukemia, lung cancer, prostate, skin and stomach cancer [6]. Flavonoids which are found in many fruits and vegetables are very essential for human health due to their activity as free radical acceptors. In this study, the sensor electrode was developed for the determination of Apigenin which is one of the flavonoid derivatives has anticancer properties. The surface modifications of glassy carbon (GC) electrode were performed with diazonium salt using cyclic voltammetry (CV), whereas the characterization of these sensor electrodes were performed using CV, electrochemical impedance spectroscopy (EIS) and scanning electron microscopy (SEM). Following the modification and characterization process, the sensitivity of sensor electrode was tested against Apigenin using square wave voltammetry (SWV). Calibration curve was drawn at different concentrations. Based on the sensitivity tests, the sensor electrode can be used in the determination of Apigenin using SWV in real samples. References 1. J. M. Bertz, (1999) Government Perspective on Nutraceuticals/Functional Foods, Separation Science Short Course series: Nutraceuticals and Functional Foods, Texas A&M University, Texas. 2. K. H. C. Bařer ve N. Kırırmer (2002) Fonksiyonel gıdalar ve nutrasötikler, 14. Bitkisel İlaç Hammaddeleri Toplantısı, Eskişehir. ISBN 975-94077-2-8. 3. R. Meral, İ. S. Dođan, G. S. Kanberođlu (2012) Fonksiyonel Gıda Bileřeni Olarak Antioksidanlar, İđdir Üni. Fen Bilimleri Enst. Der. / İđdir Univ. J. Inst. Sci. & Tech. 2(2): 45. 4. C. S. Yang, J. M. Landau, M. T. Huang, H. L. Newmark (2001) Annu Rev Nutr 21: 381. 5. C. M. Lin, C. T. Chen, H. H. Lee, J. K. Lin (2002) Prevention of cellular ROS damage by isovitexin and

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KEYWORDS

Functional food, Flavonoid, Apigenin, Sensor electrode, Cyclic voltammetry

Poster Session 1

Submission ID: 80

INVESTIGATION OF ELECTROCHEMICAL BEHAVIORS OF QUERCETIN ONTO THE MODIFIED GLASSY CARBON NANOSENSOR ELECTRODE SURFACE

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ABSTRACT

Electrochemical studies revealed general trends in the electron-donating abilities of flavonoids [1]. The reduction potentials of flavonoids depend strongly on the electron donating properties of the substituents in the ring B [2], and on the ring B, the most oxidizable phenolic group is the more basic site [1]. The pKa values were assigned to ring A and ring B following reference [3]. The mechanism of phenolic compound action as antioxidants seems to involve the ability of phenols to scavenge radicals by an H-atom or electron transfer process by which the phenol is converted into a phenoxyl radical. The ease of oxidation of the phenol is of importance for its effectiveness as an antioxidant [4]. Quercetin is one of the most abundant plant-derived polyphenols and is widely consumed with a human diet [5]. Most flavonoid molecules have the same structure as quercetin, except that they have a specific sugar molecule in place of one of quercetin hydroxyl groups on the C ring, which dramatically changes the activity of the molecule. Quercetin is the 3,3',4',5,7-pentahydroxyflavone and the corresponding chemical structure is shown in Figure 1(B). The literature on the electrochemistry of quercetin is limited [6–9]. However, Zhu et al. [10] investigated the electrochemical behavior of the interaction of quercetin with DNA. Nematollahi and Malakzadeh [9] described the electrooxidation of quercetin in the absence and presence of benzenesulfonic acid and 4-toluenesulfonic acid as nucleophiles. Liu and Guo [11] studied the interaction of flavonoid, quercetin with organized molecular assemblies of nonionic surfactant. On account of these properties it is widely used as beneficial food supplement that is recommended for prevention and suppression of many diseases associated with oxidative stress. It has also become evident that antioxidant therapy may lead to adverse effects, as the ability of quercetin and other flavonoids to cause damage to cellular macromolecules and induce formation of reactive oxygen species has been discovered [12–14]. The most accepted explanation of the adverse effects is the formation of flavonoid oxidation products [15, 16]. The main intermediates formed during oxidation are semiquinone and reactive electrophilic o-quinones. Electrochemical oxidation of quercetin, as an important biological molecule, has been studied in non-aqueous media using cyclic voltammetry (CV), electrochemical impedance spectroscopy (EIS) and scanning electron microscopy (SEM). To investigate the electrochemical properties of quercetin, an important flavonoid derivative, on a different surface, a new glassy carbon electrode has been developed in non-aqueous media. References 1. Cren-Olivé, C.; Hapiot, P.; Pinson, J.; Rolando, C. Free radical chemistry of flavan-3-ols: Determination of thermodynamic parameters and of kinetic reactivity from short (ns) to long (ms) time scale. *J. Am. Chem. Soc.* 2002, 124, 14027–14038. 2. Jovanovic, S.V.; Steenken, S.; Tosic, M.; Marjanovic, B.; Simic, M.G. Flavonoids as antioxidants. *J. Am. Chem. Soc.* 1994, 116, 4846–4851. 3. Slabbert, N.P. Ionisation of some flavanols and dihydroflavonols. *Tetrahedron* 1977, 33, 821–824. 4. Steenken, S.; Neta, P. One-electron redox

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KEYWORDS

Surface modification, surface characterization, sensor electrode, quercetin

Poster Session 1

Submission ID: 81

APOPTOTIC EFFECT OF GINGER (*ZINGIBER OFFICINALE*) ON K562 LEUKEMIA CELL LINES

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ABSTRACT

INTRODUCTION Ginger (*Zingiber officinale*) is widely used as a traditional medicinal herb as well as a flavoring agent. For centuries, it has been an important ingredient for the treatment of cold, catarrh, rheumatism, neural diseases, gingivitis, toothache, asthma, stroke and diabetes. Ginger has various bioactive components such as gingerols, paradols, shogaols and zingerone, showing the pharmacological roles in mediating anti-bacterial, anti-inflammatory and anti-tumor activities. Among the bioactive ingredients from ginger, gingerols with various chain lengths (n6 to n10) and 6- shogaol have been reported to exert antitumor activities in a variety of cancers by inhibition of cell proliferation, migration and invasion or induction of apoptosis. 10- gingerol, one of the main phenolic compounds has been reported to possess antitumor activity against ovarian, colon, lung, breast cancer and prostate cancer cells by inhibition of cell proliferation or induction of apoptosis. Here, we studied anti-proliferative and apoptotic effects of ginger plant in different concentrations on K562 human chronic myeloid leukemia cell lines. **METHODS** Cell Culture: K562 cell line was maintained in RPMI medium, supplemented with 10% FBS, 1% glutamine and penicillin/ streptomycin at 37 °C with 5% CO₂ in atmosphere. MTT Assay: Using the MTT colorimetric method, the ginger was evaluated in vitro against the K562 cell lines, for cell viability and growth inhibition at different doses (10, 25, 50, 75 and 100 µM) following 24 hours incubation (Roche 11 465 007 001). Tali Apoptosis Assay: Cells were stained with Annexin-V/PI and analyzed using the Tali image-based cytometer. The Annexin-V positive / PI negative cells were recognized as apoptotic / dead cells, respectively (Molecular Probes A10788). Mitochondrial Membrane Potential Assay: Apoptosis was evaluated by mitochondrial membrane potential changes. Cells were stained with JC-1 probe according to the protocol of JC-1 mitochondrial membrane potential kit. JC-1 was used to detect mitochondrial membrane potential changes (Abnova KA1324). **RESULTS** There was a dose-dependent decrease in proliferation detected by MTT assay at the end of 24 hour incubation. IC₅₀ value was determined as 67µM. Apoptosis was found to be approximately 15% at concentration corresponding to the IC₅₀ value (67 µM). K562 cells treated with 100 µM ginger showed a decrease 44.7% relative to the control group (cells not treated with ginger) in mitochondrial membrane potential. In conclusion, current results indicate that the ginger has anti-proliferative and apoptotic effects in a dose-dependent manner on K562 leukemia cell line.

KEYWORDS

Ginger (Zingiber officinale), K562 leukemia cell lines, Cancer, Apoptosis.

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Poster Session 1

Submission ID: 82

INDEPENDENT AND SIMULTANEOUSLY DETERMINATION OF QUERCETIN, MORIN AND RUTIN USING AMINOPHENYL MODIFIED GLASSY CARBON NANOSENSOR ELECTRODE

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ABSTRACT

Polyphenols or Phenolic compounds are one of the most important groups of compounds occurring in plants, in which they are widely distributed. Polyphenols are also products of the secondary metabolism of plants. Flavonoids and phenolic acids (both benzoic and cinnamic-acid derivatives) constitute the most important classes of polyphenol, with more than 5000 compounds already described [1, 2]. Flavonoids of dietary significance can be categorized as flavonols, flavanones, flavones, anthocyanidins and isoflavones. They exhibit a wide range of biological effects, including antibacterial, anti-inflammatory, antioxidant, anti-allergic and anti-thrombotic activities [3, 5]. Epidemiological studies point to their possible role in preventing cardiovascular diseases and cancer. Flavonoids behave as antioxidants in a variety of ways, including direct trapping of reactive oxygen species, inhibition of enzymes responsible for producing superoxide anions, chelation of transition metals involved in processes forming radicals and prevention of the peroxidation process by reducing alkoxy and peroxy radicals [6, 7]. Some of the structural features and nature of substitutions on rings B and C which determine the antioxidant activity of flavonoids include the following: a) the degree of hydroxylation and the positions of the –OH groups in the B ring, in particular an orthodihydroxyl structure of ring B (catechol group) results in a higher activity; b) a double bond between C-2 and C-3, combined with a 3-OH, in ring C, enhances the active radical scavenging capacity of flavonoids; c) substitution of the 3-OH in ring C results in increase in torsion angle and loss of coplanarity, which subsequently reduces antioxidant activity and d) a double bond between C-2 and C-3, conjugated with the 4-oxo group in ring C also enhances the radical scavenging capacity of flavonoids [8]. Since the chemical activities of flavonoids in terms of their reducing properties as hydrogen or electron-donating agents could predict their potential to act as antioxidants (lower oxidation potential points to a higher antioxidant activity) [9], studying of electrochemical and antioxidant properties could help to better understand the mentioned group of compounds. The aim of this work were: i) to electrochemically modified glassy carbon (GC) electrode in non-aqueous media, ii) to characterize modified GC electrodes and flavonoid grafted modified GC sensor electrodes in various medium by cyclic voltammetry (CV), electrochemical impedance spectroscopy (EIS) and scanning electron microscopy (SEM), iii) to investigate the effect of sweeping rate and iv) to investigate the interaction of this modified electrode with some flavonoid derivatives by CV. Modified GC sensor electrode has been used to examine its sensitivity against quercetin, morin and rutin by using CV technique. As a result of, it was examined for the first time whether modified GC sensor electrode prepared by reduction and modification of diazonium salt could be used in the determination of total antioxidant capacity after modification in non-aqueous media. The sequence of antioxidant activity has been given for these flavonoid derivatives at the end. Originating from this study, we are

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KEYWORDS

Flavonoids, nanosensor electrode, cyclic voltammetry

Poster Session 1

Submission ID: 86

EFFECT OF DIFFERENT HYDROCOLLOIDS ON THE PASTING PROPERTIES OF TARO (*COLOCASIA ESCULENTA* L. SCHOTT) FLOUR

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ABSTRACT

Taro (*Colocasia esculenta* L. Schott) is grown in the tropical and sub-tropical regions of the world and corms of taro are consumed in many countries owing to its high nutritional value. In this study, taro flour was produced from corms and the influence of different hydrocolloids (xanthan gum, guar gum and gum arabic) at different concentrations (0.5 and 1 %) on the pasting properties of the flour was investigated since hydrocolloids are used to improve technological properties of gluten-free flours. Raw taro corms were obtained from Anamur region of Mersin in Turkey and dried at 50°C and air flow rate of 2 m/s in drying oven. Addition of hydrocolloids significantly affected the pasting characteristics of the taro flour. As the increase in xanthan and guar gum concentrations significantly increased the peak viscosity, holding strength, final viscosity, breakdown viscosity and trough viscosity parameters, the increase in gum arabic resulted in decrease in magnitude of these parameters. Guar gum had more dominant effect when compared with the xanthan gum. As the 1 % guar gum added the peak, final, breakdown and setback viscosity values increased from 1469 cP to 4234 cP, from 1354 cP to 3968 cP, from 512 cP to 2068 cP and from 397 cP to 1803 cP, respectively. The results highlighted that taro flour was used with xanthan and guar gum in the formulations of gluten-free products. *This work is supported by TUBITAK (Project number: 114O391).

KEYWORDS

Taro flour, gum arabic, guar gum, xanthan gum, pasting properties

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Poster Session 1

Submission ID: 89

DETERMINATION OF VOLATILE OIL CONTENT AND COMPONENTS OF DIFFERENT ORIGINATED BASIL LINES

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ABSTRACT

This study was carried out in order to determine the essential oil ratios and components of the leaves of 14 different Basil (*Ocimum basilicum* L.) lines in 2013 in Ankara University Faculty of Agriculture Field Crops Department experimental field. The seeds of the Basil lines used in the study were planted in the plastic seedling trays and reached to a height of 10 cm and kept in the greenhouse environment. Before transplanting of seedlings, it was left outside the greenhouse for a few days in order to adjust to the field conditions. Then the seedlings were planted with 3 replications in the experiment as a randomized complete block design and plant density 20x40 cm. During the full bloom period, the lines were cut 10 cm above the soil level, the leaves were separated and then dried at room temperature in a shade environment. The harvest of the lines was made in July and August and two cuts were taken from each. The rate of essential oil in dry leaves of harvested plants ranged from 0.28-1.18% in the first harvest and from 0.33-1.25% in the second harvest. A statistical difference of 1% was found between the lines in terms of essential oil ratios. Component determinations of essential oils were made on GC-MS. These essential oils have been defined as 81.36-95.1% in the first harvest and 76.43-89.86% in the second harvest. Essential oil components in lines; α -cadinol, ϵ -cadinen, germacrene-d, α -bergamotene, methyleugenol, β -elemene, methyl cinnamate, methyleugenol, linalool and eucalyptole. Among these components; linalool, methyl cinnamate and methyleugenol lines were found to be the main constituents in essential oils in both harvests.

KEYWORDS

Ocimum basilicum L., Essential oil ratio, Harvest, Line.

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Poster Session 1

Submission ID: 93

STUDIES ON SAMSUN SALEP ORCHID DIVERSITY

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ABSTRACT

With the advantages of geographical features, our country has a very rich flora. A similar situation can be said in Samsun. Within this diversity, the Orchidaceae family has a distinct place. The richest variety of aromatic plant variety belongs to the Orchidaceae family in Samsun. The previous results revealed the existence of 44 orchid taxa. It is possible to see about 1/3 of our orchids in our province, and many of them are able to produce salep. Depending on the richness of species, it is understood that 25-30 tons salep tuber were collected in Samsun annually. Collection without farming increases destruction of natural flora. The species that produce tubers and are used to obtain salep have not been studied in Samsun. In this study, land trips were made in Samsun province and the types of salep collected for tuber were determined. Various measures to be taken in order to reduce the collection pressure have been emphasized.

KEYWORDS

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Poster Session 1

Submission ID: 94

FLOWER YIELDS ACCORDING TO FLOWERING PERIOD AND HARVESTS IN POT MARIGOLD (*CALENDULA OFFICINALIS* L.)

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ABSTRACT

Pot Marigold (*Calendula officinalis* L.) is a medical plant used for pharmaceutical and cosmetic purposes since ancient times. Today, as well as folk medicine, it continues to be widely used in the field of natural medicine and the pharmaceutical industry. It is the active ingredients in the flowers that make him a feature and the flowers are the parts that are used. Pot marigold is available in the climate which is quite capable of constantly blooming. In this study, flowering yield and floral yields were discussed. In the survey conducted under the ecological conditions of Samsun province, flowering continued for about 4 months from the beginning of July to the end of October. 24 times the flower harvest was made. From the first harvest, the flower yield has continued to increase. After the 10th harvest, it tended to decrease. A total of 328.6 kg / da fresh and 56.68 kg / da dry flower yield values were reached. An average of 49.11 flowers per plant was collected.

KEYWORDS

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Poster Session 1

Submission ID: 98

INVESTIGATION OF ANTI- ACETYLCHOLINESTERASE, ANTI- UREASE, ANTI-XANTHINE OXIDASE AND ANTIOXIDANT PROPERTIES OF POLLEN SAMPLES

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ABSTRACT

It was investigated clinically important enzymes such as anti- acetylcholinesterase, anti-urease, anti-xanthine oxidase and antioxidant properties of pollen samples, in this study. Total phenolic content, total flavonoid content and DPPH radical scavenging activities of the pollen samples were determined. Acetohydroxamic acid, donepezil and allopurinol were used as a standard inhibitor for urease, acetylcholinesterase and xanthine oxidase enzymes. Results of inhibition were calculated as mg/mL or µg/mL. It was found that pollen samples showed very effective inhibition on acetylcholinesterase (IC₅₀= 1.074 – 3.455 mg/mL), urease (IC₅₀= 0.984 – 2.455 mg/mL) and xanthine oxidase (IC₅₀= 0.995 - 2.111 mg/mL) enzymes. Also, it was determined, pollen samples with higher total phenolic (55.546-95.560 mg GAE/g) and flavonoid content (22.325-45.658 mgQ/100 g) showed more effective enzyme inhibition. When deal with results of radical scavenging activity, SC₅₀ values of pollen samples were found to be between 67.312 and 112.124 mg/mL.

KEYWORDS

Pollen, Acetylcholinesterase, Urease, Xanthine oxidase, Antioxidant

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Poster Session 1

Submission ID: 99

SOME MORPHOLOGIC PROPERTIES OF AROMATIC ZIZIPHORA L. SPECIES FROM TURKEY

ÖMER KILIÇ¹, EYÜP BAĞCI²

ABSTRACT

In Turkish folk medicine, aromatic and medicinal *Ziziphora* L. (Lamiaceae) species have been used as infusion for various purposes such as sedative, stomachache, carminative and in cold and cough treatments. The genus *Ziziphora* including annual herbs, except *Ziziphora clinopodioides* Lam., and is represented by six taxa in the Flora of Turkey: *Ziziphora capitata* L., *Z. clinopodioides*, *Ziziphora tenuior* L., *Ziziphora persica* Bunge, *Ziziphora taurica* subsp. *cleonioides* and *Ziziphora taurica* Bieb. subsp. *taurica*. In this research, nutlet, leaf, stem and pollen morphology of *Z. persica*, *Z. clinopodioides* and *Z. capitata* were studied with a Hitachi SU-1500 scanning electron microscope (SEM) in Wilfrid Laurier University (Canada) Herbarium. Description of nutlet, leaf, stem and pollen morphological features examined these species is provided and illustrated. *Z. persica*: nutlet shape is elliptic to oblong, 1.8-2x0.7-0.9 mm, surface is glabrous and ornamentation is reticulate; leaves, lineare-lanceolate, 8-30x1.5-4 mm, light green, pilose, margins entire; polar shape of pollen is elliptic, ornamentation is microreticulate; stem usually branched at each node, with scarce pilose. *Z. clinopodioides*: leaves narrowly elliptic, 9-35x1.5-5 mm, light green, dense velutinous, entire margin; polar shape of pollen is oblate spheroidal, ornamentation is reticulate; stem prostrate to erect, branched from base, with scarce hirsute hairs. *Z. capitata*: nutlet, 1.5-2x0.6-0.8 mm, shape is ovate to oblong, surface is glabrous and ornamentation is reticulate; leaves, lineare-lanceolate to elliptic, 7-35x1.5-10 mm, light green, scarce hirsute, margins entire; stem 7-21 cm, usually branched at each node, with short densely hirsute hairs; polar shape of pollen is elliptic, ornamentation is microreticulate. With this study basic datas obtained to contribute systematic and morphologic studies with *Ziziphora* taxa. Acknowledgements The authors thanks to Dr. Mihai Costea from Wilfrid Laurier University (Canada) for guidance and allow to use SEM.

KEYWORDS

Ziziphora, *Lamiaceae*, *Morphology*, *SEM*.

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Poster Session 1

Submission ID: 100

SOME AROMATIC AND MEDICINAL PLANTS FROM BİNGÖL (TURKEY)

ÖMER KILIÇ¹, ŞİNASI YILDIRIMLI², FETHİ AHMET ÖZDEMİR³

ABSTRACT

The use of aromatic and medicinal plants in developing countries has been widely observed. The increasing human population and demands in the late decades has led to over exploitation of land in many areas thus reducing the biodiversity of medicinal plants. Aromatic and medicinal plants possess odorous volatile substances and the characteristic aroma is due to a variety of complex chemical compounds. This study was carried out in order to contribute aromatic and medicinal plants knowledge of Eastern Anatolia Region of Turkey. This investigation included twentyfive medicinal or aromatic plant specimens collected and photographed from Bingöl provinces during the vegetation seasons 2016. Plant samples was collected contents of Project (BAP -TBMYO.2016.00.001). Specimens were identified by taxonomists O.Kılıç and Ş. Yıldırımli, with the Flora of Turkey. The plant taxa are deposited Yıld. Herbarium (Ankara) and Department Garden-Park Plants of Bingol University. With this study some medicinal and aromatic plants recorded and photographed; that might be useful for health-care programme, aromatic and medicinal plants knowledge, aromateraphy, phytoteraphy, economic agricultural policy development, alternative food programme, ethnobotany and development of drug sector. Acknowledgements The authors acknowledge the Scientific and Research Council of Bingol University (BAP -TBMYO.2016.00.001) for support this study.

KEYWORDS

Bingöl, Medicinal plant, Aromatic plant

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Poster Session 1

Submission ID: 101

**ESSENTIAL OIL COMPOSITION OF CLINOPODIUM VULGARE L.
SUBSP. ARUNDANUM (BOISS.) NYMAN (LAMIACEAE) COLLECTED
FROM BİNGÖL (TURKEY)**

MEHMET ALİ KUTLU¹, ÖMER KILIÇ², FETHİ AHMET ÖZDEMİR³

ABSTRACT

Many of the Lamiaceae species are used as the ornamentals and can potentially be used as the medicinal or aromatic herbs in the industries such as the cosmetics, foods, hygienic products and perfumery. Clinopodium L. genus is belong to Lamiaceae family. Some Clinopodium species have been used in folk medicine for the treatment of haemorrhagic disease and as a salve for bruises and swelling. Clinopodium vulgare L. is also used in folk medicine and it's oil has cytotoxic and anti-tumour effects. C. vulgare is one of the two Clinopodium spp. growing wild in Turkey. In The Flora of Turkey, two subspecies are defined: vulgare and arundanum. Plant sample was collected contents of Project (BAP -TBMYO.2016.00.001). In this study aerial parts essential oil of Clinopodium vulgare subsp. arundanum was analyzed by HS-SPME/GC-MS. As a result thirty two components were identified. α -caryophyllene (29.2%), germacrene D (19.1%) and caryophyllene oxide (14.6%) were found to be the major constituents of the plant. With this study, chemotypes of studied taxa were detected α -caryophyllene, germacrene D and caryophyllene oxide. In addition studied plant samples were found to be rich in respect to essential oils and the results discussed natural product, renewable resources and chemotaxonomy. Acknowledgements: The authors acknowledge the Scientific and Research Council of Bingol University (BAP -TBMYO.2016.00.001) for support this study.

KEYWORDS

Clinopodium, essential oil, HS-SPME/GC-MS, Lamiaceae.

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Poster Session 1

Submission ID: 102

BULBS SURFACE-STERILIZATION PROTOCOL FOR TULIPA JULIA K. KOCH FROM TURKEY

FETHİ AHMET ÖZDEMİR¹, ÖMER KILIÇ², MEHMET ALİ KUTLU³

ABSTRACT

Soğanlı bitkiler (Tulipa türleri gibi), tıbbi ve aromatik özellikleri ve gerekse de güzellikleri nedeniyle çok eski zamanlardan beri insanların yararlandığı ve halk tıbbında sıkça kullandıkları bitkiler arasında yer almıştır. Tulipa julia K.Koch is a high valuable economic plant and a wide geographical distribution eastern of Turkey. However, due to habitat loss and illegal over collection in the wild it is included as a vulnerable species. The development of a protocol for Tulipa julia bulblet propagation in vitro may be useful for reintroducing plants in their natural habitats, and for germplasm conservation. A difficult problem encountered during the establishment of an in vitro culture is explants disinfection, especially when working with endangered species, from which explant availability is restricted. Thus, the establishment of a sterilization protocol is crucial for the initiation and success of bulblets micropropagation system for Tulipa julia. This study was to evaluate the effect of sodium hypochlorite concentrations and treatments time in bulbs surface disinfection, tissue sensitivity and development. Sodium hypochlorite solutions (2.5 or 3%, 20 or 25 min; 4 or 5%, 30 or 35 min) were effective in eliminating bulbs superficial contaminants. There was significant difference among the effective sterilization sodium hypochlorite concentrations and treatments time in relation to surface sterilization bulbs of Tulipa julia. Also, no damage to bulbs tissues were observed. Surface sterilization of bulbs, for initiation of an in vitro culture, required higher concentrations of sodium hypochlorite (4 or 5% NaOCl, 30 or 35 min) for controlling fungal and yeast contamination, compared to bulbs sterilization. Acknowledgements The authors acknowledge the Scientific and Research Council of Bingol University (BAP -TBMYO.2016.00.001) for support this study.

KEYWORDS

Tulipa julia, surface sterilization, in vitro culture.

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Poster Session 1

Submission ID: 103

**IN VITRO BULB REGENERATION FROM STEM EXPLANTS OF
ENDEMIC AND MEDICINAL GEOPHYT MUSCARI AUCHERI
(BOISS.) BAKER**

FETHİ AHMET ÖZDEMİR¹, ÖMER KILIÇ², EYÜP BAĞCI³

ABSTRACT

Majority of Muscari species bulbs have medicinal properties and contains high percentages of homoisoflavonoids, this chemical matter possesses antimutagenic and anticlastogenic properties, and may be included among effective natural antimutagens to prevention of cancer. Bulbous plants (like Muscari taxa) are among the plants that people used in folk medicine due to their medicinal and aromatic properties and their beauty. Muscari aucheri (Boiss.) Baker bears beautiful and attractive purplish blue flowers bloom between May and June; it grows stony slopes, mountain pastures an altitude of 1000-3000 meters. The natural populations of Muscari aucheri, is seriously affected by increased environmental pollution, urbanization and grazing. Therefore, this study aimed to accelerate multiplication by devising a strategy for an efficient in vitro bulblet regeneration system of Muscari aucheri using stem explants on MS medium containing 1, 3, 5 mg/l TDZ plus 0, 0.1, 0.2, 0.4 mg/l NAA (12 combinations). The stem explants induced direct bulblet regeneration on explants. Maximum mean number of bulblets per explant was noted on MS medium containing 3.00 mg/l TDZ + 0.4 mg/l NAA and maximum mean number of bulb diameter was noted on MS medium containing 5.00 mg/l TDZ + 0.2 mg/l NAA. The regenerated bulblets were isolated from peduncle explants and cultured on MS medium containing 40 g/l sucrose; where they gained diameter and rooted. Acknowledgements The authors acknowledge the Scientific and Research Council of Bingol University (BAP - TBMYO.2016.00.001) for support this study.

KEYWORDS

Muscari aucheri, in vitro, bulb regeneration

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Poster Session 1

Submission ID: 104

OPTIMIZATION OF TISSUE CULTURE CONDITIONS AND CALLUS INDUCTION IN SMALL FLOWERED WILLOW HERB (*EPILOBIUM PARVIFLORUM* SCHREB)

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ABSTRACT

Small flowered willow herb (*Epilobium parviflorum* Schreb) has been frequently used as a folk medicine to cure prostate diseases, especially Bening Prostatic Hyperplasia (BPH). It has been reported that one of its substances, Oenothien B is a strong inhibitor of Herpes Simplex Virus (HSV-1) and Human Immunodeficiency Virus (HIV). Determining optimum tissue culture conditions is essential to increase pharmacologic substances, genetic manipulation and in vitro production of *E. parviflorum*. In this study, various explants of *E. parviflorum* were cultured on semi-solid MS media containing factorial combinations of plant growth regulators. Callus induction from hypocotyl, cotyledon, petiole and leaf explants was achieved on media containing 2,4-dichlorophenoxy acetic acid (2,4-D) and kinetin (KIN). All other growth regulator combinations [α -naphthalene acetic acid (NAA) \pm benzylaminopurine (BAP), NAA \pm thidiazuron (TDZ), indol acetic acid (IAA) \pm Zeatin (ZEA)] tested failed to respond. The best results with cotyledon- and petiole- derived callus were obtained from MS medium supplemented with 1.0 mg/l 2,4-D + 0.1 mg/l KIN and 2.0 mg/l 2,4-D + 0.2 mg/l KIN. It was observed that B5 basal medium was more effective than MS basal medium for producing seedling and the most effective seed sterilizing solution was 25% (v/v) sodium hypochlorite (NaOCl). No plant regeneration was observed in either callus induction or during the sub-culturing stage. This is the first report on in vitro tissue culture study within the genus *Epilobium*.

KEYWORDS

Epilobium parviflorum, tissue culture, callus formation, kinetin, cotyledon

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Poster Session 1

Submission ID: 105

**ESSENTIAL OIL COMPOSITION OF TORILIS LEPTOCARPA
(HOCHST.) TOWNSEND (APIACEAE) COLLECTED FROM BINGÖL
(TURKEY)**

MEHMET ALİ KUTLU¹, ÖMER KILIÇ², FETHİ AHMET ÖZDEMİR³, ŞİNASI YILDIRIMLI⁴

ABSTRACT

Many of the medicinal and aromatic plants from Apiaceae taxa are uses presumed to be connected to the terpenic constituents of the essential oils. *Torilis leptocarpa* belonging to the Apiaceae family and mainly distributed in the world in Asia, Europe and North Africa. Some *Torilis* species from Turkey have antioxidant, antimicrobial and antibacterial effects. In addition, the plant is highly effective against some pathogens thus confirming its use as disinfectant or antiseptic. Plant sample was collected contents of Project (BAP -TBMYO.2016.00.001). In this study aerial parts essential oil of *Torilis leptocarpa* was analyzed by HS-SPME/GC-MS. As a result thirty four components were identified. Spathulenol (29.2%), beta-farnesene (18.5%) and beta-caryophyllene (10.2%) were detected the major constituents of the plant. With this study, chemotypes of studied taxa were detected spathulenol, beta-farnesene and beta-caryophyllene. In addition studied plant samples were found to be rich in respect to essential oils and the results discussed natural product, renewable resources and chemotaxonomy. Acknowledgements The authors acknowledge the Scientific and Research Council of Bingol University (BAP -TBMYO.2016.00.001) for support this study.

KEYWORDS

Torilis, essential oil, HS-SPME/GC-MS, Apiaceae.

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Poster Session 1

Submission ID: 106

INVESTIGATION OF EFFECT OF 1,8-CINEOLE ON ANTIMICROBIAL ACTIVITY OF CHLORHEXIDINE GLUCONATE

MERİH ŞİMŞEK¹, REŞAT DUMAN²

ABSTRACT

Aims: Chlorhexidine gluconate is commonly used for the care and clean off the skin, hands, and wounds. In recent years, medicinal and aromatic plants have been used for prevention of disease, maintaining health, and improving disease in traditional and modern medicine as a medicament. According to recent research, cineole is the isolated active agent of eucalyptus oil and possesses antimicrobial activity. It was demonstrated that cineole could enhance the antimicrobial effects of the other antiseptics. The aim of this study was to investigate the effect of 1,8 cineole on antimicrobial activity of chlorhexidine gluconate against some microorganisms. **Methods:** The effect of 1,8 cineole on antimicrobial activity of chlorhexidine gluconate was tested using seven different microorganisms. In this study, chlorhexidine gluconate (128–0.125 mg/l) and cineole (512–2 g/l) were analyzed together and separately using checkerboard assay. Interactions between chlorhexidine gluconate and 1,8 cineole have been identified as synergistic, indifferent or antagonistic. **Results:** Synergistic activity was demonstrated between chlorhexidine gluconate and 1,8 cineole against *Staphylococcus aureus*, methicillin resistant *S. aureus*, *Escherichia coli*, *Klebsiella pneumoniae*, *Enterococcus faecalis*, and *Candida albicans*. Indifferent interactions for these compounds were demonstrated against *Pseudomonas aeruginosa*. (Table.1) **Conclusions:** Chlorhexidine gluconate antiseptic properties were found to be increased when chlorhexidine gluconate was used in combination with 1,8 cineole. Cineole has increased the antimicrobial activity of chlorhexidine gluconate against all microorganisms except *Pseudomonas aeruginosa*. In this way, chlorhexidine gluconate will reveal stronger effect against microorganisms. In topical application, using cineole in combination with chlorhexidine gluconate may be easier, eradicate certain resistant bacteria by increasing the antimicrobial efficacy of chlorhexidine gluconate. Table.1 Antimicrobial activities of CHG alone and in combination with 1,8-cineole against *S. aureus*, MRSA, *P. aeruginosa*, *E.coli*, *K. pneumoniae*, *E. faecalis* and *C.albicans*

Microorganisms	In combination/Alone	FIC of C	and CHG FICI	Results (MIC of *C (g/l)-CHG (mg/l))
<i>S. aureus</i>	C+CHG	8/128-0.25/4	0.062-0.062	0.125 Synergy
MRSA	C+CHG	8/128-0.125/4	0.062-0.031	0.053 Synergy
<i>P. aeruginosa</i>	C+CHG	8/256-2/4	0.031-0.500	0.531 Indifference
<i>E. coli</i>	C+CHG	4/32-0.125/2	0.125-0.062	0.187 Synergy
<i>K. pneumoniae</i>	C+CHG	8/64-1/8	0.125-0.125	0.250 Synergy
<i>E. faecalis</i>	C+CHG	32/128-0.125/4	0.250-0.125	0.375 Synergy
<i>C. albicans</i>	C+CHG	4/32-0.5/2	0.125-0.250	0.375 Synergy

*1,8 cineole. CHG: Chlorhexidine gluconate; MRSA: Methicillin resistant *Staphylococcus aureus*; FICI: FIC index; FIC: Fractional inhibitory concentration; MIC: Minimum inhibitory concentration

KEYWORDS

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Cineole, Antimicrobial Activity, Medicinal plants



Poster Session 1

Submission ID: 109

**DETERMINATION OF ALKALOIDS AND OIL RATES OF SOME
POPPY (PAPAVER SOMNIFERUM L.) VARIETIES CULTIVATED AS
WINTER AND SUMMER**

LEVENT YAZICI¹, GÜNGÖR YILMAZ²

ABSTRACT

The aim of this study is to determine the alkaloid and oil rates contents of some poppy (*Papaver somniferum L.*) varieties, such as Morphine, Codeine, Oripavine, Thebaine, Noscapine and Papaverine, which are planted as winter and summer. Five varieties of poppy (Zaferyolu, TMO 2, Ofis NP, Ofis 4, Anayurt) registered in different organizations were used in the research. The study was carried out in the trial field belonging to Tokat Middle Black Sea Crossing Belt Agricultural Research Institute Directorate in 2015 and 2016. Alkaloid analyzes were carried out on an HPLC device in the Bolvadin Alkaloid Plant Laboratory. The study was carried out in three replications according to randomized block trial design. As a result; Varieties of poppy the cultivated as summer, mean morphine value 0.61-1.19 %, the codeine 0.07-0.25 %, the Oripavine 0.01-0.02 %, Thebaine 0.02-0,11 %, Noscapine, 0,04-0,49 %, Papaverine , 0,03-0,18 and oil ratio values varied between 41,6-48,8 %. Varieties of poppy the cultivated as winter; mean morphine value 0.29-0.56 %, the codeine 0.04-0.09 %, the Oripavine 0.0002-0.007 %, Thebaine 0.01-0.06 %, Noscapine, 0.009-0.93 %, Papaverine , 0.00-0.06 %, and oil ratio values varied between 45.3-54.3 %. Poppy varieties cultivated as summer, according to winter sown; Alkaloid ratios are higher and oil ratios are lower.

KEYWORDS

Poppy, Papaver somniferum L., alkaloid, oil, winter, summer

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Poster Session 1

Submission ID: 113

ALLELOPATHIC EFFECT ON PLANT GROWTH OF AROMATIC PLANT EXTRACTS AND ESSENTIAL OILS

CENNET YAMAN¹, BELGIN COŞGE ŞENKAL¹, CÜNEYT CESUR¹, TANSU USKUTOĞLU¹

ABSTRACT

Plants to rich in essential oil are known as aromatic plants that generally contain between 0.5 and 5% essential oil. Essential oils are industrially important natural products of aromatic plants. Essential oils are secondary metabolites that are biosynthesized and accumulated in specialized and accumulated cells types, such as osmophores, glandular trichomes, and ducts and cavities, present in different secretory cells and tissues of aromatic plants. Essential oils, components, and extracts of some aromatic plants have allelopathic effects. Allelopathy is a biological phenomenon by which an organism produces one or more biochemicals that influence the germination, growth, survival, and reproduction of other organisms. These biochemicals are known as allelochemicals. Effects of allelochemicals can be beneficial (positive allelopathy) or detrimental (negative allelopathy). Essential oils or plant parts obtained from aromatic plants show an inhibitory effect (negative allelopathic effect) on germination, radicle and shoot growth of some wild and cultivated plants. In addition, essential oils and extracts obtained from different harvesting times and different parts of aromatic plants have different effects. Essential oils of leaf and fruit parts of *Ecballium elaterium* have exhibited negative allelopathic effect on germination, radicle and shoot growth of lettuce seeds, leaf essential oil has observed to have more allelopathic activity than fruit essential oil. Essential oil and leaf extract of *Ageratum conyzoides* have decreased fresh weight, root and shoot length of cultivated seeds such as cucumber (*Cucumis sativus* L.), ryegrass (*Lolium ultiforum* L.), radish (*Raphanus sativus* L.), mungbean (*Phaseolus aureus*), wheat (*Triticum aestivum* L.), and tomato (*Lycapesicon*). And essential oil applications have demonstrated more inhibitory activity than leaf extract application. Essential oil of *Tagetes minuta* has showed more inhibitory effect on root development of corn than essential oil of *Schinus areira*. Although essential oils of *Carum carvi*, *Mentha spicata*, *Origanum onites* and *Thymbra spicata* have found strong inhibitory effect on germination of wild seeds such as *Amaranthus retroflexus* L., *Centaurea salsotitialis* L., *Raphanus raphanistrum* L., *Rumex nepalensis* Spreng., *Sinapis arvensis* L. and *Sonchus oleraceus* L., seeds of *Alcea pallida* have exhibited resistance. The allelopathic effects may have different in different habitats, strongly coupled with stresses in environment. In this study, it has investigated allelopathic effects of some aromatic plants on germination, radicle and shoot growth of some wild and cultivated plants.

KEYWORDS

Essential oil, allelopathic effect, germination, wild plant, cultivated plant

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Poster Session 1

Submission ID: 116

USING SOME FRUITS AS NATURAL ANTIOXIDANT SOURCES IN MEAT AND MEAT PRODUCTS

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ABSTRACT

Meat and meat products are an important part of a healthy diet. However, lipid oxidation in meat products causes to decrease the shelf life of the product. In addition, oxidation results with negative change of quality parameters such as colour, odour and aroma. Antioxidants are frequently used to prevent such spoilage, to extend the shelf life of meat products and to maintain their sensory qualities. The discussions on the toxic effects of synthetic antioxidants are still continued. Moreover, nowadays the demand of consumers for natural and healthy products increases the number of such products and researches on natural antioxidants. Fruits are also known to be one of the main elements of a healthy diet. Moreover fruits are also considered as one of the most important natural antioxidant sources. The use of this source in meat and meat products is important both for the protection of shelf life and the quality and production natural meat products. Positive results have been obtained in studies on meat products produced by utilizing the antioxidative effect of different fruits. The use of these fruits which have positive effects on metabolism (immune system, cardiovascular system etc.) instead of synthetic antioxidants has positive effects on health in two different directions. Some studies have reported that fruits such as plum (Nunez de Gonzalez et al., 2008), grape (Jia et al., 2012), cranberry (Raghavan and Richards, 2006), bearberry (Carpenter et al., 2007), pomegranate (Çam et al., 2009), citrus fruits (Fernandez-Lopez et al., 2004), carob fruit (Bastida et al., 2009) and tropical fruits (Ahmad et al., 2015) have antioxidative effects on meat products. In these studies, meat groups with different characteristics such as sausage, turkey meat, beef and poultry meat were used and positive results were obtained in all these different products. Moreover, the packaging systems using fruit-based natural antioxidants were obtained give positive results. Studies on natural antioxidants are increasing with interest and demand for natural additives and natural food products. Considering the antioxidative effects and natural structures of fruit-based antioxidants, their importance is increasing. In this review, different antioxidative fruit extracts used in meat products consumed in the world were investigated. In addition, the effects of these antioxidants on meat products have been studied under varying conditions through in-depth literature studies. Keywords: Natural antioxidants, meat products, fruit

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KEYWORDS

Natural antioxidants, meat products, fruit

Poster Session 1

Submission ID: 117

INDEPENDENT AND SIMULTANEOUSLY DETERMINATION OF QUERCETIN AND KAEMPFEROL USING ELECTROCHEMICAL PULSE TECHNIQUES

BEDRETTİN MERCİMEK¹, AYŞEN DEMİR MÜLAZİMOĞLU¹, İBRAHİM ENDER MÜLAZİMOĞLU¹

ABSTRACT

Polyphenolic molecules represent a large group of biological molecules with a variety of functions in plant growth, development, and defence. Phenolic molecules are a class of chemical compounds consisting of a hydroxyl functional group (–OH) attached to an aromatic hydrocarbon group, with a ring structure like that of benzene. They are also related to the groups of hormones, vitamins, amino acids and antioxidants [1]. Antioxidants are of interest to the food industry, because they prevent rancidity and are as well of interest to biologists and clinicians, because they may help to protect the human body against damage by reactive oxygen species (ROS) [2, 3]. Extensive research on natural antioxidants such as flavonoids is currently in progress [4]. These compounds are natural vegetable dyes, synthesized from phenylalanine, which impart colour to the blooming portions of plants [5-7]. In addition to their significant role in plants, they are of importance to human health due to their activity as free radical acceptors. Flavonoids can protect against cancer by inhibiting the damages caused by oxidation processes. They are specified by their capability to scavenge free radicals and active oxygen groups [8, 9]. It is a very well known fact that flavonoids are essential molecules is human life due to their antioxidant capacity. For this reason, the quantification of those molecules (belong to polyphenol group) recently is becoming more important. Spectrophotometric, a classical method, has been performed for the antioxidant activity determination for many years. However the antioxidant activity determination has been done using chemically modified electrodes for the last two decades. Electrochemical methods have been often utilized for this cause due to low cost, reliable results and small amounts of sample. Electroanalytical techniques are based on the direct oxidation or reduction of substrate onto the electrode surface. Electrode reactions are very suitable for analytical applications due to their requirements of high potential. Moreover, these surfaces can be modified by a reductive substrate for analytical applications [10-12]. Chemically modified electrodes (CMEs), generally based on the incorporation of a catalyst or a redox mediator, have extended the applicability of electrochemical detection. CMEs have received increasing attentions in the last two decades, which enhance the sensitivity, selectivity and reproducibility of electrochemical analysis techniques [11-15]. Recently, application of CMEs in chemistry and biochemistry has been paid more and more attention. In this study, electrochemical modification of a glassy carbon (GC) electrode with modifier molecule was carried out and the modified electrode was investigated separately and simultaneously for the availability in determination of quercetin (Que) and kaempferol (Kae). The surface modification of GC electrode was performed with modifier molecule using cyclic voltammetry (CV), whereas the characterization of this sensor electrode was performed using CV, electrochemical impedance spectroscopy (EIS) and scanning electron microscopy (SEM). The usability of the modified electrode has been examined in determination of Que and Kae using CV, differential pulse

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voltammetry (DPV) and square wave voltammetry (SWV). Consequently, Que and Kae can easily be determined as independent and simultaneously by using modifier molecule modified GC sensor electrode. Following step of this study will focus on the quantitative determination of those flavonoid derivatives in natural sample. References 1. E. T. Denisov, and I. B. Afanasev, Chemistry of antioxidants in oxidation and antioxidants in organic chemistry and biology, CRC Press, Taylor & Francis Group 6000 Broken Sound Parkway NW, pp. 488, (2005). 2. Halliwell, Food Sci. Agr. Chem. 1, 67, (1999). 3. R. L. Prior, and G. Cao, Free Radical Bio. Med. 27, 1173, (1999). 4. M. S. Xu, M. F. Luo, X. H. Xing, and H. Z. Chen, Food Bioprod. Process. 84, 237, (2006). 5. G. Chen, X. Ma, F. Meng, and G. Li, Bioelectrochemistry 72, 169, (2008). 6. M. Katalinic, G. Rusak, J. Domacinovic, Barovic, G. Sinko, D. Jelic, R. Antolovic, and Z. Kovarik, Eur. J. Med. Chem. 45, 186, (2010). 7. W. Ren, Z. Qian, H. Wang, L. Zhu, and Zhang, L. Med. Chem. Res. 23(4), 519, (2003). 8. J. B. He, Y. Wang, N. Deng, and X. Q. Lin, Bioelectrochemistry 71, 157, (2007). 9. A. Karadag, B. Ozcelik, and S. Saner, Food Anal. Method. 2, 41, (2009). 10. A. İsbir-Turan, E. Kılıç, Z. Üstündağ, H. Ekşi, A. O. Solak, and B. Zorer, J. Solid State Electrochem. 16, 235, (2012). 11. E. Mulazımoğlu, and E. Ozkan, E-J. Chem. 5(3), 539, (2008). 12. E. Mulazımoğlu, Energy Educ. Sci. Technol. Part A 28(1), 393, (2011). 13. J. Xue, X. Ying, J. Chen, Y. Xian, and L. T. Jin, Anal. Chem. 72, 5313, (2000). 14. R. Kubant, C. Malinski, A. Burewicz, and T. Malinski, Electroanalysis 18, 410, (2006). 15. J. S. Corte, S. G. Granados, A. Ordaz, S. Griveau, and F. Bediouib, Electroanalysis 19, 61, (2007).

KEYWORDS

Pulse Techniques, Antioxidant, Sensor electrode, Chemically modified electrodes

Poster Session 1

Submission ID: 120

INFLUENCES OF *PHYSALIS PERUVIANA* L.(GOLDENBERRY) AND *LUPINUS ALBUS* L.(LUPIN) FRUITS EXTRACTS ON THE LEVELS OF SOME BIOCHEMICAL PARAMETERS IN MUSCLE TISSUE OF TYPE II DIABETIC RATS

OĐUZ AYHAN KİRECCİ¹, ÖKKEŐ YILMAZ², TUBAY KAYA², ORHAN ERMAN²

ABSTRACT

Medical plants are increasingly sought to improve the treatment of diseases related to glucose and lipid metabolism. The present study was designed to investigate the possible antidiabetic and antioxidant effects of goldenberry and lupin on muscle tissue of streptozotocin-induced type II diabetic rats. Type II diabetes was produced in albino rats by the streptozotocin injection. Wistar albino rats were divided into four groups, each one containing 10 rats: non-diabetic control group, STZ- type II Diabetes group, STZ- type II Diabetes+goldenberry group, and STZ- type II Diabetes+lupin group. After one week from the injection, goldenberry and lupin were injected to rats for 2 months. Malondialdehyde, glutathione, cholesterol, and fatty acid levels, which are signs of lipid peroxidation, were measured in muscle tissue. In type II diabetes, malondialdehyde increased compared to the control group. Glutathione decreased in the both tissues and all of the streptozotocin-induced diabetic groups. Treatment with similar doses of goldenberry and lupin significantly reduced oxidative stress, augments antioxidant system and altered fatty acid metabolism in these tissues, thereby maintaining favourable fatty acid distribution affected by diabetic complications. These results validate the use of goldenberry and lupin fruits as a treatment against diabetes mellitus and its complications and suggest it is suitable to continue studies for its safe therapeutic use.

KEYWORDS

Diabetes mellitus, Goldenberry, Lupin, Lipid Peroxidation, Glutathione, Cholesterol, Fatty acid

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Poster Session 1

Submission ID: 121

ANTIOXIDANT PROPERTIES OF ETHANOLIC EXTRACT OF PLEUROTUS OSTREATUS MUSHROOM

NAZNOOSH SHOMALI¹, ILGAZ AKATA¹, ÖZLEM YILDIRIM¹

ABSTRACT

Mushrooms have been valued as edible and medicinal resources. Laboratory studies confirm that extracts of fungi contain many secondary compounds which have specific biological effects. These compounds which, could be found in fruit bodies, mycelium and broth, are verified to be phenolics, flavonoides, glycosides, polysaccharides, tocopherols, carotenoids and ascorbic acid. Some of the most recently isolated and identified compounds originating from the medicinal mushrooms have shown promising antiviral, antibacterial, antioxidant, antidiabetic, immunomodulatory, antitumor and hepatoprotective properties. Various studies demonstrate that mushrooms were remarkable source of antioxidants. They might be used directly in promotion of antioxidant defenses through dietary supplementation to reduce the level of oxidative stress. Studies carried out in recent years showed that antioxidant properties of mushrooms were mainly related to their phenolic compounds such as phenolic acids and flavonoids. In this study, the ethanol extracts of *Pleurotus ostreatus* was studied for the polyphenolic contents using spectrophotometric method. The free radical scavenging activity of extract was evaluated by 2,2-Diphenyl-1-(2,4,6-trinitrophenyl) (DPPH) assay. Furthermore, the mushroom extract effect was examined on the glutathione peroxidase (GPx) and catalase (CAT) enzymes activities by kinetic assays. Total phenolic contents were determined by using the Folin-Ciocalteu's method. According to the method, the total phenolic contents of extracts were calculated using the equation obtained from the standard curve of gallic acid graphic. The amount of total phenolic compounds found in the ethanol extract of *P.ostreatus* was 12.945 ± 0.0021 mg GAE/g dry sample. The total concentration of flavonoids in extracts were determined by employing the aluminium chloride colorimetric method. The total flavonoid contents of extracts were calculated using the equation got from the standard curve of quercetin graphic. Total amount of the flavonoid contents found in the ethanol extracts of *P.ostreatus* was 1.108 ± 0.0042 mg QE/g dry sample. The scavenging effect of *P.ostreatus* on DPPH radicals was measured as 67.33% at 10 mg/mL concentration. Also, ethanol extract of *P.ostreatus* showed good GPx and CAT enzymes activities at 0.625 and 10 mg/mL concentrations, respectively.

KEYWORDS

Pleurotus ostreatus, *Glutathione Peroxidase*, *Catalase*, *Antioxidant Properties*

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Poster Session 1

Submission ID: 122

SCREENING EFFECTS OF METHANOL EXTRACTS OF THE DIPLLOTAXIS TENUIFOLIA AND RESEDA LUTEA ON THE GLUTATHIONE-S-TRANSFERASE ENZYME ACTIVITY

NAZNOOSH SHOMALI¹, ÖZLEM YILDIRIM¹

ABSTRACT

Glutathione-S-transferase (GSTs), comprise a family of eukaryotic and prokaryotic phase II metabolic isozymes best known for their ability to catalyse the conjugation of the reduced form of glutathione (GSH) to xenobiotic substrates for the purpose of detoxification. Every member of the eukaryotic species has multiple GST isoenzymes that are bounded by cytosolic and membranes. They catalyse the process of glutathione conjugation in electrophilic regions using sulfhydryl group which will increase solubility of xenobiotic and endogenous compounds. During this process, endogenous compounds like peroxidase lipids are detoxified together with the disintegration of compounds and xenobiotics. In this study, the methanol extracts of *Dipllotaxis tenuifolia* and *Reseda lutea* were studied for the polyphenolic contents using spectrophotometric method. Furthermore, the plant extract effects were examined on the glutathione-S-transferase (GST) enzyme activity by kinetic assay. Total phenolic contents were determined by using the Folin-Ciocalteu's method. Also, the total concentration of flavonoids in extracts were determined by employing the aluminium chloride colorimetric method. According to the results, the highest phenolic and flavonoid contents were detected in the methanol extract of *D. tenuifolia* leaves, with 144.49±0.29 mg gallic acid equivalent/L and 250.485±0.002 quercetin equivalent/L respectively. The best activity profile for GST was observed in the extract of leaves belonging to *D. tenuifolia* with IC₅₀ values of 121±0.05 ng/mL. Results indicated that leaves of *D. tenuifolia* have good effect on the GST activity. Therefore it is considered as a good source of food for the detoxification systems.

KEYWORDS

Dipllotaxis tenuifolia, *Reseda lutea*, *Glutathione-S-transferase*

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Poster Session 1

Submission ID: 123

**PROTECTIVE EFFECT OF PHYSALIS PERUVIANA L.
(GOLDENBERRY) AND LUPINUS ALBUS (LUPIN) ON LIPID
PEROXIDATION AND BIOCHEMICAL ALTERATIONS OF BRAIN
TISSUE IN DIABETIC RATS**

AYŞE DİLEK ÖZŞAHİN¹, ORHAN ERMAN², TUBAY KAYA², ÖKKEŞ YILMAZ²

ABSTRACT

The present study was designed to investigate the possible antidiabetic and biochemical alterations of goldenberry and lupin on brain tissue of streptozotocin-induced type II diabetic rats. Type II diabetes was produced in albino rats by the streptozotocin injection. Wistar albino rats were divided into four groups, each one containing 10 rats: non-diabetic control group, STZ- type II Diabetes group, STZ- type II Diabetes+goldenberry group, and STZ- type II Diabetes+lupin group. After one week from the injection, goldenberry and lupin were injected to rats for 2 months. Malondialdehyde, glutathione, cholesterol, and fatty acid levels, which are signs of lipid peroxidation, were measured in brain tissue. In type II diabetes, malondialdehyde increased compared to the control group. Glutathione decreased in the both tissues and all of the streptozotocin-induced diabetic groups. Treatment with similar doses of goldenberry and lupin significantly reduced oxidative stress, augments antioxidant system and altered fatty acid metabolism in these tissues, thereby maintaining favourable fatty acid distribution affected by diabetic complications. These results validate the use of goldenberry and lupin fruits as a treatment against diabetes mellitus and its complications and suggest it is suitable to continue studies for its safe therapeutic use.

KEYWORDS

Diabetes mellitus, Goldenberry, Lupin, Lipid Peroxidation, Glutathione, Cholesterol, Fatty acid

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Poster Session 1

Submission ID: 125

AN IMPORTANT IMPLEMENTATION FOR THE DEVELOPMENT OF BIOACTIVES OF MEDICAL PLANTS: FERMENTATION

ECEM AKAN¹, OKTAY YERLIKAYA², ÖZER KINIK³

ABSTRACT

Fermentation is a microorganism-based technological process that enables obtaining high-value products from raw or low-quality substrates. Specially selected fermentations provide the ability to improve substrate properties or bioactive components properties by the action of microbial enzymes in undesired substrates. In addition, fermentations improve the nutritional properties of foods, while at the same time, they make the foods easily digestible and better metabolizable. Medical plants have been used as medicines for thousands of years. Herbal medicines/herbs include medical plants, plant materials and herbal products with the medical properties that are made into the product. They also contain the plant materials of the plants or their combinations as the active ingredients. Raw plant materials such as leaf, flower, fruit, seed, stems, stem, stem, branch and other plant organelles of medical plants are used, separated or powdered. In addition, water extracts, gums, oils, essential oils, resins and dry powders of medical plants are also used for different purposes. Therefore, medical plant-based medicines have a very large plant-based area with some digestible properties. Due to the legal obligations regarding the medical plants which change from country to country, there are no internationally homogenous standards and restrictions have been introduced to the regulations on the use of these products in the food and cosmetics field. Based on the determinations, World Health Organization reports that more than three quarters of the population in developing countries use medical plants due to health concerns. Numerous components of medical plants have now been researched and biological activities have been detected. Based on the date obtained in different ways, it was revealed that these components are beneficial against a large number of diseases and disorders. Since the beneficial effects of probiotic and other fermented foods on human health have been determined in detail, studies on the use of fermented medical herbs have begun to intensify. The transformation of traditional medical plants and the essence of microbial fermentations cover the following basic topics. In the logarithmic development phase of microorganisms, a large number of active molecules in the group of synthetases and hydrolytic enzymes such as protease, amylase, cellulase, esterase, amidase are produced. These enzymes play a key role in the fermentation reactions of medical plants. In these reactions; 1. The structures of medical based substances are changed into new component. 2. A large number of microorganisms can actively use the components of active medical plants as substrates and medicines obtained from secondary metabolites of these microorganisms and medical plants may interact with the resulting new components. 3. Medical plant mixtures can be used in the metabolic activities of microorganisms to produce new compounds. 4. Herbal medicines can be concentrated since the microorganisms consume non-medical components such as proteins, sugars and other components during development phases. In addition, medical plant fermentations are known to be associated with chemical reactions that alter the proportions of nutritive and non-nutritive components of plants. These changes also affect the properties of the products such as bioactivity and digestibility. Bioactivation of medical herbal medicines through fermentation

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increases their therapeutic potential and reduces their toxicity. The fermentation process improves the pharmacological properties of medical herbal medicines, such as isoflavones, saponins, phytosterols, phenols, and increases the naturally occurring molecules that increase the positive and disease-preventing effects on health. This article will focus on new technological areas applied in the production of microbial fermentation technologies, transformations and other new active ingredients of potential medical products.

KEYWORDS

Medical plants, fermentation, bioactivity, human health

Poster Session 1

Submission ID: 126

MORPHOLOGICAL AND ANATOMICAL CHARACTERISTICS OF CLINOPODIUM ALPINUM (LAMIACEAE)

AYLA KAYA¹

ABSTRACT

Clinopodium alpinum (L.) Kuntze is a decumbent, rarely ascending perennial herb which grows in 900-2200 m in western Turkey. *C. alpinum* is an aromatic plant and used for coughs and gastrointestinal disorders in folk medicine. In the current study, morphology and anatomical characteristics of *C. alpinum* previously treated as *Acinos alpinus* (L.) Moench in Flora of Turkey, is studied for the first time and detailed descriptions and illustrations of general appearance of plants and their leaf, bract, calyx, corolla and fruit shapes and anatomical descriptions and illustrations of root, stem and leaf are described and illustrated. The plant is 4.5-40 cm. Leaves are ovate, orbicular or elliptic shaped. Corolla is purple-violet coloured. The root is orbicular in outline in cross-section. The secondary tissues are only observed in root anatomy of species. The stem is almost square in shape and contains non-glandular and glandular hairs in transverse sections. The vascular bundles are well-developed at the corners of the stem. Leaf is bifacial and bears on their surfaces non-glandular and glandular trichomes.

KEYWORDS

Anatomy, Clinopodium alpinum, morphology

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Poster Session 1

Submission ID: 134

INFLUENCES OF *PHYSALIS PERUVIANA* L. AND *LUPINUS ALBUS* L. EXTRACTS ON THE LEVELS OF SOME BIOCHEMICAL PARAMETERS IN ERYTHROCYTES AND SERUM OF STREPTOZOTOCIN INDUCED DIABETIC MALE RATS

AYŞE DİLEK ÖZŞAHİN¹, ÖKKEŞ YILMAZ², TUBAY KAYA², ORHAN ERMAN²

ABSTRACT

In this study, the effects of goldenberry and lupin on lipid peroxidation antioxidant system parameters in erythrocytes and serum of streptozotocin-induced diabetic rats were investigated. Type II diabetes was produced in rats by the streptozotocin injection. Albino rats were divided into four groups, each one containing 10 rats: non-diabetic control group, STZ-Diabetes type II group, STZ-Diabetes+goldenberry type II group, and STZ-Diabetes+lupin type II group. After one week from the injection, goldenberry and lupin were injected to rats for 2 months. Malondialdehyde, glutathione, cholesterol, and fatty acid levels, which are signs of lipid peroxidation, were measured in these tissues. In type II diabetes, malondialdehyde have increased when it have compared with control group. Glutathione has decreased in the other tissues and all of the streptozotocin-induced diabetic groups. When blood samples controlled, they have been shown that malondialdehyde, cholesterol values have been decreased and glutathione levels have been increased by goldenberry and lupin. The results of the present study showed that the herb suspensions exerted anti-hyperglycemic effects and consequently may alleviative tissue damage caused by streptozotocin-induced diabetes.

KEYWORDS

Diabetes mellitus, Goldenberry, Lupin, Malondialdehyde, Glutathione, Cholesterol, Fatty acid

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Poster Session 1

Submission ID: 136

AN ENDEMIC PLANT OF ERMENEK REGION, MUSCARI MUSCARIMI, ECONOMIC IMPORTANCE, AND IS THERE ANY USEFUL WAY OUT CULTIVATION IN ITS NATURAL HABITATS

HAYDAR OZTAŞ¹, FULYA OZTAS²

ABSTRACT

Turkey is one of the most floristically rich countries in the world with endemic plants. The approximately one third of its flora is endemic. The *Muscari muscarimi* which belongs to the Liliaceae family is one of its most prominent endemic geophyte plants which originates in southwestern of Turkey where it is found in rocky places like Ermenek, Başıyayla (Büyükkarapınar village), Sarıveliler. This species is the most sweetly scented member of the Liliaceae family, having something of the musk scent. Also, this plant locally is used in traditional medicine as antirheumatic, stomachic, diuretic and expectorant. In addition to this, it has also been used as food for humans and animals, ornamental plants in gardens. Morphologically, it has 3–6 linear-lanceolate, grayish-green leaves per plant and bulbs of 2–4 cm in diameter with thick fleshy perennial roots which delve down into the rocky ground of their natural habitats. The chemically it is composed of polysaccharides, homoisoflavanons, glycosides and...Main components of *M. muscarimi* were identified as (E)- β -ocimene (t-36%), methyl salicylate (1–21%), E-methyl isoeugenol (4–22%) and benzyl benzoate (7–56%). The picking up of the plant bulbs from their natural habitats is prohibited, in accordance with international agreements for the protection of endangered geophytes. The overly habitat destruction in native growing area threatened the existence of the species categories. It known that in vitro bulblet production in *Muscari muscarimi* is low. This is difficulty of its cultivation in native Ermenek area districts. Recent works shown that the culturing immature *Muscari muscarimi* embryos on different growth media could consider an useful method for in vitro propagation. As a result, the geophytes, such as *M. muscarimi* is eligible widely for perfume production and in the pharmaceutical industry as well as for ornamental flowers. Because of this plant economic importance, bulbs growing and cultivation in their natural habitats could discuss in this study.

KEYWORDS

Muscari muscarimi, endemic plant, cultivation, Ermenek

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²SELÇUK ÜNİVERSİTESİ, SAĞLIK HİZMETLERİ MYO, SELÇUKLU-KONYA

Poster Session 1

Submission ID: 137

**IDENTIFICATION OF HARVEST TIME AND NEW
DETERMINATIONS OF WILD CAROB (CERATONIA SILIQUA L.) IN
MERSİN**

DR. HAKAN KELEŞ¹

ABSTRACT

Wild Carob (*Ceratonia siliqua* L.), which shows limited spread on east Mediterranean, west Mediterranean and Aegean region in Turkey, is one of our important minor forest products especially because its commercial value of its seed and fruit. Besides this economic value; as it is resistant to drought and fire, natural carob comes at the beginning of species which has potential value at our forestry sector. Early picking of blacken fruits causes early decaying, deformation of fruits and bug-infested. In this study, some phenological aspects and determinations works were made on total 60 pcs tree with the aim of identification of harvest time for 3 different natural (Wild) carob species in Tarsus, Erdemli and Silifke, Mersin. Blacken and drying of fruit stalk is observed as the best suitable harvest time for criterion. Also some determinations are identified on these subjects; Classification according to being vaccinated and wild, New natural spread areas on most south and north latitude of species, Sits index plant, importance as wild life and side of landscape.

KEYWORDS

Wild Carob, Ceratonia siliqua, Harvest Time, Phenological Determinations

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Poster Session 1

Submission ID: 140

DETERMINATION OF CHEMICAL AND MICROBIOLOGICAL PROPERTIES IN KANLICA MUSHROOM PICKLED

MEHTAP OKUR¹, AYSEL GÜLBANDILAR¹

ABSTRACT

Turkey has a very rich edible macro fungal flora because it possesses favorable environmental conditions for the growth of fungi. Wild or cultivated mushrooms have long been a popular part of the human diet because of their agreeable sensory qualities. In addition to their nutritious value, they have been used in traditional medicine in many countries. Mushrooms have been used as food and food-flavoring material in soups and sauces for centuries due to their unique and suitable flavor. They are healthy foods, poor in calories and in fat, rich in vegetable proteins, iron, zinc, chitin, fibre, vitamins and minerals. Kanlıca mushroom (*Lactarius deliciosus*) is a well-known mushroom which is widely used as a food in Bolu province. *L. deliciosus* is an edible and it can be eaten fresh, dry or pickled. The pickled mushroom is one of the traditional fermented vegetables in Turkey, especially in Bolu. The process is that boiled mushrooms, garlic, vinegar, salt, parsley, olive oil and water are mixed in a suitable manner and filled in the jar. Finally, the mouth of the jar is sealed and allowed to ferment for a period of time. In this study was conducted to determine chemical and microbiological properties of kanlıca mushrooms.

KEYWORDS

Kanlıca, mushroom, pickled, Lactarius deliciosus.

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Poster Session 1

Submission ID: 145

A NEW FUNCTIONAL ADDITIVE OBTAINED BY USING JET PULSE FILTERS: PUMPKIN SEED MEMBRANE

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ABSTRACT

Jet Pulse Filters (JPF) are the most widely used filters in industry which are used to prevent dust emissions and to separate air-dust mixtures. JPF are one of the important equipment of production processes with its these features. JPF can be used as the main element to obtain some products. Some of these products are functional food raw materials and medical- aromatic plants that have increased rapidly in recent years. Today, along with the increase in demand for medicinal - aromatic plants and functional food, some products that have not been previously used or evaluated have gained value. In this study, it was investigated that pumpkin seed membrane which is obtained by using JPF in nut packaging facilities. Pumpkin seed membrane is composed of cellulose as content. This very thin membrane layer covering the pumpkin seed shell is wet and slippery before it comes into contact with air. When it contacts with air, it dries up to become a fragile membrane. This thin membrane is composed of cellulose having an ash content of 4%. Cellulose is a very important industrial product with a wide range of uses. At nut packaging plants, this membrane is separated from the shell due to friction during the cleaning of the pumpkin core. This membrane is captured by the JPF together with other dust and foreign substances, thanks to the existing cleaning and aspiration system. At present, this membrane is a very problematic and undesirable waste in terms of environment. This product is discarded with other aspiration and cleaning wastes. Neither can it be used as feed additive nor for any other purpose. Pumpkin seed membrane with high cellulose content can be obtained as a pure product, by using Jet Pulse Filter, by settings made on existing cleaning system and by using automation system. Pumpkin seed membrane can be used in the production of dietary products by joining to food products based on flour. At present, this product which is considered as a waste, can be a food additive material which is used in the production of dietary products and functional foods and it can be obtained by JPF. In addition, due to its physical and chemical properties, the obtained product has the possibility to be utilized in many different areas of the industry. Thanks to its high cellulose content and physical properties such as high water retention capacity, large surface area, fine texture, it can be utilized as an edible dehumidifier, paper and textile raw material, and filter equipment. It can be used as an additive or isolation material for newly developed high-tech materials. It can also be used as an alternative to cotton and sponges in the furniture sector. In this work, the possibilities to convert a problematic waste product into a useful product with high commercial value were reviewed.

KEYWORDS

jet filter, pumpkin seed membrane

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Poster Session 1

Submission ID: 148

CYTOTOXIC POTENTIAL OF ARTEMISIA ARGYI EVALUATED BY THE MTT-CELL CULTURE ASSAY

ZÜLAL ATLI ŞEKEROĞLU¹, ZEYNEP KOLÖREN¹, ONUR KOLÖREN²

ABSTRACT

Cytotoxic potential of *Artemisia argyi* evaluated by the MTT-cell culture assay Zülal ATLI ŞEKEROĞLU¹, Zeynep KOLÖREN¹ and Onur KOLÖREN² 1 Department of Molecular Biology and Genetics, Faculty of Arts and Sciences, Ordu University, Ordu, Turkey 2 Department of Plant Protection, Faculty of Agriculture, Ordu University, Ordu, Turkey (E-mail: zeynep.koloren@yahoo.com) *Artemisia argyi* (Asteraceae) is an important medicinal plants for the treatment of allergi, inflammation and infections by various microorganisms, malaria, cancer, hepatitis. The objective of this study was to determine the cytotoxicity of *A. argyi* leaves on human bronchial cell cultures. The evaluation of the possible cytotoxic activities of the methanolic extracts of *A. argyi* were carried out using the 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay (Mosmann 1983). BEAS-2B, human bronchial epithelial cells (ATCC, CRL-9609), were treated with different concentrations of methanolic extracts of *Artemisia* (1.2, 2.3, 4.7, 9.4, 18.7, 37.4 and 74.8 mg/ml) and incubated for 72 h at 37°C. The 50% inhibitory concentrations (IC₅₀) of *Artemisia* were found approximately 5.5 mg/ml. *Artemisia* showed stronger inhibitory effects at the concentrations of 9.4, 18.7, 37.4 and 74.8 mg/ml in BEAS-2B cells. The methanolic extracts of *Artemisia* reduced cell viability by approximately 31, 27, 12 and 7 % at the concentrations 9.4, 18.7, 37.4 and 74.8 mg/ml.

KEYWORDS

Artemisia argyi, MTT assay, BEAS-2B cell, Cytotoxicity assays

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Poster Session 1

Submission ID: 149

EFFECTS OF DIFFERENT DRYING METHODS ON THE ANTIOXIDANT CAPACITY OF SMILAX EXCELSA L.

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ABSTRACT

The genus *Smilax* (family Smilacaceae), native to tropical and temperate parts of the World which is a brambled woody vine with paired tendrils for climbing. *Smilax excelsa* L. widely used in the Black Sea region of Turkey for consumption in the daily diet and in folk medicine for its medicinal properties. In this research, green and reddish stalks and leaves of *Smilax excelsa* L. were used. These two groups were treated with different drying methods such as lyophilization, microwave drying, drying in the shade at room temperature and drying 50 °C in drying cabinet. Then dried samples milled and water extracts were prepared from the obtained powders. In order to evaluate the antioxidant activity of water extracts of green and reddish *Smilax excelsa* L. leaves and stalks which dried by different techniques, various in vitro methods such as total phenolic compounds determination, Fe³⁺ reducing power by FRAP reduction method, 2,2-diphenyl-1-picryl-hydrazyl free radical (DPPH·) scavenging activity, 2,2'-azino-bis(3-ethylbenzthiazoline-6-sulfonic acid) radical (ABTS·+) scavenging activity were performed separately. Total phenolic compounds of dried green and reddish *Smilax excelsa* L. were varied between 15.781 mgGAE/g and 29.781 mgGAE/g. Results showed that highest total phenolic compounds content was found in reddish parts of plant dried with lyophilization. From the effective concentration (IC₅₀) of extracts, it was seen that lyophilized reddish samples (2.24 mg/ml) had the highest DPPH· radical scavenging activity while the samples dried at 50 °C had the least activity (4.12 mg/ml). All the plant extracts exhibited lower ABTS·+ scavenging activity than BHA, BHT and Trolox. Among them, microwave dried reddish sample extract showed better antioxidant activity (IC₅₀=2.73 mg/ml). Ferric ions (Fe³⁺) reducing capabilities of samples ranged from 2.22 to 4.82 mg GAE/g. It was observed that the used lyophilized water extract of reddish stalks and leaves demonstrated effective reducing activities.

KEYWORDS

Drying, antioxidant, Smilax excelsa L., total phenolic compounds

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Poster Session 1

Submission ID: 150

ECONOMICS OF THE MEDICINAL AND AROMATIC PLANTS (MAPS) IN DEVELOPING COUNTRIES

ÜSTÜNER BİRBEN¹, HASAN EMRE ÜNAL¹

ABSTRACT

One main objective of economics is to better understand the role of resources in the economy with a view to develop more sustainable methods of managing those resources to ensure their availability to generations to come. Many economists study interactions between economic and scarce resources, with the goal of developing a sustainable and efficient economy. At this point, Mother earth/nature is remarkably rich in biological and ecological diversity and is home to outstanding bio-resources such as a large number of herbs, medicinal, cosmetic and aromatic plants. Medicinal and aromatic plants (MAPs) have been an important part of the health, livelihood and wealth systems throughout the human history and are continue to make important contributions to local, national and international economies. Worldwide trade of the MAPs is about 60 billion dollars annually and growth rate is 5-10%. The main purpose of this paper is to get an insight into economics of MAPs in Developing Countries. The findings are to provide recommendations that might form both the basis of preparing action plans and policy-making process. The research is focus on current areas of utilization, supply chain, demand intensity, and the economic value of the most important MAPs

KEYWORDS

Economics, MAPs, Developing Countries

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Poster Session 1

Submission ID: 156

EXAMINATION OF CULTURAL VALUE AGAINST ECONOMIC DEMAND: JOURNEY OF POPLAR AND WILLOW IN ANATOLIA

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ABSTRACT

The interest of mankind with poplar trees remains indispensable since the early history of civilization. The word "Populus" relates to the term "Arbor Populi" meaning "peoples' tree" during the ancient Roman Empire. Poplar tree has been an integral part of Anatolia culture in our country due to expressed in Turkish folk song, stories, name of our living space, used hand and house tools, Black poplar (*Populus nigra* L.), known as the Anatolian poplar has become synonymous with at every stage of life of the Anatolian people for centuries. Traditionally, in the rural of Anatolia, poplar plantations were the first precious gift which was given the children by their families at the a new life cycle such as marriage and birth. In today, poplars and willows, indispensable for the wood processing industry has become one of the important pillars of the economy and ecology. The various species and clones of poplar tree used in industrial plantations are among the most important fast growing tree species due to their relative high growth rate within a shorter period of rotation, and their ability to adapt to a wide range of site conditions around the world in our country as well as all over the world. In today's real, a important proportion of the growing wood demand is met by wood produced from poplars and willows plantations, thereby reducing the demand pressure over natural forest resources significantly, plays a key role in the sustainability of natural forest. In our country, 3.7 million m³ / year level of approximately 5 million m³/year up to the wood raw material deficit are met from poplar wood. There has been a rapid increase in modern poplar cultivation after the inauguration of the "Poplar and Fast Growing Forest Trees Research Institute" in İzmit in 1962 and 9 commercial poplar clones have been developed and selected clones were registered by the International Poplar Commission. The high level of wood yielding capacity of poplar plantations is attracting attention and consequently the study of poplar cultivation is included in the graduate and postgraduate curriculums in forestry education in Turkey. The numerous research studies has been done about the poplar cultivation in our country and in the World and poplar has become a model tree In this paper, the trip of the poplar and willows turned a critical role in the global economy and ecology, industrial industry from the Anatolian culture was studied to explain with scientific data

KEYWORDS

Poplar, willow, industrial plantations, ethnobotany

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Poster Session 1

Submission ID: 158

MULTIPLE SCLEROSİS(MS) AND CAMPARI

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ABSTRACT

Introduction: Multiple sclerosis (MS) is the most common of the central nervous system, inflammatory, demyelinating disease. Along with these symptoms, fatigue, cognitive loss and depression are other symptoms associated with MS symptoms. In 1998, the Multiple Sclerosis Council of Clinical Practice Guidelines, setting the guidelines for clinical practice, made a common definition of fatigue in MS. Fatigue in MS according to this definition; "A subjective physical or mental energy deficiency that is perceived by the individual or caregiver and is determined by the individual's inability to complete the usual activities". Fatigue is a subjective finding and is determined by the patient's feelings, shaped by the individual's perception of fatigue. Acute fatigue is a fatigue that has just started and is experienced in the last six weeks. If it lasts for six weeks, it is defined as chronic fatigue. Fatigue in MS is a symptom that is difficult to distinguish, especially with mental fatigue, emotional-state changes, anxiety, depression, or cognitive impairment. MS patients are known to resort to a variety of complementary or alternative therapies for various symptoms or to stop disease activity. Examples such as exercise, meditation, yoga, relaxation techniques, acupuncture, cannabis, massage, diet changes, vitamins, medicinal plants and mineral supplements. In our study, the effect of the caper plant on fatigue was examined, because some of the MS patients have tried it but have not used it regularly. Campari is very fruitful, with a very high economic impact. Since ancient times; The richness of the pea-sized buds of caper plant used for food and treatment for protein, vitamin, mineral, polyphenolic substances, caparirutin and glucocaparin make it a functional food. Glucocaparin, especially in flower buds of all plants, is distinguished by the effect of glucohydrolases on tissue fragmentation and D-glucose and methyl isothiocyanate which gives unique aroma. An important group of compounds found in caper flower buds and other organs are flavonoid glycosides. One of the most important of these is the routine (kaparirutin) amount, 0.2-0.5% in fresh bud. The routine capillary vessels with P vitamene activity increase resistance and reduce permeability; Hypertension, arteriosclerosis and circulatory disturbances. Case: A 40-year-old female patient was admitted to the doctor due to withdrawal and numbness in the year 2012 and received MS diagnosis. He did not receive any medical treatment after 5 days of cortisone treatment. As of 2012, 15 months have begun to consume the capers vegetable pickles in the morning and 1 cup in the morning. Our patient who initially complained of extreme tiredness, said he felt very fit. When fatigue was assessed retrospectively via Visual Analog Scale (VAS), the capari was specified as 8 before use and 3 after capers. Conclusion: There is no study of how much caper plant is to be used. In this case, what are the effects of the liver enzymes in the containers and the drugs used in MS? In MS patients, medical treatments are only of importance. It is thought to support the treatment of caper use by consulting a doctor.

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KEYWORDS

Multiple sclerosis, Campari, Fatigue

Poster Session 1

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DETERMINATION OF α -AMYRIN AND β -SITOSTEROL IN CENTRANTHUS LONGIFLORUS BY GC-MS

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ABSTRACT

Turkey has an excellent flora and is one of the richest countries in the world in terms of plant diversity. Approximately 10 500 plant species have been recorded in this flora and the endemism rate of plants is approximately 30%. *Centranthus longiflorus*, which belongs to the family Valerianaceae, is known as red valerian in Turkey. The plant is widely distributed in the northern, southern and central Anatolian regions of Turkey (Makki et al. 2015), endemic to the Mediterranean region (Lebanon, Syria, Turkey, Italy and Palestine). The aerial parts and roots of this species is mostly used for sedative, antispasmodic, anthiolitic, familial hypercholesterolemia, coronary artery disease and preventing colon cancer purposes in traditional Turkish medicines (Suleyman et al. 2007). *Centranthus longiflorus* plant was collected from Tortum in the province of Erzurum in April and June 2015 and authenticated by Richardson (1975). The drying process of the plant and all the remaining studies were carried out in Atatürk University Science Faculty Genetics Laboratory. Ethanol extract (CLEE) was prepared from the dried aerial parts (leaves and flowers) of *C. longiflorus*. Extraction of ethanol from our plant was performed according to Kotan et al. (2010). In this study, a simple and specific gas chromatography-mass spectrometry (GC-MS) method was developed for the simultaneous determination of α -amyrin and β -sitosterol in *Centranthus longiflorus* plant. The chromatographic separation was achieved on a HP-5MS (30 m x 0.25 mm i.d., 0.25 μ m film thickness) analytical column. The retention times of α -amyrin and β -sitosterol were found to be 15.1 and 16.0 min, respectively. The validation of the proposed method was carried out for specificity, linearity, accuracy, precision, limit of detection, limit of quantitation and recovery. The linear ranges in this developed method were 1-100 and 5-750 μ g/ml for α -amyrin and β -sitosterol, respectively. The intra- and inter-day precisions, expressed as the relative standard deviation (RSD), were less than 3.44 and 4.13%, determined from quality control samples for α -amyrin and β -sitosterol, and accuracy was within 2.47 and 1.25% in terms of relative error, respectively. The percentage recovery obtained for α -amyrin and β -sitosterol were 99.07 and 99.10%, respectively. Limit of detection and quantification for α -amyrin were 5 and 15 ng/ml, for β -sitosterol 50 and 150 ng/ml, respectively. The application of a simple, rapid and accurate GC-MS method was carried out the quantitation of α -amyrin and β -sitosterol in whole plant powder of *Centranthus longiflorus*. References 1- Kotan R., Cakir A., Dadasoglu F., Aydin T., Cakmakci R., Ozer H., Kordali S., Mete E., Dikbas N. 2010. Antibacterial activities of essential oils and extracts of Turkish Achillea, Satureja and Thymus species against plant pathogenic bacteria. J Sci Food Agric, 90:145-160. 2- Makki R., Dirani Z.E., Rammal H., Sweidan A., Al bazzal A., Chokr A. 2015. Antibacterial activity of two lebanese plants: *Eryngium creticum* and *Centranthus longiflorus*. Journal of Nanomedicine & Nanotechnology, Volume 6, Issue 5, 1-5. 3- Richardson I.B.K. 1975. A revision of the genus *Centranthus* DC. (Valerianaceae). Botanical Journal of the Linnean Society, 71:211-234. 4- Suleyman H., Guvenalp Z., Kizilkaya M., Demirezer L.O. 2007.

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Sedative effect of *Centranthus longiflorus* ssp. *longiflorus* in rats and the influence of adrenalectomy on its effect. The Pharmaceutical Society of Japan, 127(8):1263-1265.

KEYWORDS

*α -myrin, β -sitosterol, GC-MS, *Centranthus longiflorus**

Poster Session 1

Submission ID: 164

IN VITRO AMOEBICIDAL ACTIVITY OF TURKISH ARTEMISIA ARGYI LEAVES EXTRACT ON ACANTHAMOEBA CASTELLANII

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ABSTRACT

In Vitro Amoebicidal Activity of Turkish *Artemisia argyi* leaves extract on *Acanthamoeba castellanii* Zeynep KOLÖREN¹, Onur KOLÖREN², Ülkü KARAMAN³, Melek ÇÖL AYVAZ⁴, 1 Department of Molecular Biology and Genetics, Faculty of Arts and Sciences, Ordu University, Ordu, Turkey 2 Department of Plant Protection, Faculty of Agriculture, Ordu University, Ordu, Turkey 3 Department of Medical Parasitology, Faculty of Medicine, Ordu University, Ordu, Turkey 4Department of Chemistry, Faculty of Arts and Sciences, Ordu University, Ordu, Turkey (E-mail: zeynep.koloren@yahoo.com) *Artemisia argyi* is mostly used in traditional medicine in China and have been commonly consumed as tea, spices, and food in East Asia. *A. argyi* leaves have flavones and terpenes which are used for antimicrobials and anti-inflammatory and relieving itching and increasing blood circulation of the skin. The present study was aimed to investigate the amoebicidal and amoebistatic effect of *A. argyi* leaf methanolic extracts on the proliferation of *Acanthamoeba castellanii* trophozoites and cysts. *A. argyi* was harvested from different geographic locations in Ordu Province of Turkey. The fresh leaves were subjected to methanolic extraction. One hundred microliters culture of the different concentrations of *A. argyi* methanolic extracts (in the quantity from 1.2 to 74.8mg/ml), and the the same volume of trophozoites/cysts suspension were mixed for the determination of the amoebicidal activity of plant extracts. The amoebicidal activity was time and dose-dependent on the trophozoites and cysts. The trophozoite growth stopped in *A. argyi* methanolic extracts with IC₅₀/8 h at 37.4 mg/ml. All trophozoites were nonviable at 37.4 mg/ml methanolic extract concentration within 72 h. Among the different concentrations of *A. argyi* methanolic extracts used in this study, 74.8 mg/ml extract solution showed the stronger amoebicidal activity on the cysts with IC₅₀/72 h.

KEYWORDS

Artemisia argyi, *Acanthamoeba castellanii*, amoebicidal activity

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Poster Session 1

Submission ID: 165

EXAMINATION OF LEAD ACCUMULATION IN CAPSELLA BURSA- PASTORIS (L.) MEDIK USED AS MEDICAL PLANT

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ABSTRACT

Heavy metals have been increasing rapidly in recent years, with increasing urbanization and consequently, traffic and industrialization, to be toxic to the environment in the wild. Some heavy metals are used at microelement level by plants. However, the amount of heavy metal that goes beyond the acceptable range of soil and air is a danger to all living species. There is a heavy metal transition from the plants consumed by humans through the food chain. This is especially true of other diseases, especially cancer. Medical and aromatic plants have been used for therapeutic purposes since mankind's existence. In particular, care must be taken to ensure that the areas where naturally grown medical plants are collected are free from contamination. However, due to the fact that it is easily accessible by the public, it is seen that plants are collected from inside the city and from the roadsides. In this study, *Capsella bursa-pastoris* (L.) Medik, which is used as a medicinal plant, consumed rustically grown leaves in urban and roadside areas as food. Lead accumulation has been investigated. *Capsella bursa-pastoris* is traditionally used as a medicinal herbal medicine in the treatment of diseases such as kidney diseases, wound healing, hemorrhoid constipation. In the study, 11 different stations were identified in the city of Amasya, where traffic is heavy, and out of city (highway side). As a control group, stations were chosen to be 500m, 1000m, 1500m away from the highway. Five plants were selected from each of these areas and the amount of lead in root, stem and washed-unwashed leaves of plants was measured by Inductively Coupled Plasma-Optical Emission Spectrometry (ICP-OES) method. As a result of the work, it was found that the plants were washed in the city center (43.54 ppm) and in the untreated leaves (61.70 ppm) and the roadside washed (30.47 ppm) and in the unwashed leaves (31.75 ppm) Toxic values. Reduction of lead residue accumulation path distance is seen. Differences in metal accumulation between plant organs and stations were statistically significant ($p < 0.05$). As a result, the amount of lead found in *Capsella bursa-pastoris* plant at the distance of 500 m from the side of the highway and the highway was above the acceptable limit to be found in the food.

KEYWORDS

Capsella bursa-pastoris, Medical Plant, Heavy metal pollution, Traffic

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Poster Session 1

Submission ID: 166

INHIBITORY EFFECTS OF VARIOUS PLANT EXTRACTS AND VITAMINS ON COLLAGENASE ACTIVITY

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ABSTRACT

Skin aging is a natural process characterized by structural and physiological changes in the skin. Excessive exposure to sunlight, environmental pollution and smoking accelerate the production of enzymes such as elastase and collagenase in the skin that degrade the main components of the extracellular matrix of derms. Collagenase (EC 3.4.24.3) is the zinc-dependent endoproteinase that specifically cleaves collagen. Inhibition the collagenase enzyme is an important cause of pathological collagenolysis, osteoarthritis, corneal ulcers, diabetes and periodontitis. In our study, we have examined collagenase enzyme inhibitory activities of different plant extracts such as black mulberry, pineapple, white tea, white grape, rosemary and vitamins such as vitamin U, ascorbic acid, α -tocopherol and rutin. The plant extracts were prepared by using 96 % ethanol and refluxed for 8 hours in Soxhlet device. Collagenase inhibitory activities of different plant extracts and vitamins were increasing in a dose dependant manner. As a result, among the studied extracts and vitamins, black mulberry and vitamin U showed the highest inhibitory activities. It can be suggested that all used plant extracts and vitamins with high collagenase inhibitor activity are suitable for use of skin disease in addition to drug treatment.

KEYWORDS

Collagenase, Plant extracts, Vitamin, Inhibition.

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Poster Session 1

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MYELOPEROXIDASE ENZYME INHIBITION BY VARIOUS PLANT EXTRACTS

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ABSTRACT

Myeloperoxidase (MPO, EC 1.11.2.2) is a key antimicrobial enzyme, playing a normal role in host defense. It is expressed mainly in human neutrophils and to some extent in monocytes and activates hydrogen peroxide to oxidize a great variety of organic substrates to free radicals. However, interest in MPO exploded when it was found to aggravate tissue damage by oxidation of lipids, (lipo) protein or DNA at sites of inflammation. It has been reported that MPO plays a role in ischemia, and neurodegenerative diseases, as well as sepsis, lung disease, atherosclerosis and atrial fibrillation. Consequently, blocking the activity of MPO is a potential pharmacological strategy for prevention and treatment of a broad range of inflammatory diseases. In our study, we have examined MPO enzyme inhibitory activities of different sulfur contain plant extracts such as black cabbage, brussels sprouts, cauliflower, purple cabbage, white cabbage, and onion. The plant extracts were prepared by using distilled water and refluxed for 8 hours in the flask. As obtained results among the used cabbage species and onion extracts, black cabbage and white cabbage showed the highest inhibitory effects on MPO enzyme activity. It was found that sulfur containing plant extracts inhibited MPO enzyme activity and adding these plants in a controlled diet will contribute to alternative and complementary treatment.

KEYWORDS

Myeloperoxidase, Plant extracts, Inhibition.

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Poster Session 1

Submission ID: 168

PROPAGATION POSSIBILITIES OF BAY LAUREL (*LAURUS NOBILIS* L.) BY TISSUE CULTURE METHOD

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ABSTRACT

In this study, bay Laurel explants were taken from Kuşadası and Urla's laurel trees. These explants were placed in MS (Murashige&Skoog, 1962) and DKW (Driwer Kuniyuki) media. The propagation material consisted of buds and meristem of shoot of one year old shoots. Explants were taken per two months and placed in media. Two different media were used in this study. Different concentrations of NAA (naphthaleneacetic acid) (0.01-5 mg/l), BA (Benzil Adenin) (0.01-20 mg/l), IBA (Indole Butyric Acid) (0.01-20 mg/l) and Kinetin (0.01-20 mg/l) were added to these media. Effects of hormones on in vitro root regeneration were examined. These explants were not grown up to root regeneration. It was noticed that MS medium was better than DKW medium and calli growth was increased with 0.5-5 mg/l NAA, shoot growth was increased with 0.3-4 mg/l BA.

KEYWORDS

explant, tissue culture, Bay Laurel (Laurus nobilis L.)

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Poster Session 1

Submission ID: 169

POSSIBILITES OF USING SOME SOILLESS CULTURE SYSTEMS OF LAUREL (LAURUS NOBILIS L.) CUTTING PROPAGATION

AYSUN BOZA¹, AYŞE GÜL²

ABSTRACT

In this study, effects of taking cuttings in different periods and soilless culture systems on rooting of Karaburun originated Laurel (*Laurus nobilis* L.) cuttings which were taken Kuşadası Dilek peninsula. For this aim, studies had been carried out in different periods as August, October, December, February, April and June. And also, aeroponic, perlite, tufa, sand, forest soil and zeolite were used as rooting media in greenhouse at Ege Forestry Research Institute in Urla. Before planting, cuttings were kept in NAA with the dosage of 5000 ppm for 10 seconds. Rooting rates of cuttings that obtained from different periods did not reach the level of statistical analysis. There were no rooting become in aeroponic system in August, but different rates of rooting from other media were obtained. Rooting rates in perlite, tufa, sand, forest soil and zeolite were respectively 15, 17.5, 12.5, 2.5 and 17.5 % . Results had suggested that there were more needs of physiological and anatomical studies about rooting of Laurel cuttings.

KEYWORDS

Laurel (Laurus nobilis L.), cutting propagation, taking cutting period, aeroponic, rooting medium.

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Poster Session 1

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EFFECT OF INTRAUTERINE ALLIUM SATIVUM EXTRACT ON RECOVERY IN DAIRY COWS WITH SUBCLINICAL ENDOMETRITIS

AYŞE KILIÇ¹, ATILLA YILDIZ¹

ABSTRACT

Abstract: The current study was designed to investigate the therapeutic effectiveness of garlic extract infusion by intrauterin on recovery in cows with subclinical endometritis. This study was carried out on forty two Holstein cows with subclinical endometritis by based on the presence of > 5% PMN cells in an endometrial cytological examination from 176 clinically healthy cows at week 6–8 post-partum in a commercial dairy farm in Elazig. Bacteriological examination was performed from uterine lavage of subclinical endometritis cows. Cloves of garlic were decorticated, cut in small pieces put in a juice extractor and pressed. The obtained garlic extract was put in sterile screw cap bottles and stored in the refrigerator at 4°C for later use. Forty two cows with subclinical endometritis were randomly divided into 2 equal groups as a treatment group (group T) and a control group (group C). In group T, cows received a single intrauterine administration of 10 ml garlic extract mixed with 40 ml saline. In the cows of group C, no intrauterine treatment was administered. Samples were collected again from the all animals of both groups on day 14 after therapy and the same laboratory tests were repeated. 10 (23.8 %) out of 42 cows had subclinical endometritis without bacteria in the uterus; however majority of cows with subclinical endometritis were positive for bacterial infection (76.2%). 32 out of 42 cows (76.2%) yielded single (9 samples) and mixed type (23 samples) bacterial isolates including E. coli, Staphylococcus spp., Streptococcus spp. and Bacillus spp. in the pre-treatment uterine flushes. In group T, 18 out of 21 (85.7%) cows had sterile uterine flushes on day 14 after garlic treatment. In group C, bacterial isolates at second examination were similar to the first examination. Bacterial load in group T was significantly lower as compared to both pre-treatment and group C. The cure rate for group T and C was 100.0 and 19.0%, respectively. The results of this study demonstrate that intrauterine use of the garlic extract can be successfully used as a treatment option in subclinical endometritis because it reduces uterine infections and endometrial inflammation in subclinical endometritis cases.

KEYWORDS

Allium sativum, cow, subclinical endometritis, bacteriological examination

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Poster Session 1

Submission ID: 171

**ORNAMENTAL TREES AND SHRUBS WITH MEDICINAL AND
AROMATICAL QUALIFICATIONS OF ÇANAKKALE ONSEKİZ
MART UNIVERSITY DARDANOS CAMPUS**

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ABSTRACT

University campuses offer important contributions to urban green open spaces. There are units such as faculties, vocational schools, research centers, libraries, gymnasiums, swimming pools, guesthouses, cafés in university campuses. Social and cultural activities together with educational activities are carried out in these units. Plant design in the campus gives possibility and acceleration to social and cultural activities. It is very important to make the plant selection according to the ecological conditions. In this way, sustainable plant design can be realized. This study is carried out between 2016 and 2017 to determine the condition of outdoor ornamental plants in terms of medical and aromatic plant in Dardanos Campus of Çanakkale Onsekiz Mart University. Medicinal and aromatic plants used as ornamental plants in Dardanos Campus were identified. Information about species names, common names, botanical characteristics, used parts and content of these plants was given.

KEYWORDS

ÇOMU Dardanos Campus, Medicinal and Aromatic Plants, Ornamental Plants

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Poster Session 1

Submission ID: 173

MEDICAL IMPORTANCE AND PRODUCTION OF SPIRULINA PLATENSIS

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ABSTRACT

Spirulina (*Arthrospira*) *platensis* is biotechnologically valuable in its metabolites and is a microalgae of the Cyanobacteria class. With Spirulina biomass, high-value products such as essential amino acids and essential fatty acids as the primary metabolite and phycocyanin as the secondary metabolite are obtained. Among these high-value metabolites, it is known that phycocyanin pigment has nutritional and therapeutic properties. It has been reported in several studies that the phycocyanin from *Spirulina platensis* has positive health benefits that promote immune function, inhibit cancer cell growth and regenerate zooblast. *Spirulina (Arthrospira) platensis* is produced in large scale at Yalova University and various studies are carried out to obtain high purity phycocyanin pigment. In this presentation, it is aimed to emphasize the necessity of producing *Spirulina* widely as a plant-based and healthy organic food, as well as the potential benefits to health and disease.

KEYWORDS

Spirulina platensis, *phycocyanin*, *purity ratio*

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Poster Session 1

Submission ID: 179

**CHEMICAL COMPONENTS AND ANTIMICROBIAL AND
ANTIOXIDANT ACTIVITIES OF NEST MATERIALS VESPA CRABRO
GERMANA CHRIST, 1791 (HYMENOPTERA: VESPIDAE) IN TURKEY**

ÖMER ERTÜRK¹, MELEK ÇOL AYVAZ¹, ZEYNEP KOLÖREN¹

ABSTRACT

Social wasp nests serve as a place for rearing brood and the centre for their nesting activities. The wasps belonging to Vespinae use paper pulps that are obtained from a mixture of oral secretions and plant fibers to construct their nests. They collect plant fibers from nearby environment. The oral secretion protect their nest from the effects of rain and weathering. Social wasps build their nests in nature by using various organic and inorganic materials. In this study, the total phenolic content, antioxidant potentials based on ferric reducing antioxidant power (FRAP) and DPPH radical scavenging activity, biochemical composition and antimicrobial activity of the ethanol extract of *Vespa crabro germana* Christ, 1791 nest collected from Trabzon in East Black Sea Region were investigated. Diffusion disk plates method was used for determination of antibacterial and antifungal activity against 8 bacterial and 2 fungi species. The ethanol extract of the investigated nest sample showed maximum antimicrobial activities against *Proteus vulgaris*, *Bacillus subtilis*, *Micrococcus luteus* and *Candida albicans*. On the other hand the minimum activities obtained against *Pseudomonas aeruginosa*, *Yersinia enterocolitica*, *Aspergillus niger* and *Klebsiella pneumoniae*. Obtained values for antimicrobial activity of nest extract was comparable with the values of standard antimicrobials, (Ampicillin, Cefazolin, Nystain). Total phenolic content (TPC) of sample extract was analyzed using Folin–Ciocalteu assay. TPC was calculated as 0.56 mg gallic acid equivalent/g sample. FRAP value was calculated as 1.94 mg trolox/g sample. DPPH radical scavenging activity of the extract was also calculated as 0.88 mg trolox/g sample. GC-MS analysis of the sample was performed using GC-MS (Shimadzu 2010 Series GC- Shimadzu QP 2010 Plus Series MS) equipped with a column (Teknokroma TRB 5-MS, 30 m×0.250 mm i.d.; film thickness 0.25 µm) according to solid phase microextraction (SPME) technique and 44 compounds were identified. As a result of detailed assessment, two peak pointed out with retention times of 25.239 and 45.860 belong to 1,2-Benzenedicarboxylic acid, diethyl ester and 9-Tricosene compounds, respectively. Apart from these, other prominent peaks belong to 1,1,1,5,7,7,7-Heptamethyl-3,3-bis(trimethylsiloxy)tetrasiloxane, Eicosamethylcyclododecasiloxane, Tetracosamethylcyclododecasiloxane, Octadecamethylcyclononasiloxane, Hexacosane, 1H-Purin-6-amine. The presence of these compounds with bioactive potential, add value to investigated sample extract with a pharmaceutical meaning as antifungal, antibacterial, antiviral agents and so on. In other words, the antioxidative and antimicrobial potential of the nest sample could be attributed to presence of these compounds. Thus, the nests used for rearing brood and several activities by social wasps, have a precaution in terms of biological activities.

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KEYWORDS

Vespidae, social wasp nest, antimicrobial, antioxidant, GC-MS

Poster Session 1

Submission ID: 184

TOTAL PHENOLIC CONTENT AND ANTIOXIDANT CAPACITY OF CORIANDER

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ABSTRACT

The present work aimed to proceed to the total phenolic content and the antioxidant activity of coriander (*Coriandrum sativum* L.) wıch harvested in Erzurum. The coriander was lyophilized and then extracted with water. In order to performed the antioxidant activity of water extracts, various in vitro methods such as β -carotene bleaching, 2,2-diphenyl-1-picryl-hydrazyl free radical (DPPH \cdot) scavenging activity, 2,2'-azino-bis (3-ethylbenzthiazoline-6-sulfonic acid) radical (ABTS \cdot +) scavenging activity were used. Also, total phenolic content was determined by Folin Ciocalteu method. In this method standard graphic calibration curves were obtained using known quantities of standard gallic acid ($y = 0.0009x - 0.0853$, $R^2 = 0.972$). Results indicated that coriander contained remarkable phenolic compounds (277 mg GAE/g). DPPH \cdot and ABTS \cdot + are stable free radicals, which have been widely accepted as a tool for estimating free radical scavenging activities of antioxidants. Water extract of coriander exhibited a radical scavenging activity against both radicals in a concentration-dependent manner. IC₅₀ values for DPPH \cdot and ABTS \cdot + methods were 52.53 mg/ml and 83.10 mg/ml, respectively. The antioxidant activity of coriander water extract was found to be 41.58% with β -carotene bleaching method. The presented results clearly demonstrate that water extract of lyophilized coriander has antioxidant activity and radical-scavenging activity in various antioxidant systems in vitro. These activities of coriander can be attributed to its content of phenolic compounds.

KEYWORDS

Coriander, Coriandrum sativum L., antioxidant, β -carotene.

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Poster Session 1

Submission ID: 187

USAGE OF ALOE VERA IN MEAT AND MEAT PRODUCTS

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ABSTRACT

Fresh meat is rich in terms of protein (18-20%); has enough mineral and carbohydrate for microorganisms; has proper pH value (~5,6) and its moisture content is high. Because of these reasons, meat plays a part in range risky foods that can be spoiled by microorganisms. Nowadays, consumers' numbers who investigate the components of foods they buy has been increased. Conscious consumers go towards to foods minimal processed and doesn't have chemical preservatives. Because of this reason; the attention, for natural preservatives that extend the shelf-life unless putting the food safety in danger increased. So on the one hand the studies different concentration and combinations of spices are carried out, on the other hand the antimicrobial and antioxidant activity of some plants except spices are started to investigate in foods. There are some studies with natural plants as mustard, rosemary, lavender, sage, sumac vb. Researchers found useful effects of these plants for foods. Besides that there are some studies about Aloe vera (L) Burn. fil. extract. Laxative, antienflamatuar, immunostimulant, antiseptic, healers of wound, anti-tumour, antidiabetic activity of Aloe vera are found from these different studies. It is thought that reason of these effects of Aloe vera is its antioxidant activity. Besides antioxidant activity, it is emphasised that reason of these effect can be its antimicrobial activity. But in a study, carrying out with Aloe vera, green tea and amla extract in meat products, it is found that Aloe vera's antimicrobial activity is lower than the others. But besides these, there are some studies that Aloe vera are practised with different chemical substance (glycerol, tween 80 ect.) in foods. It is found that Aloe vera has effects to extend shelf-life at the end of these studies.

KEYWORDS

Meat and meat products, aloe vera, antioxidant, antimicrobial

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Poster Session 1

Submission ID: 188

INVENTORY AND PRODUCTION PLANNING OF MEDICAL AND AROMATIC PLANTS [ADIYAMAN PROVINCE]

AHMET ÜNVER¹

ABSTRACT

Due to the absent of inventory and planning data of the non-wood forest products within the borders of Adıyaman Forest Management Directorate which subsidiary of Şanlıurfa Regional Directorate of Forestry, inventory of non-wood forest products was made in Adıyaman province center, Çelikhan, Gölbaşı and Kâhta districts. The economic size of the industry has been sought to be determined by amount of products of 10 medicinal and aromatic plant products with economic value, the current production potential and the amount of product to be added to agricultural production. 1- Licorice root, 2-Turpentine, 3-Gall oak, 4-Rosehip 5-Thyme Tymbra, 6-Thyme Thymus, 7-Thyme Satureja, 8-Hawthorn, 9-Sage, 10-Sumac; With the inventory and planning studies; The medical and aromatic plant sector, which is the main raw material of many sectors including food, medicine and cosmetics in the world and in our country, is aiming to reveal, plan and develop the existing potential in Adıyaman province, to mobilize the idle potential for local and national economy. It is expected to contribute to the development of the agro-based industry, to increase the production of organic products, employment in agriculture and industry, to develop new products and to develop marketing opportunities.

KEYWORDS

Medical Aromatic Plant

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Poster Session 1

Submission ID: 1897

ESSENTIAL OIL COMPOSITION OF *TANACETUM ARGENTEUM* SUBSP. *ARGENTUM* (ASTERACEAE) FROM TURKEY

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ABSTRACT

The genus *Tanacetum* is one of the largest genera in the Asteraceae family and this genus is represented by 59 taxa in Flora of Turkey. After the revision of this genus the total number has reached to 60 taxa and 27 taxa are endemic to Turkey. Some members of this genus have traditionally been used in insecticides, cosmetics, balsams, dyes, medicines, and preservatives. Previous phytochemical studies on *Tanacetum* species revealed some secondary metabolites such as essential oils, sesquiterpene lactones, flavonoids. Some species of the genus *Tanacetum* have been also reported for antimicrobial, insecticidal, herbicidal, antihelminthic activities and antioxidant activities. The essential oils of *Tanacetum* species have been the subject of several investigations. Essential oils of this genus have been exhibited bioactivities like, antimicrobial, anti-inflammatory and cytotoxicity etc. The objectives of this study was to determine the essential oil composition of *Tanacetum argenteum* subsp. *argenteum* (an endemic species in Turkey). Dried flowers of *Tanacetum argenteum* subsp. *argenteum* were hydrodistilled to obtain essential oil that was then analysed by GC and GC/MS. 90 compounds were identified representing 89.4% of the oil and Santolinatriene (6.8%), α -Pinene (6.3%) and 1,8-cineole (5.7%) were detected as main constituents.

KEYWORDS

Tanacetum argenteum subsp. *argenteum*, Asteraceae, essential oil composition, Santolinatriene

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Poster Session 2

Submission ID: 189

EFFECTS OF RUTIN AND QUERCETIN ON 5-FU-INDUCED HEPATOTOXICITY IN RATS

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ABSTRACT

Introduction and aim: 5-Fluorouracil (5-FU), a anticarcinogenic agent, is widely used in the chemotherapy. At high doses of the 5-FU causes hepatotoxicity. Antioxidants are agents that prevent oxidative stress and oxidative stress mediated tissue damage. Quercetin (Q) and rutin are natural flavonoids and antioxidant in many fruits, herbs, leaves and vegetables. Our aim in this study investigations protective effects of Q and rutin on 5-FU-induced hepatotoxicity. Method: In the present study used weight 200-250 g 48 piece Sprague Dawley male rats. Rats were divided randomly into eight group (n=6). The control group was intragastric (i.g.) corn oil (1 ml) for 21 days. The 5-FU group rats were ig corn oil for 21 days and 18th day injected intraperitoneal (i.p.) a single dose of 5-FU 50 mg/kg. Group Rutin50+5-FU and Rutin100+5-FU were respectively ig 50 mg/kg and 100 mg/kg rutin for 21 days. These groups were single dose of 5-FU (50 mg/kg) in the 18th days of application rutin. The group Rutin100 was rutin (100 mg/kg-i.g.) for 21 days. Group Q50+5-FU and Q100+5-FU were respectively i.g. 50 mg/kg and 100 mg/kg quercetin for 21 days. These groups were single dose of 5-FU (50 mg/kg) in the 18th days of application quercetin. The group Q100 was quercetin (100 mg/kg-i.g) for 21 days. In the end experimental applications, blood was collected from anesthetized rats and rats were scarified. Serum was separated by centrifugation and utilized for the evaluation of various enzymes (AST, ALT, LDH, ALP). The hepatic tissues used for biochemical (oxidative stress) and histopathological analysis. The data were analyzed by Tukey test in the one-way ANOVA. Results: When data are showed compared among groups that in the MDA level was significantly higher in the 5-FU group compared with other groups (P<0.05). GPx and GSH levels were significantly decreased in the 5-FU group compared to the control, Rutin100+5-FU and Q100+5-FU groups. AST, ALT, LDH and ALP levels in the serum were significantly increased in the 5-FU group compared with the other groups (P<0.05). The histopathological examination of hepatic tissue determined in the 5-FU group had significantly degeneration hepatocyte. In the Rutin50+5-FU and Q50+5-FU treatment, hepatocyte degeneration and connective tissue deposition were reduced. In the Rutin100+5-FU group tissues were seen nearly normal hepatic structure. Conclusion: In this study was determined that the of Rutin and Q have protective effects on 5-FU-induced hepatotoxicity.

KEYWORDS

Quercetin, Rutin, Rat, 5-FU, Hepatotoxicity

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Poster Session 2

Submission ID: 190

EFFECTS OF DIFFERENT DOSES OF CINNAMOMUM CASSIA EXTRACT ON OXIDATIVE STRESS INDUCED BY TYPE II DIABETES IN MUSCLE, BRAIN AND EYE TISSUES OF RATS

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ABSTRACT

Type II diabetes is a metabolic disease characterized by hyperglycemia that occurs due to the inadequacy of carbohydrate metabolism and the development of insulin resistance. Metformin is the only antidiabetic drug that has been used in the treatment of type II diabetes for many years and has been developed and approved from the herbal source. It was obtained from *Galega officinalis*. Surveys has become widespread in this area, assuming that plant sources have less toxic and less side effects than synthetic ones. Chronic complications of diabetes (neuropathy, myopathy, retinopathy, nephropathy...etc) develop due to long-term hyperglycemia and it is thought that increased free radicals are effective in the pathogenesis of these complications. For this reason, the aim of in this study were investigated the effects of different doses of *Cinnamomum cassia* (CN) extract on oxidative stress induced by type II diabetes in muscle, brain and eye tissues of rats. Sixty female Sprague-Dawley female rats were used in the study, all of which were 2-3 months old, was be randomly divided into 6 group of 10 animals in each group. *Cinnamomum cassia* barks were purchased from local market and were powdered finely. 50 gr of the plant material and 250 ml of ethanol were extracted in Soxhlet apparatus for 6 hours. Then, the extract was evaporated to dryness and 9.5 gr of the extract were obtained from 50 gr plant material. Normoglycemic control group (NC), Diabetes control group (DC), Diabetes + cinnamon (500 mg/kg, 1000 mg/kg, 1500 mg/kg groups (D+CN500, D+CN1000, D+CN1500), Diabetes + Metformin group (D+M). Type 2 diabetes was induced in adult rats by a single doses given Nicotinamide (NAD) (230 mg/kg, i.p) 15 min before administration of Streptozotocin (STZ) (65 mg/kg, i.v). We waited for 7 days for steady state of hyperglycemia. Rats were defined as diabetic if their fasting blood glucose levels (FBG) were >200 mg/dl. Afterwards cinnamon extract in different doses, metformin and Dimethyl sulfoxide (DMSO) were administered to 35 days. Also DMSO was administered to the control groups to equalize stress induced by oral application in all groups. Our data show that skeletal muscle NO levels and brain, eye and skeletal muscle MDA levels were significantly higher in DC group compared to NC group ($p<0.001$). Skeletal muscle NO levels were found significantly lower in D+CN500, D+M ($p<0.01$), D+CN1000 and D+CN1500 ($p<0.05$) groups than those of DC group. However, it was found out that no significance had been present in the eye and brain tissues NO levels. Skeletal muscle MDA levels were found significantly lower in D+CN500, D+CN1000 and D+CN1500 groups than those of DC group ($p<0.001$, $p<0.01$ respectively). Moreover, different doses of CN extract and metformin administered significantly decreased MDA levels in eye ($p<0.001$) and brain tissues ($p<0.05$, $p<0.01$, $p<0.001$ respectively). Eye GSH and brain GSH-Px levels were determined significantly lower in DC group with respect to the NC group ($p<0.01$, $p<0.05$ respectively). In conclusion, the data obtained in

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this study thought that, in the different doses CN extract decreased the oxidative stress induced by type II diabetes in the brain, eye and skeletal muscle tissues which is via increasing the activity of antioxidant enzyme GSH and GSH-Px.

KEYWORDS

Cinnamomum cassia, Type II diabetes, Oxidative stress, Skeletal Muscle, Brain, Eye

Poster Session 2

Submission ID: 192

STIMULATION OF ANTIOXIDANT SYSTEM BY HUMIC SUBSTANCES TO ALLEVIATE OF DAMAGE INDUCED BY CADMIUM STRESS IN WHEAT (*TRITICUM AESTIVUM*)

CEYDA OZFIDAN-KONAKCI¹, EVREN YILDIZTUGAY², MUSTAFA KUCUKODUK²

ABSTRACT

The use of humic acid (C187H186O89N9; HA) is a promising natural resource to be utilized as an alternative for increasing crop production. It is a naturally occurring polymeric organic compound and is produced by the decay of organic materials and is found in soils. Taking advantage of the complexing properties, various micronutrients are further complexed with HA to form chelates. Cadmium (Cd) is highly toxic to plants, water soluble and therefore promptly adsorbed in tissues and its presence greatly influences the entire plant metabolism. Cd induces a number of changes, such as growth inhibition, the inhibition of photosynthesis, changes in enzyme activities, and the formation of free radicals. HA, which is commonly used as a soil supplement in agriculture, can be alleviate the Cd-induced damage in plants. Moreover, the information is unknown about the effects of HA on alleviating the harmful effect of Cd stress on antioxidant defense system in *Triticum aestivum*. The present study is aimed to study the effects of exogenous HA on water content (RWC), proline content (Pro), hydrogen peroxidase (H₂O₂), activities of some antioxidant enzymes and lipid peroxidation (TBARS) were investigated in leaves of Cd-stressed wheat. For this, three-weeks-old wheat plants were treated with 100 and 200 µM Cd stress with/without HA (750 and 1500 mg L⁻¹) treatments for 7 days. A decrease in RWC and an increase in activities of catalase (CAT) and peroxidase (POX) were observed in response to increasing levels of Cd concentration. These changes were observed more pronounced in 200 µM Cd stress-treated wheat. However, in Cd-stressed wheat, exogenous HA application resulted an alleviation on RWC and a decline in H₂O₂ content. Also, when comparison to the plants treated with stress alone, added HA to Cd-stressed wheat significantly decreased TBARS content and significantly enhanced the activities of superoxide dismutase (SOD), POX and ascorbate peroxidase (APX). It could be concluded that exogenous HA may have the application possibility for a future practical trial of stress reduction leading to mitigated heavy metal toxicity and improved the water content and the antioxidant enzyme activities in wheat leaves.

KEYWORDS

Antioxidant enzyme; Cadmium; Humic acid; Reactive oxygen species; Triticum aestivum

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Poster Session 2

Submission ID: 193

RADICAL SCAVENGING AND ANTIOXIDANT ACTIVITY OF EXOGENOUS TANNIC ACID IN RICE (*ORYZA SATIVA*) ROOTS EXPOSED TO CADMIUM INDUCED-HEAVY METAL STRESS

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ABSTRACT

Cadmium (Cd) is a dangerous heavy metal that is toxic to many organisms. This metal can accumulate in the environment as a result of anthropogenic activities and its main sources are herbicides, pesticides, chemical fertilizers, irrigation with contaminated water and pollutants from industrial processes. Although Cd is a nonessential element, it can be easily taken up by plants, causing morphological, structural, biochemical, physiological dysfunctions and alteration of transcript profile. Tannic acid (TA) is a widely distributed plant polyphenol. Tannic acid is composed of a central glucose molecule derivatized at its hydroxyl groups with one or more galloyl residues. Considerable amounts of experimental data on the antioxidant activity of TA have been reported to be effective antioxidant in vitro assay including reducing power, superoxide anion radical scavenging and hydrogen peroxide scavenging. However, our limited knowledge about the alleviation of TA treatment on Cd stress-associated metabolism in plants remains a major gap in our understanding. Therefore, the aim of the present work is to investigate effects of exogenous TA on water content (RWC), proline content (Pro), hydrogen peroxidase (H₂O₂), activities of some antioxidant enzymes and lipid peroxidation (TBARS) were investigated in roots of Cd-stressed rice (*Oryza sativa*) roots. For this, three-weeks-old rice plants were treated with 100 and 200 μ M cadmium (Cd) with/without TA (25 and 50 mM) treatments for 7 days (d). Stress treatment caused a decrease in RWC. Although the activities of catalase (CAT) and peroxidase (POX) increased when rice roots were exposed to Cd-induced oxidative stress, induction of these antioxidant enzyme were inadequate to detoxify extreme levels of radical, as evident by hydrogen peroxide (H₂O₂) and TBARS content. However, in Cd-stressed rice roots, TA application significantly resulted an increase on superoxide dismutase (SOD), POX and ascorbate glutathione (APX). However, compared with the plants treated with stress alone, exogenous TA application markedly decreased H₂O₂ content and TBARS levels. Finally, our data confirm that TA addition to Cd-stressed roots was able to cope stress-induced oxidative damage by protecting the water content and antioxidant defense system in rice roots.

KEYWORDS

Antioxidant enzymes; Cadmium stress; Oryza sativa; Reactive oxygen species; Tannic acid

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Poster Session 2

Submission ID: 196

BIOACTIVE AND AROMATIC PROPERTIES OF DIFFERENT LOQUAT VARIETIES

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ABSTRACT

The most-produced loquat (*Eriobotrya japonica* Lindl.) as tea in the world is mostly consumed as fresh fruit in Turkey. Loquat has many varieties. There are very few researches in which, the differences of bioactive properties among the loquat varieties are studied. In this research, the amount of bioactive properties (total phenolic content, total flavonoid content, antioxidant capacity) and aromatic properties of dried extracts of the most cultivated and consumed loquat varieties; Yuvarlak Çukur Göbek, Hafif Çukur Göbek, Uzun Çukur Göbek, Gold Nugget and Akko XIII are determined. The purpose of this work is to investigate which type of loquat among 5 types which also known as "Yenidunya" and generally cultivated in Mediterranean area of Turkey is more suitable than the other types of loquat for food industry, by determining bioactive and aromatic properties. The amount of total phenolic, flavonoid, antioxidant and aromatic properties belonging to loquat varieties were determined. In conclusion, dry matter; 87.12-91.00%, total phenolic content; 2954.50-5071.62 mg/kg as gallic acid equivalent (GAE), total flavonoid content; 1189.01-2020.78 mg/L as catechin equivalent, antioxidant capacity with DPPH method; 2506.49-3738.56 mg/L as trolox equivalent, antioxidant capacity with CUPRAC method; 11.79-19.40 mg/L as trolox equivalent, were found in loquat varieties. In all loquat varieties except one (Uzun Çukur Göbek variety), "acetic acid (CAS)" was found as the most dominant flavour component. "l-Limonene" was identified as the most effective aroma component and the second most dominant flavour type is "2-Butanone, 3-hydroxy- (CAS)" in all varieties except for only one variety (Uzun Çukur Göbek variety).

KEYWORDS

Loquat, bioactive properties, aroma profile

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Poster Session 2

Submission ID: 197

DETERMINATION OF EFFECT OF NITROGEN FERTILIZATION ON SOME QUALITY PROPERTIES OF SAHLEP ORCHID (*ORCHIS SANCTA L.*) CULTIVATED IN FIELD CONDITIONS IN TURKEY

OLCAY ARABACI¹, UđUR TAN¹, ÖZGE YILDIZ², MEHMET TUTAR²

ABSTRACT

Turkey has rich biodiversity because it was located at the inter section of Europe-Siberia, Mediterranean and Iran-Turan flora regions. Orchidaceae family has a distinct place with in rich biodiversity. It has been reported that a total of 204 orchid species belonging to the 24 genera and 49 hybrids are grown in Turkey. Seventeen species of Turkish orchids contain tubers. Excluding six of them (*Coeologlossum*, *Gymnadenia*, *Listera*, *Spiranthes*, *Stenopogon*, *Traunsteinera*), others (*Aceras*, *Anacamptis*, *Barlia*, *Comperia*, *Dactylorhiza*, *Himantoglossum*, *Neotinea*, *Ophrys*, *Orchis*, *Platanthera*, *Serapias*) are benefited from the use of sahlep. Sahlep has been obtained as a result of the natural collection of tubers of Orchidaceae family. The exports of the sahlep orchids were banned in 1974 by the Ministry of Agriculture due to very high destruction of natural distribution areas of the plant. Despite the fact that nowadays the sahlep plants are protected by laws, the tubers of sahlep orchids still have been collected by people. Washing, boiling in water or milk, washing in cold water and drying stages are used to prevent the sahlep tubers to stop its growing activity. After that, by grinding, the tubers are prepared to ready-to-use sahlep powder. Sahlep drinks were prepared in two ways, with milk or plain. According to the conventional method, sahlep powder and starch are put together in water or milk, and it is boiled by mixing slowly. All of the sahlep production is provided by collection of sahlep orchids tubers from nature. For one kilogram of sahlep, 1000-4000 tubers are used. And it is assumed that our country produces 45 tons of tubers per year. Cultivation of highly requested plants is necessary for conservation and sustainable use of natural resources. *Orchis sancta L.* is one of the most commonly collected species from the nature in the Aegean Region. This study was carried out to determine the effect of nitrogen fertilization on some quality characteristics of *Orchis sancta L.* grown in field conditions in order to take in part into agricultural cultivation of sahlep orchids. In the study, the effect of four fertilizer doses (0, 5, 10 and 15 kg/da) was investigated on starch ratio (%), mucilage ratio (%), protein ratio (%), moisture ratio (%), dry matter ratio (%) and ash ratio (%). Mucilage rate (sahlep mannia) was found to vary between 14% and 26% according to nitrogen fertilizer doses.

KEYWORDS

Sahlep, Orchis sancta L., Cultivation, Nitrogen fertilizer, Quality.

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Poster Session 2

Submission ID: 198

**EFFECT OF DIFFERENT HARVEST TIMES ON SOME QUALITY
CHARACTERISTICS OF CULTIVATED SALEP ORCHID SERAPIAS
VOMERACE (BURM.FILL.) BRIG.**

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ABSTRACT

Salep orchids are used as medicinal plants in Turkey as a diarrhea stopping, restorative food for ulcers and upper respiratory ailments. Also the main ingredient of traditional Turkish ice cream and sahlepe drinks is obtained from the tubers of wild orchids. It is reported that sahlepe is obtained from 38 different orchid plants belonging to 10 different genera in Turkey. Sahlepe had not standard chemical composition due to obtain from different species of Orchidaceae in different regions. Also sahlepe composition shows a fairly large change depending on the period that collected. In order to protect the Orchidaceae species in Turkey, "Salep" export is prohibited since 1974. Although there was a ban on exports still millions lump removed from nature every year and exported to many countries, especially European countries. Continuously collected tubers were not find any chance the produce seeds and even if it produce seeds these seeds having difficulty to germinate. Many in vitro studies were conducted by the researchers for the culture of orchids and orchid tubers have failed to adapt outdoor conditions. Intense collection of some species of sahlepe orchids made it compulsory to take necessary measures without delay. Aim of this study investigates the effect of different harvest times on some quality characteristics of *Serapias vomerace* (Burm. fill.) Brig. species which one of the most collected species in the Aegean region. In this study, starch content (%), mucilage rate (%), protein content (%), relative humidity (%), dry matter content (%) and ash content (%) was investigated. According to the Harvest time, mucilage rate was found between %16-23.

KEYWORDS

Cultivation, Harvest Time, Sahlepe, Serapias vomerace (Burm.fill.). Brig., Quality.

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Poster Session 2

Submission ID: 206

EVALUATION OF EFFECTS OF OLEUROPEIN AND THYMOL ALONE OR IN COMBINATION AGAINST INDOMETHACIN INDUCED ULCER IN RAT

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ABSTRACT

Oleuropein (Ole), predominant natural constituent of leaves of the olive tree, presents several of pharmacological beneficial properties. We first explored the therapeutic efficacy of oleuropein (250 and 500 mg/kg) in Indomethacin-induced gastric mucosal injury. We also investigated the effects on gastric mucosa of Thymol (Thym), the most abundant constituent of the volatile oil of thyme, with wide dosage range (50-500 mg/kg) and hoped to understand the gastroprotective mechanism of these agents in vivo. Furthermore, we revealed the therapy profiles of overdoses of both herbal products together. Sixty female Sprague-Dawley rats were divided into twelve groups: control, ulcer control (25 mg/kg Indomethacin), Indomethacin + reference standard (50 mg/kg Rantidine hydrochloride), Indomethacin + Ole (50, 100, 250 and 500 mg/kg), Indomethacin + Thym (50, 100, 200 and 500 mg/kg), Indomethacin + Thym (500 mg/kg) + Ole (500 mg/kg). Oleuropein and Thymol was orally administered to rats after 10 minutes from induction of ulcer with Indomethacin. In addition, the highest dose of Thymol was administered with or without Oleuropein. Six hours later, the animals were anesthetized and their stomachs were removed. The histology of stomach was examined via using three different staining methods: Hematoxylin-eosin (H & E), Periodic acid Schiff (PAS), and Amyloid. The mRNA expressions of caspase-3 and TNF- α was quantified by RT-PCR and protein levels of prostaglandin E2 (PGE2) were assessed by ELISA in stomach samples. Total antioxidant status (TAS) and total oxidant status (TOS) levels were measured to determine the level of oxidative stress following the treatments. Indomethacin induced significant increases in mRNA expression of TNF- α and caspase-3, and levels of TOS, while reduced the TAS and PGE2 levels. The high doses of Oleuropein and 200 mg/kg Thymol significantly inhibited mRNA expression of TNF- α and caspase-3, and reduced oxidative stress induced by Indomethacin. In stomach tissue, histopathological observations revealed that mucosal erosions were significantly inhibited with Oleuropein and Thymol treatments. However, unlike oleuropein, the highest dose of Thymol (500 mg/kg) caused inflammation, oxidant/antioxidant imbalance and apoptotic activities. Moreover, combination treatment with Oleuropein did not provide any significant remedy. The results have clearly demonstrated the anti-ulcerogenic potential of Oleuropein and Thymol on Indomethacin-induced gastric ulcer; nevertheless, the gastroprotective activity of oleuropein in the wide dose range was superior to Thymol due to more multi-pathway regulation than Thymol.

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KEYWORDS

Oleuropein, Thymol, Gastric ulcer, Oxidative stress, Histopathology, caspase-3, tumor necrosis factor-alpha, Prostaglandin E2

Poster Session 2

Submission ID: 210

ANTIMICROBIAL PROPERTIES OF ESSENTIAL OILS AND EVALUATION OF THESE OILS AS A FUNCTIONAL FOOD COMPONENT

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ABSTRACT

Essential oils are aromatic and volatile liquids obtained from plants or various parts of these plants such as, flowers, roots, shells, leaves, seeds and fruits by solvent extraction, pressing, steam or hydro distillation. Since essential oils are subject for pharmacological studies, testing their antimicrobial activity as well as using them in various foods to extend their shelf life have been studied frequently. On the other hand, many adverse effects of synthetic additives with developing technology and the prevalence of antimicrobial drug resistance against synthetic antibiotics increased the interest in essential oils derived from medical and aromatic plants. A great many research articles investigating the antimicrobial activity of essential oils have demonstrated that the results were very encouraging. In these researches antibacterial, antifungal and antiviral properties of essential oils have been proved and it has been reported that the activity of essential oil depends upon the nature, composition, and synergism of its functional groups such as, terpenes, aldehydes, ketones, esters, phenolic, alcohols, and ethers. Because of these properties of essential oils, their use as a flavoring material and antimicrobial agent in many foods and beverages has been suggested. Recently, food technologists and scientists are formulating functional foods containing these aromatic volatile oils in order to improve nutritional quality, prevent microbial spoilage and risk of food borne infections without causing loss of organoleptic properties of the food. Also, it is stated that these oils can be used in packaging films. For these reasons, it is accepted that the use of vegetable essential oils and their specific compounds may be one of the effective and potential solutions for many unhealthy synthetic food additives. Therefore, it is expected that the use of essential oils in the food industry will increase in the near future.

KEYWORDS

Antimicrobial properties, essential oils, functional food

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Poster Session 2

Submission ID: 211

THYME AND THYME ESSENTIAL OIL AND THEIR POTENTIAL USE IN FOODS

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ABSTRACT

Thyme, is broadly used in different countries of the world as folk medicine for its carminative, immunostimulant, digestive-eupeptic, expectorant, antispasmodic, anti-inflammatory, and antitussive-bronchodilator features. Thyme plant includes approximately 100 species, found in Mediterranean countries such as Spain, Italy, Algeria, France, Turkey, Portugal and Morocco. Thyme is cultivated primarily in these countries for the production of fresh and dry herbs, essential oil and oleoresin. On the other hand, it has been generally considered as spice. Many thymus species are used in various regions of the world. There are about 39 species of the genus *Thymus* grown in Turkey. Thyme essential oils have some anti-inflammatory and hepatoprotective properties and thyme oils and extracts are thoroughly used in pharmaceutical, cosmetic, perfume and flavor industries. Thyme essential oil extracted from fresh thyme leaves can be used for antioxidant potential and antimicrobial properties in many different food. High antimicrobial activity of thyme species results from their phenolic components. The chemical composition of the thyme oil is reported as thymol, p-cymene, γ -terpinene, myrcene, carvacrol and α -terpinene. Fatty acid composition was analyzed and nine fatty acids were identified. Among these fatty acids, C18:1 and C18:2 were major fatty acids. Because of high C18:1 and C18:2 levels, thyme oil may be nutritionally valuable. And also this oil can be used in food, cosmetics and pharmaceutical products to restrict microbial activity.

KEYWORDS

Thyme, thyme oil, chemical properties

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Poster Session 2

Submission ID: 216

MORPHOGENETIC VARIATION FOR ESSENTIAL OIL CONTENT AND COMPOSITION OF SAGE (*SALVIA OFFICINALIS* L.) IN ÇUKUROVA CONDITION

CEMRE PALA¹, TUNCAY ÇALIŞKAN¹, HASAN MARAL², EBRU KAFKAS³, SALIHA KIRICI⁴

ABSTRACT

In this research were conducted for morphogenetic variation on yield and essential oil content and composition in *Salvia officinalis* L. in 2016 at the Research Area of Department of Field Crops, Faculty of Agriculture, Çukurova University, Adana. Field trial was arranged randomized complete block design, with three replications. Seed of sage was sowing December, 17 at 2015 in the green house. Seedling was transferred to field at March 31, 2016. The plants was harvested on November 29, 2016. After harvest, imminently all plant material were separated in to three part, lower (1/3), middle (1/3) and upper (1/3) for morphogenetic variation and fresh herb weight were determined each part. In the research, it was determined that plant height (37.28 – 52.84 cm), fresh herbage yield (608-822 kg da⁻¹), drug herbage yield (236-259 kg da⁻¹) and essential oil content (1.65 – 2.32 %). The highest essential oil content was obtained as 2.32 % from upper part of plant. The lowest one (1.65%) was obtained from lower parts.

KEYWORDS

Sage; Salvia officinalis L.; morphogenetic variability; essential oil.

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Poster Session 2

Submission ID: 217

CONE AND SEED CHARACTERISTICS IN THE STONE PINE FOREST IN KOZAK BASIN (BERGAMA)

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ABSTRACT

In the study; the cones, harvested from production areas of Stone pine (*Pinus pinea* L.) which are considered as less efficient and productive by the producers in Kozak Basin, were used. The samplings were made in different areas of 11 villages in the basin. It was worked with 33 cones (total 66) taken from areas that are considered as less efficient and productive. Diameter, height, weight, quantity and occupancy rates of cones and seed extracted from cones were determined. At the result of evaluation of the data; significant differences were found in terms of fresh cone weight, the amount of seed obtained from the cones, seed weight, occupancy rate and internal peanut weights. There were no significant differences in cone diameter and length, total seed quantity, empty seed quantity, seed diameter and size.

KEYWORDS

Kozak Basin, Stone pine, internal peanut, cone, seed

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Poster Session 2

Submission ID: 218

PHYTOCHEMICAL CONTENT AND ANTIOXIDANT CAPACITY OF ALOE VERA

FATMA BÜŞRA ALAN¹, CEMAL KASNAK¹, RECEP PALAMUTOĞLU¹

ABSTRACT

Aloe vera is a perennial watery plant belonging to the family Aloeaceae and subfamily Asphodelaceae. It is found in the arid regions of Africa, Asia, Europe and America and has more than 360 different species. It grows in the Mediterranean, Aegean and Marmara regions in our country and the local name is sarısabır. Aloe vera is considered a healing plant and has been used for centuries to treat injuries. Aloe vera is widely used in alternative treatments for various disease types. Aloe vera used as herbal treatment in skin diseases such as eczema, skin ulser and psoriasis. Many studies reveal the utility of this herb in the treatment and cosmetics, but the study of nutritional properties is scarce. It contains vitamins (E, C and A), minerals, amino acids and enzymes. It has low fat and high fiber content. It also has antioxidative capacity and carries a functional nutritional potential in terms of the phytochemicals it contains. Therefore, we aimed to determine the antioxidant potential and the phytochemicals contained in Aloe vera plant in our research. We performed 2,2-diphenyl-1-picrylhydrazyl (DPPH) analysis showing antioxidant capacity, total phenolic substance determination by spectrophotometric method, total flavanoid content, pH, dry matter, water activity, FRAP (iron reducing power) and color analysis in our study. One gram of whole leaf Aloe vera sample was homogenized in 70% methanol. Centrifuged for 15 minutes at 4000 rpm. The liquid was evaporated at 45 ° C on a rotary evaporator. It was then filtered by adding 25 mL of pure methanol. The total amount of phenolic substance in aloe vera is 318,49 mg / kg, flavanoid amount is 81,30 mg / kg, dry matter is 9,15%, pH is 5,81, color L is 55,85, a is -6,64, b is 26.37, a water activity of 0.955 aw, FRAP 5650 mg trolox equivalent/ kg and an antioxidant capacity of 65 %.

KEYWORDS

Aloe vera; Phytochemical content; Antioxidant capacity; Phenolic compounds; Flavonoids

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Poster Session 2

Submission ID: 222

FUNCTIONAL FOOD PROPERTIES OF GARLIC AND CURRENT APPROACHES

SELEN AKAN¹, RUHSAR YANMAZ¹

ABSTRACT

Garlic (*Allium sativum* L.) has been widely used for hundreds of years due to its nutritive and therapeutic properties. Interest and popularity of garlic have been increased by clinical trials in recent years. Besides rich nutritional content, garlic has a health promoting properties with antibacterial, antifungal, antimicrobial, antioxidant, antiviral, anticarcinogenic, hypoglycemic and cholesterol-lowering, digestive, respiratory and immune system strengthening as well as using treatment of gynecological, skin, and cardiovascular diseases. Consumption of garlic is increasing day by day thanks to this medical features. However, although it is known as a miracle food, it can not be consumed in enough quantities in all societies due to its unpleasant odour and bitter. For this reason, alternative ways of consumption of garlic have been researched by scientists and so activities for processed garlic products have been increased rapidly. Nowadays, it is seen that it covers a great deal of space in the canning, vegetable oil, chemistry, cosmetics and pharmaceutical industries besides the food industry thanks to the initiatives and investments made by industrialists in different sectors. In this review, it is aimed to give information about the current research results on the functional use of garlic including processed garlic products and recognize products of garlic visullay on markets.

KEYWORDS

Garlic, Allium sativum L., functional food

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Poster Session 2

Submission ID: 223

GARLIC TEA

SELEN AKAN¹

ABSTRACT

Herbal teas have been introduced to my country by Far Eastern Countries and China. The most popular teas along with fruit extracts are green, red, white and black tea as well as 'Ginseng' (Chinese herbal plant tea) and 'Oolong' (black Chinese tea). People have shown interest in medicinal plants and have investigated the functional uses of these plants for centuries. In recent years, garlic is one of the prominent foods with its functional and medical properties. As a result of supporting the therapeutic properties of garlic with clinical studies, the tendency towards consumption of garlic has increased and different ways of using garlic have been sought. For this reason, it has also been discovered that was used as a tea in recent years. It is widely consumed in China and Japan. As a result of the studies, it was determined that garlic tea contains protein, saponin, flavonoid and vitamin A, B2, B6, C. In terms of minerals, it has been shown that it is rich in Ca, Cu, Fe, I, Zn and Se contents as well as sulphur compounds. Thanks to its rich nutritional content, it has a protective and therapeutic effect against many diseases. According to the results of the researches; it is effect to sore throat, coughing, respiratory infections, hoarseness, bronchitis, sinus congestion, digestive system disorders and headache. It has strong antioxidant and antimicrobial effects similar to the green tea. This miracle tea is recommended to drink especially in the winter months in order to strengthen the immune system. The preparation of this tea is simple, practical and is described as follows; crushed 2 or 3 cloves of garlic place in a cup. Then add lemon, honey and boiled water. And then cover top of the cup and let it rest for 20 minutes. Be careful with consumption of garlic tea prepared by this way and it is recommended to drink 1 cup of cold periods a day. However, the researches on this subject are not sufficient and needed more extensive researches in the future.

KEYWORDS

Herbal tea, garlic, garlic tea, functional food

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Poster Session 2

Submission ID: 224

ICE CREAM PRODUCTION WITH CAROB PEKMEZ (MOLASSES)

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ABSTRACT

Day by day, it is known that people give importance to nutrition diets in terms of health. Whether or not substances used in the production of food are natural, the amount used in production and the effect on human health have become important. In this study, low-fat ice cream was produced with rich compound carob pekmez (molasses), which has a positive contribution to nutrition, and the effect on ice cream was investigated. As a result, it has been concluded that carob pekmez can be used in the production of ice cream and that people can consume it with taste and admiration. It has also been found that low fat ice cream formulation can be achieved by use of suitable stabilizers. For ice cream production, 0,1% carrageenan gum, 0,1% xanthan gum and 0,4% locust bean gum were used in the formulation. pH, dry matter (%), fat (%), protein (%), overrun (%), viscosity values (10-20-50 rpm-cP) of the carob molasses produced were 6,31; 27,23; 3.50; 3.86; 18.99; 11.840; 6.560 and 3.344, respectively.

KEYWORDS

Low-fat ice cream, Carob bean, Carob pekmez (molasses)

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Poster Session 2

Submission ID: 226

ANTIMICROBIAL EFFECTS OF MEDICAL AND AROMATIC PLANTS

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ABSTRACT

The important properties of plants for killer microorganisms and human health have been investigated since 1926. In recent years, it has been found that pathogenic bacteria are resistant to antibiotics because of the random use of antibiotics all over the world. Today, intensive studies are being conducted on the use of medicinal plants as an alternative to antibiotics. Today, nearly 300 plant families approximately 1/3 growing in the forest contain antimicrobial components. According to the chemical structures of the antimicrobial substances of the plant obtained from the root, stem, leaf, seed, flower and fruit, can be classified as phenolics, terpenoids and essential oils, alkaloids, lectins and polypeptides, polyacetylenes. Phenolics are grouped in themselves such as simple phenols, phenolic acids, quinones, flavonoids, flavones, flavonols, tannins and coumarins. These components on microorganisms have bacteriocidal and bacteriostatic effects. Antimicrobial activity changes depending on the type, composition and concentration of the plant, the type and load of the target microorganism. Another approach to the treatment of these rich contents in plants is phytotherapy. Phytotherapy is defined as the treatment of diseases with herbal drugs, which are therapeutic properties, or by products such as tea, drops, capsules, syrups, dragees, tablets obtained by using extraction products. It is very important that the subject specialist is used in doctor's control since these products, which are produced for the purpose of treatment, may have some side effects.

KEYWORDS

Medical Plants, Aromatic Plants, Antimicrobial Activity

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Poster Session 2

Submission ID: 230

NON-EDIBLE HORSE CHESTNUT SEED OIL: ROLE OF FATTY ACIDS COMPOSITION AND TOCOPHEROL PROFILE FOR HEALTH APPLICATIONS

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ABSTRACT

Non-conventional cold pressed oils are obtained from different nutty fruits or kernels and the chemical composition of oils determines their health beneficial capacities and their practical application. These oils provide a wide range of bioactive substances, such as tocopherols and tocotrienols, free and esterified sterols, hydrocarbons (squalene), triterpene alcohols, carotenoids and chlorophylls along with colorants being valuable nutrients. They also contain n-3 and n-6 PUFA or sterols having biologically active effects [1]. Horse Chestnut (*Aesculus indica* Caleb.) known as handun is a fast growing tree species mainly found in temperate regions of Asia particularly in India, Nepal, Pakistan and Afghanistan. Although horse chestnut fruit is very similar to sweet chestnut by comparing the carbohydrates, fibers, proteins, lipids, and vitamins content, It is distinguished from it due to its poisonous character of the Aesculin substance in its contents (aesculin, a bitter, poisonous glycoside that breaks down blood proteins). Therefore, taking some cold pressed oils as internally are not recommended such as horse chestnut seed oil. However, horse chestnut seeds have a broad spectrum of pharmacological activities with their rich vitamins and a wide range of active components [2]. The aim of this study was to investigate the chemical composition of locally produced cold-pressed horse chestnut seed oil by taking into account of fatty acid and tocol composition of the oil. The results showed that, cold pressed horse chestnut seed oil was observed to have high level of PUFAs% due to a high content of oleic acid (58.41%), linoleic acid (22.07%) and linolenic acid (5.63%) content. The oil also contained significantly higher amounts of γ -tocopherol as 202.02, while α -tocopherol, β -tocopherol, and δ -tocopherol content were as 63.7, 39.7, 5.00, respectively. As a conclusion, due to its above superior properties, cold pressed horse chestnut seed oil can be regarded as one of the special oils which can be used externally for health without oral intake.

KEYWORDS

Non-Edible Oils, Horse Chestnut Seed Oil, Fatty Acids Composition, Tocopherol Profile

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Poster Session 2

Submission ID: 231

THE USE OF SOME SPICES WITH ANTIOXIDANT CHARACTERISTICS IN MEAT AND MEAT PRODUCTS

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ABSTRACT

Meat and meat products can be spoiled because of its free radicals and nature rich structure. These spoilages can be more risky for the meat and meat products with mechanical, chemical processes, packaging, and heat processes. The result of oxidation are the colour (brown, grey, green), bad smell, lipid oxidation and rancidity taste that consumers do not like. As a result of these spoilages; deterioration in viscosity, gelatinization, emulsification mistakes and deterioration of hydration properties may occur in meat and meat products. Consumers, especially working mothers lean to ready-to-eat meals nowadays. Because of this reason, consumers demand increased for packaged ready-to-eat meals. Antioxidants are used to delay the deterioration of packaged meat products. Today, there are two types of antioxidants; synthetic and natural. Many studies have shown that synthetic antioxidants are harmful for health. Therefore, there is a trend towards natural antioxidants in meat and meat products. Natural antioxidants can be obtained from many plant products. However, spices are emphasized in this study. It is known that spices are aromatic plants that used in meat marinating for a long time. The antioxidant properties of spices can be used in meat and meat products for preventing the deterioration of meat without harming human health. As a result of oxidation in meat and meat products, the quality of the meat decreases, resulting in the formation of undesirable meat by the consumer and the producers suffer from great losses. The antioxidant properties of rosemary, green tea leaves, grape seed, basil, pimento, thyme, carnosine, carnitine, cinnamon, sage and many other spices have been studied and found to have an effective antioxidant property. In this study, it is aimed to investigate the antioxidant properties of spices in meat and meat products.

KEYWORDS

Spices, antioxidant, rosemary, green tea leaves, meat and meat product

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Poster Session 2

Submission ID: 232

THE CONTRIBUTIONS OF SOME SPICES USED IN MARINATION ON PHYSICAL, MICROBIOLOGICAL AND SENSORY PROPERTIES OF MEAT

SABIRE YERLIKAYA¹, AYŞENUR ÖZÇELİK², CEMALETTİN SARIÇOBAN²

ABSTRACT

Marination is a method that has been used all over the world in order to gain some features to food before cooking. There are many functional groups used in marination. One of these functional groups is marinated meat. This marinated meat has been taken consumer's attention and has contributed to health in positive way. Spices make meat has many textural features. Beside these features meat becomes to have more tenderness, aromatic, delicious, juicy and well appearance. In addition, researches about using of natural antioxidants and antimicrobial spices against synthetic preservatives have recently been enhanced. Marined meat can increase the consumer's desire to buy, as well as it prevents forming the toxins during cooking. In this case the marinated meat, with spices that has antimicrobial and antioxidant properties, increases the shelf life. In this study, the effect of certain spices (thyme, ginger, red pepper and rosemary) used during marination on the aroma and structure of meat was investigated.

KEYWORDS

Marination, spices, ginger, thyme and rosemary

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Poster Session 2

Submission ID: 234

EFFECTS OF OREGANO ESSENTIAL OIL AND VITAMIN E SUPPLEMENTATION TO DISTILLERS DRIED GRAINS WITH SOLUBLES (DDGS) BASED BROILER DIETS ON PERFORMANCE AND CARCASS QUALITY

YUSUF KONCA¹, MERVE ÖZYÜREK¹, MAHMUT KALİBER¹

ABSTRACT

This study was carried out to determine the effects of Distiller's Dried Grains with Soluble (DDGS), oragano essential oil (KEY) and vitamin E (vit E) on performance and carcass quality of broilers. In the study, a total of 400 broiler chickens were distributed in 5 treatments group with 5 replicate and 16 chicks each. Treatment groups as follows: 1: Control (C, ration based on corn and soybean meal, no contain DDGS), 2: 25% DDGS in diet, 3: 25% DDGS + 300 mg / kg vitamin E, 4: 25% DDGS + 30 mg / Kg KEY and 5: 25% DDGS + 300 mg / kg vitamin E ration + 30 mg / kg KEY groups. The body weight (BW) of chickens were higher than that of DDGS supplemented group, however, KEY and vit E supplementation not affected BW of chickens. In the DDGS and KEY and KEY+Vit E supplemnted groups feed consumption were higher than those of other groups. The feed efficiency ratios were not influenced by the treatments. The DDGS supplementation caused a decrease in carcass yield and breast meat yield however increase in wing and neck yield, however, KEY and vit E addition were not affected these traits. The pH and color of breast and hip meat were not affected by the DDGS addition. The breast meat lightness (L*) were increased by the KEY addition and KEY+vit E supplementation decreased breast and hip meat's redness (a*) and yellowness (b*).

KEYWORDS

DDGS, broiler, oregano, essential oil, performance, carcass

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Poster Session 2

Submission ID: 235

ANTIOXIDANT STORAGE; FAMILY OF SOLANACEAE

REZZAN KASIM¹, MEHMET UFUK KASIM¹, PINAR ŐANLIBABA²

ABSTRACT

Nowadays, eating habits of people changed because of the increase in the importance given to human health. Humans use nutrients not only to satiety but also to protect their health. In addition to the main food sources, carbohydrates, fat and protein-containing foods, there has also been an increase in the consumption of vegetables containing vitamins, minerals, fiber and various phytochemicals. It has recently been found that the consumption of colored vegetables is protective against various types of cancer. Tomatoes, red peppers and aubergines in the Solanaceae family are red and purple vegetables which have considerable effects on human health. Lycopene is a carotenoid found in tomato and has attracted considerable attention due to its antioxidant activity, and the anticancer effect of lycopene has been determined by doing a lot of research. Capsaicin found in pepper including capsaicinoids, which are plant secondary metabolites, is alkaloid structure and caused bitter flavor, also has analgesic, antiretroviral, antiseptic and antidiabetic properties. The antioxidant effect of nasunin, which gives a purplish purple color from the phytochemicals contained in the eggplant and belongs to the anthocyanin group, has been determined and the anticancerogenic properties are being investigated. Therefore, in this study, by examining the studies related to the subject, the antioxidant properties of tomatoes, red peppers and eggplant, which are red and purple vegetables including Solanaceae family, and the effects of these vegetables on the protection of human health have been examined.

KEYWORDS

Tomato, red peppers, eggplant, antioxidant

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Poster Session 2

Submission ID: 237

USING OF POTTED ORNAMENTAL PLANTS TO CLEAN UP VOLATILE ORGANIC COMPOUND THAT CAUSE AIR POLLUTION INDOOR.

CENGİZ KÖSE¹, REZZAN KASIM¹, MEHMET UFUK KASIM¹

ABSTRACT

Volatile organic compounds (VOCs) are found in indoor air, and many of these can adversely affect human health. Indoor air pollution results from the release of chemical vapors and the suspension in the air of particulates such as dust and microorganisms. In response to increasing energy costs and the need to conserve energy resources, buildings and homes have been designed to be more energy efficient. Thus, many offices and new homes have tighter construction, sealing the building from the outside air. This makes it easier for indoor air pollutants to accumulate to dangerous levels. With people spending up to 70–90 percent of their time indoors, long-term exposure to indoor air pollution can cause various health problems. Poor indoor air quality has been linked to health problems, especially in children. The major sources of indoor air pollutants are combustion byproducts, building materials, household products and chemicals, and bioeffluents. Combustion byproducts include carbon monoxide, nitrogen and sulfur dioxides, formaldehyde, and tobacco smoke. Combustion byproducts are produced by gas ranges, cook tops, water heaters, clothes dryers, smokers, and internal combustion engines turned on in enclosed spaces. NASA had identified 107 VOCs, in the Skylab space station. When those chemicals, like benzene, formaldehyde, trichloroethylene, all potential carcinogens and irritants, are trapped in a closed environment such as Skylab, the inhabitants. Common indoor plants in your office or home are not only decorative, but NASA scientists are finding them to be surprisingly useful in absorbing potentially harmful gases and cleaning the air inside modern buildings. Keeping plants around the home and office purify and renew our stale air by filtering out toxins, pollutants, harmful viruses, mold spores and the carbon dioxide we exhale. With this review study, plants grown and used in the indoors, and the effects of these plants on the holding of volatile organic compounds that air pollutant and the protection of human health are examined.

KEYWORDS

In door, Volatile organik compounds, potted ornamental plants.

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Poster Session 2

Submission ID: 239

METAL INDUCED GENE EXPRESSION IN MEDICALLY IMPORTANT CROP PLANTS IN BRASSICA SPS.

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ABSTRACT

Brassica juncea and B. nigra are well known oil producing industrial crops grown in China, India and other south Asian countries. They are also important source of herbal medicine used in these countries including Middle East. These species commercially important in producing valuable products such as vegetable, food, seed oil and sauce-spice. The medicinal drugs produced from these plants have beneficial effect on human health. For example these herbal products reduce cancer risk, prevent cancer cell proliferation, inhibit malignant transformation and carcinogenic mutations, stimulate immune system and activate the enzymes responsible for oxidative stress inhibition. Brassica species are also well known as metal accumulators and some of them are being used for phytoremediation in contaminated soils. The Diyabekir ecotype of B. nigra collected from southeastern part of Turkey was found to be hyperaccumulator of Cu. In this study the detailed expression of the metal ATPase (PAA1 and HMA2) genes were carried out in accumulator and non accumulator B. nigra ecotypes grown at low, medium and high Cu levels using RT-PCR. Our data show that PAA1 and HMA2 play an important role in metal accumulation and detoxification. Further studies will be carried out on the beneficial effects of these plants on human health.

KEYWORDS

Medically plants, B. juncea, B. nigra, Gene expression, RT-PCR

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Poster Session 2

Submission ID: 243

DETERMINATION OF GENETIC DIVERSITY OF SOME SAGE SPECIES

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ABSTRACT

Sage (*Salvia* ssp.), is the most important and biggest species of Lamiaceae family and it is getting more important in the medicinal plants as they are also getting popular. The future of those species threatened by collecting from the nature and marketing. Those species must be ex situ preserved, domesticated and genetically characterized besides starting breeding programs. For this purposes in the study, 11 sage species collected from East Mediterranean were genotyped by SRAP markers and genetic differences of the species were determined. As the results of the study, average polymorphism content was 90.91%, the average allele number was 4.2, and polymorphism information content (PIC) was 0.91 and PIC values ranked in 0.04 to 0.99. The average differences of the species was 43.15% and the most diverse species was *Salvia aucheri* ssp. *Aucheri* and *Salvia aramiensis* with 61.46%, while the lowest genetic differences was determined in % 22.62 ile *Salvia tomentosa* and *Salvia hypergeia* species. In future breeding programs using the most diverse species could increase the breeding success. In addition it is concluded that the SRAP markers might be successfully used for genetic characterization studies.

KEYWORDS

Sage, Salvia ssp., Genetic diversity, SRAP

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Poster Session 2

Submission ID: 246

DISTRIBUTION AND USES OF BIARUM GENUS AS A NEW ORNAMENTAL AND MEDICINAL PLANT IN TURKEY

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ABSTRACT

Biarumgenus has 21 species in the world and naturally grown in semi-arid and dry areas of southern of Turkey. There are 11 species in Turkey where is gene center for this genus (Biarum species existing in Turkey (B. tenuifolium (L.) Schott subsp.zeleborii(Schott) P.C.Boyce, B. davisiiTurrill, B.carduchorum (Schott) Engler, B. eximium (Schott &Kotschy) Engler, B. bovei Blume, B. ditschianumBogner&P.C.Boyce, B. marmarisense(P.C.Boyce) P.C.Boyce and B. pyrami (Schott) Englervar.pyrami,B.carduchorum (Schott) Engler.Biarum species which are morphologically and taxonomically very similar to Arum and Dracunculusgenus are also used for folk medicine in Turkey. The genera has interesting flowers and contain important medicinal volatile organic compounds together with the striking inflorescence. All species of the genera are thermogenic and the flowers of genus very attractive for many insect species belonging to many families. The plants of the genus start growth at the beginning of autumn and the growth continues until spring. Also, plants of the genus are resistant to heat and drought conditions, because the plants are generally dormant at the start of summer heat and drought. The majority of species blossom in autumn and early winter in Turkey. Horticultural popularity of Biarumspecies among European garden enthusiasts has been recently increasing, therefore, these species may be alternative crop as a new ornamental and medicinal plant in Turkey.

KEYWORDS

Biarum, ornamental and medicinal plant, Turkey

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Poster Session 2

Submission ID: 248

A RESEARCH ON THE SOCIO-ECONOMIC STRUCTURE OF THE ACTORS WHO SELL MEDICAL AROMATIC AND SPICE HERBS (CASE OF TOKAT PROVINCE)

ESRA GÜREL¹, HASAN GÖKHAN DOĞAN², ARSLAN ZAFER GÜRLER¹, HAKAN METE DOĞAN¹

ABSTRACT

Consumption has become difficult to control in the medical drug market as it is in every area. The output of the pharmaceutical sector, which has an important place in economic activities, has had undesirable consequences in recent years due to its chemical composition on human health. This has led people to search for alternative solutions. At the beginning of these solutions are herbal medicine resources and their derivatives. These resources, traditionally collected from the rural area, reach consumers through various channels. As a proposal for modern medicine, the use of medicines, which put people in a large vacuum in relation to quantity and harm, has come back as an economic and natural solution after a long time as a result of awareness. These plant products, which are needed for natural solutions and carry raw material qualities, can be obtained from transporters. Actuaries play an important role in marketing medicinal and aromatic plants. However, when they are not physicians, they are considered within the scope of medical activities when they have knowledge of the information they have and the quality of the products they sell. These activities are shaped by a number of legal regulations. In this study, it is aimed to determine the views and attitudes of Tokat province in terms of structural characteristics, activities and related legislation. The research region constitutes the province center of Tokat. The data set was obtained from the surveys to be made by the full counting method from the transfers in the province center. Various evaluations will be made with the aid of some statistical and econometric methods by using the data set which emerges in this direction.

KEYWORDS

Keywords: Medical and Aromatic Plants, Actuaries, Health Products Marketing, Tokat.

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Poster Session 2

Submission ID: 249

NATURAL AND AROMATIC PLANTS THAT MAKE NATURAL DISTRIBUTION IN SOME FOREST RECREATION SITES IN ERZURUM PROVINCE

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ABSTRACT

Within the scope of this study, the floristic composition of 7 forest recreation areas having "C" and "B" type promenade location characteristics that local and local tourists used throughout the year in Erzurum province were determined. The plants which are found among the identified flora elements and have medical and aromatic characteristics constitute the subject of this work. In this context, it was determined that 93 taxa belonging to 42 families and 83 genres showed medical and aromatic characteristics when considering all recreational places. In addition, it has been revealed from the literature that the medical and aromatic plants used at the promenade sites are used by the local people for their purposes. Numerical distribution of the detected medical and aromatic plants according to the recreation areas; Uzundere (Zuvarboğazı): 19, İspir (Hoşutlar): 29, Horasan (Fidanlık): 22, Olur (Akdağ): 20, Narman (Göllü): 40, Oltu (Uzunoluk): 41 and Şenkaya (H. Mehmet Sırma): 25.

KEYWORDS

Erzurum, medical and aromatic, recreation area, flora

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Poster Session 2

Submission ID: 252

HERBAL TELOMERASE INHIBITORS AND ACTIVATORS

AYŞE GÜL MUTLU¹

ABSTRACT

Telomeres are specialized functional complexes that protect the ends of eukaryotic chromosomes. The inability to DNA polymerase to replicate the end of the chromosome during lagging strand synthesis results in the loss of telomeric repeats when cell divides. The majority of the cancer cells depend on the activation of telomerase to gain proliferative immortality. Thus, telomerase is a molecular target for diseases since its discovery. Some of the synthetic and natural telomerase inhibitors were tried on various cancers and there was decrease in the number of cancer cells. But on the other hand, telomere shortening is related with cellular aging. Some evidence suggest that the progressive loss of telomeric repeats of chromosomes may function as a molecular clock that triggers senescence. Because of that, telomerase activators important for anti-aging and telomerase dependent disease treatments. Various chemical compounds that occur naturally in plants like allicin and curcumin have been suggested as telomerase inhibitors. Milk thistle's silymarin and silibinin also have been investigated by some researchers in terms of telomerase inhibition and activation. Major tea catechin epigallocatechin gallate strongly and directly inhibits telomerase. It is suggested that telomerase inhibition could be one of the major mechanisms underlying the anticancer effects of tea. The extract of *Astragalus membranaceus* was licenced as a nutritional supplement. This extract could elongates short telomeres and increases health span of adult mice without increasing cancer incidence. Also this natural based product can elongates short telomeres in human leukocytes. Furthermore certain phytochemicals like resveratrol and genistein have been shown to activate telomerase. Further studies are necessary in herbal telomerase inhibitors and activators, especially for endemic plants of Turkey.

KEYWORDS

Telomerase inhibitors; Telomerase activators

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Poster Session 2

Submission ID: 254

KARYOLOGICAL STUDIES ON SECTION LEIOPETALI OF AROMATIC DIANTHUS (CARYOPHYLLACEAE) FROM TURKEY

ESRA MARTIN¹, ERGIN HAMZAOĞLU², MURAT KOÇ³, ESRA KARAKAŞ¹, FATMA NAGEHAN YAVAŞ¹

ABSTRACT

This study has been focused on determination of chromosome number for seven taxa naturally grow in Turkey belonged to Leiopetali section of Dianthus genus which is a member of Caryophyllaceae family. The main purpose of the study is to cover the lack of cytogenetic studies for Dianthus taxa and make a contribution to the revision of this genus. Chromosome analyses were carried out via the use of an Image Analyses System (Bs200ProP). The chromosome numbers of Dianthus arpadianus, D. micranthus, D. ingoldbyi, D. zederbaueri, D. lactiflorus, D. andronakii and D. robustus taxa from Leiopetali sections were $2n = 30$. All chromosome practices was made by squash preparation technique. Root-tip meristems were provided from seed by germinating them on wet filter paper in Petri dishes at room temperature. Firstly root tips pretreated for 16 h in α -monobromonaphthalene at 4°C, fixed in 3:1 absolute alcohol/glacial acetic acid, then the root tips were hydrolyzed with 1 N HCl for 9 min at room temperature and stained with 2% aceto-orcein for 3 h at room temperature. Stained root tips were squashed in a drop of 45% acetic acid and permanent slides were made by mounting in Depex. The chromosomes were counted by Software Image Analyses (Bs200ProP) loaded on a personal computer.

KEYWORDS

Chromosome number, Caryophyllaceae, Dianthus

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Poster Session 2

Submission ID: 255

KARYOLOGICAL STUDIES OF AROMATIC GENUS ORIGANUM (LAMIACEAE) SECTION CHILOCALYX FROM TURKEY

ESRA MARTIN¹, TUNCAY DIRMENCİ²

ABSTRACT

Origanum section Chilocalyx (Briq.) Ietsw. comprises Origanum bilgeri P.H.Davis, Origanum vogelii Greuter & Burdet and Origanum minutiflorum O.Schwarz & P.H.Davis which have been studied. Root-tip meristems were provided from seed by germinating them on wet filter paper in Petri dishes at room temperature. Firstly root tips pretreated for 16 h in α -monobromonaphthalene at 4°C, fixed in 3:1 absolute alcohol/glacial acetic acid, then the root tips were hydrolyzed with 1 N HCl for 12 min at room temperature and stained with 2% aceto-orcein for 3 h at room temperature. Stained root tips were squashed in a drop of 45% acetic acid and permanent slides were made by mounting in Depex. The karyotypes were measured by Software Image Analyses (Bs200ProP) loaded on a personal computer. Ideograms of these taxa were arranged in decreasing length. The samples of O. bilgeri which naturally grow in the province of Antalya numbered as 4343 and 4530 have been studied. The number of diploid chromosome for both samples was detected as $2n=30$. Karyotype analysis of the 4343 sample was made via the Image Analysis System. The average chromosome length for 4343 plant sample was 0.47 μm while its haploid chromosome length was 14.25 μm . Also, the relative length of the 4343 sample changed between 2.66 and 11.08. Additionally, example of O. vogelii numbered as 4332 was studied. Diploid chromosome number of this taxon which naturally grow in the province of Mersin was $2n=30$. Other plant samples numbered as 4348 was studied from O. minutiflorum. These examples also grow naturally in province of Antalya. The diploid number of both plant samples was determined as $2n=30$. Karyotype analysis of both samples was also made by the Image Analysis System. While the relative length was changed between 3.62 and 10.62 for the 4348 sample, the average chromosome and haploid chromosome lengths were 0.63 μm and 19.01 μm for the same example.

KEYWORDS

Chromosome number, Lamiaceae, Origanum

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Poster Session 2

Submission ID: 260

GROWING TECHNIQUE PROBLEMS OF EXPORTED EDIBLE, ORNAMENTAL AND MEDICINAL ARUM SPECIES IN TURKEY

HUSSEIN ABDULLAH AHMED AHMED¹, SERKAN URANBEY²

ABSTRACT

Araceae contain about 4000 species currently comprising 117 genera. Aroideae consists of 78 genera and Arum, Dracunculus, Eminiun, Helicodiceros, Biarum, Arisarum and Ambrosinagenera are distributed in the Mediterranean region and also in Turkey. The genus Arum is mainly distributed in the Mediterranean and Arum species have been irregularly cultivated and collected from their natural habitat and exported for food, medicinal and ornamental uses in Turkey. Growing techniques are adequately not known in the production of exported Arum italicum MILLER and Arum dioscoridis SM species. Therefore, there are some problems in the marketing of these crops in Turkey. Regular and advanced agronomic techniques are not used in growing area of Turkey and certified variety for Arum species have not been used. Therefore high tuber yield and standard quality can not be achieved. Also, especially fungal diseases and other pathogens and comparatively low tuber yield cause major problems in the production of these plants. Development of generative and vegetative growing techniques by testing different agronomic applications are necessary for these species.

KEYWORDS

Arum species, growing technique, Turkey

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Poster Session 2

Submission ID: 261

HISTORICAL IMPORTANCE OF MEDICINAL PLANTS

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ABSTRACT

Since the earliest times in history, people have benefited from plants to keep their lives alive. It is known that these plants used both nutrition and medicine. The earliest written books on medicine by Chinese rulers of the Chinese civilization mention medicinal herbs, and acupuncture treatment is introduced. While it is known that the earliest records belong to the Hittites in history, the information about the medicinal plants was found in the Egyptians and Sumerians. There were found information about 250 medicinal plants in the Mesopotamian civilization period, 600 in the ancient Greek period, 4000 in the Arab-Persian civilization period and 500 in the Roman Empire. It is known that the information about the first medicinal plant used in Anatolia, in which medicinal plant is tablets written on nails for the first time in Hattuşaş. These tablets were found in plants such as garlic, willow, bay, arganu, myrtle tree, hemp, fir, saffron, juniper, thyme, fennel, rose, willow, liquorice, mint, coriander, olive, esfand, poppy, mustard. It is known that nearly 60 medicinal plants were used in Uighurs. Dîvân-ı Lûgâti't-Türk mentions 194 different plant species that can be used medically. Some of those; hawthorn, couch grass, elfdock, fenugreek, woad, coven, calamus, isgun, pennyroyal, esfand. In this study, medicinal plants will be informed about the traditional uses of plants for treatment and nutrition purposes from the prehistoric period to the present day.

KEYWORDS

Herbal therapeutic, medicinal plant, use in history

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Poster Session 2

Submission ID: 263

SOME CHEMICAL CHARACTERISTIC OF VOLATILE OILS AND EXTRACTION TECHNIQUES TO PRODUCE THESE OILS

NACIYE ÜNVER¹, ŞERAFETTİN ÇELİK¹

ABSTRACT

The use of medicinal and aromatic plants in the form of therapeutic preperates, nutritional supplements, flavouring substances and herbal teas has been a well-known and interesting issue from past to present. Volatile oils which are also known as essential oil and aromatic oil are obtained from the part of these plants such as root, flower, fruit and leaves and they have same appearance with lipids, but they have different chemical structure and characteristics. These oils are generally liquid at room temperature, easily crystallizable, optically active and volatile. Such aromatic taste and odour, anti-inflammatory, antimicrobial, antioxidant, insecticide, sedative (sedative) characteristics of these oils have provide the opportunity to use of the oils in many areas such as medicine, cosmetics, food, cleaning products, agricultural pests. Technique of distillation, extraction and pressing are used to obtain volatile oils from medicinal and aromatic plants. Extraction techniques can be defined as the separation of beneficial compounds in plant tissues by solvent. This method is classified into two categories as traditional (old) and modern (new) methods. Modern methods are developed to shorten the extraction time in conventional methods, to reduce the amount of solvent and to obtain better quality product. Whereas soxhlet and maceration techniques can be classified in traditional extraction techniques; sonication, supercritical fluid extraction, microwave extraction, and pressurized liquid extraction can be classified in modern extraction techniques. In this study, researches and information about the characteristics and extraction methods of essential oils have been compiled.

KEYWORDS

Essential oils, microwave extraction, pressurized liquid extraction, sonication, supercritical fluid extraction.

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Poster Session 2

Submission ID: 264

THE PRESENT STATE OF MEDICINAL PLANTS IN THE NATURAL FLORA OF THE THRACE REGION AND FACILITIES OF UTILIZING THESE PLANTS

BURHAN ARSLAN¹, EMRULLAH CULPAN¹

ABSTRACT

Medicinal plants have been used for medical and other purposes throughout history, and their use is increasing day by day. Because of possessing geographical regions that are different from each other in terms of their topographical features and climate, encompassing three phytogeographical regions, tying the continents of Asia and Europe and being surrounded on three sides by the sea, our country has a considerable worldwide wealth of plant species. Our country involves nearly 10000 plant species, 4000 of which are endemic. However, 500 of these species are known to be used for medical purposes. In our country, nearly 140 plants are registered to codexes. But the number of plants being consumed for medical purposes is much higher. In some publications, it is reported that the number of plants being consumed for medical purposes is at least around 500. It is reported in the list prepared as a result of examining lots of publications about the Thrace Region that there are 2450 plant species that ramify in 145 families. The fact that the Thrace Region involves 2450 plant species is a sign of how rich its flora. There are a large number of medicinal and aromatic plants in this rich flora. In this study, some plants that are part of natural flora, that have commercial importance and that are used in pharmaceutical industry are explored, and their present state and facilities of utilizing them are elaborated. This study was supported by participation programs of Namık Kemal University Scientific Activities

KEYWORDS

Thrace Region, plant species, medicinal plants, flora

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Poster Session 2

Submission ID: 265

EFFECT OF PROPOLIS ON THE EGG QUALITY DURING STORAGE

GÜLŞEN ÇOPUR AKPINAR¹, ALI AYGÜN²

ABSTRACT

Propolis is a sticky, resinous, dark-colored material that honey bees collect from the young shoots and buds of certain trees and shrubs. Bees use it to cover the inside of the hive and mix it with bees wax during the building of combs to protect the colony and larvae from pathogenic microorganisms such as *Bacillus subtilis*, *B. alvei*, *Proteus vulgaris* and *P. galangin*. Propolis, having strong anti-bacterial, anti-fungal and anti-viral properties, is used for protection of various agricultural products during storage. For example, propolis has been used with alcohol on strawberry to inhibit *Botrytis cinerea* development. It also has been used on mandarin in order to prevent weight loss. Since the egg shell coating limits water losses and gas diffusion through pores, it should be useful to coat table eggs shell with propolis extracts during storage. The egg shell coating with propolis has important effect on the protection of the internal egg quality parameters. Coating eggs with propolis extract, a natural product, may help to ameliorate the decrease in quality during storage. This review focuses the effect of propolis on egg quality decreasing during storage.

KEYWORDS

egg shell coating, storage, egg quality

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Poster Session 2

Submission ID: 267

OLIVE LEAF TEA

NACIYE ÜNVER¹, ŞERAFETTİN ÇELİK¹

ABSTRACT

The rapid growth of the world population, developing technology and industrialization have increased the consumption of food by making accessibility of food independent than time and place for the consumers. As a result of this situation amount of produced waste has increased, the waste recycling in different areas has gained importance in order to decrease the environmental effect of the waste. Plant waste is categorized in the group of solid waste and they are waste which is not very harmful for the environment but utilization of these wastes both can be profitable for the producers and can be used in various industries as different objects/materials thanks to their rich nutrients. In this context olive leaf is in the group of non-domestic plant waste and it is a raw material which has opportunity of usage in various areas as cosmetic, alternative medicine and food industry. Scientific research indicates that olive leaf contains more than one hundred components, mainly oils, carbohydrates, minerals, phenolic compounds and elements. Researches about antioxidative, antimicrobial and therapeutic effects of these leaves, which are especially rich in phenolic substance content, have lead up for the use of olive leaf in different areas. Consumption of olive leaf as tea is one of these areas. The effect of tea produced in this way on human health depends on the composition and amount of the water soluble substances. These substances in leaf vary depending on the tree type, growing conditions, pretreatments applied to the leaves, packaging material and the preparation method of the tea. Olive leaf tea is mainly prepared by decoction (boiling) or infusion technique and there are scientific studies which indicate that there are many positive effects of olive leaf tea such as antioxidative, antiinflamatuvar, antithrombotic, antidiabetic, antihypertensive, antiseptic, anticancerogenic thanks to the diversity and quantity of phenolic components, especially oleuropein. In this study, information about the chemical composition of olive leaf tea, preparation methods and effects on human health are presented.

KEYWORDS

Infusion, decoction, oleuropein, olive leaf tea, phenolic components.

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Poster Session 2

Submission ID: 269

INVENTORY WORKING OF BURSA REGION OVER EDIBLE AND POISONOUS FUNGİ

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ABSTRACT

Fungi are incapable of photosynthesis using light and CO₂. Similar to animals, fungi are heterotrophs, which use nutrition available in their environment. Cell structure: mycelium, which consists of filament-like cells (hyphae), generates underground and aboveground tissues. Life forms: Parasitic, saprophytic or symbiotic (mycorrhiza), (n) chromosome: having haploid nuclei, contrary to many other organisms, reproduction: occurs by sexual or asexual spores, eukaryotic: their cells contain a membrane-bound nucleus and other membrane-bound organelles. Currently, the estimated global number of species of fungi is 100.000, of which about 7000 species are edible to various degree and about 3000 species are edible. There are about 100 species of poisonous fungi and more or less 40% of them contain fatal toxins (Prof. Dr. H. Hüseyin DOĞAN). So far in the Bursa Region, 333 taxa of macro fungi have been discovered, 95% of them are edible to various degree and 18% of them have economical value. In the Bursa region 31 taxa are regarded poisonous. In Turkey, 300 fungal taxa are regarded edible.

KEYWORDS

Poisonous and edible fungi.

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Poster Session 2

Submission ID: 270

**STUDIES ABOUT TILIA TOMENTOSA I., LAURUS NOBILIS L.
AND CASTANEA SATIVA MILL. AT BURSA, IN THE VILLAGE OF
KARACABEY-KURŞUNLU**

ARİF CAN¹, TURGUT KESKİN¹

ABSTRACT

Marmara region is quite rich in terms of non wood-forest products. Karacabey-Kurşunlu village is included in this region and at this place is made effort to improve the life standard of forest villagers. In accordance with this purpose Castaneasativa Mill. Is planted in open field or grafted to raise production of Castaneasativa Mill. In 200 hectare coppice forest and this recovering areas were allocated forest villager providing their maintenance by themselves. Apart from, cutting unhealthy trees and grafting new shoots were gained significant achievements. Tiliatomentosa I. is significant aromatic plant and is located in Karacabey-Kurşunlu village as native deployed. Flower product is significant issue and forest villagers gain significant economical value from flower of Tiliatomentosa. Tilia forest occur as pure or mixed stands. If Tilia trees have high density, then canopy will be narrow. This situation cause adverse effects over flower production. We take action to raise flower production in related area. Also Laurusnobilis L. is of significant economical value in Karacabey-Kurşunlu village. It is seen as native distribution. Same Castaneasativa Mill. , also coppice space of Laurusnobilis is allocated to forest villagers to provide rehabilitation by themselves. At the end of rehabilitation work, Laurusnobilis is produced by forest villagers. Produced Laurusnobilis leaves are dried in the facility and sold in the same village. Dryer facility was founded backing loan of ORKÖY at same village. Forest villagers are worked at Laurusnobilis dryer facility and provided income to this people.

KEYWORDS

Tiliatomantosa I, Laurusnobilis L., Castaneasativa Mill.

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Poster Session 2

Submission ID: 273

USED IN FOLK MEDICINE AND BIOLOGICAL ACTIVITIES OF HELICHRYSUM TAXA IN OUR COUNTRY

HALİL ERHAN EROĐLU¹, HÜLYA DOĐAN², ERGİN HAMZAOĐLU³

ABSTRACT

Helichrysum taxa are used as medicinal tea in the world and our country for about 2000 years due to diuretic, kidney stones reducing, regulating heartbeats, healing wounds and burns, and bile regulating properties. In different regions of our country, both the intended use and local names of Helichrysum taxa are showed the differences. Helichrysum taxa are mostly used to destroy kidney stones and diuretic in our country and these effects of taxa are originated from flavonoids. It has been determined that H. sanguineum, H. stoechas, H. graveolens, H. plicatum ve H. arenarium taxa of the genus Helichrysum have cologne and coleretic activity (stimulating and regulating of bile secretion) and promote gastric fluid secretion. Helichrysum species are commonly used and generally consumed as tea in Turkey. In this study, local names in different regions, usage areas and biological effects of these species will be given.

KEYWORDS

Helichrysum, medicinal plant, bioactivity

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Poster Session 2

Submission ID: 274

INVESTIGATION OF IN VITRO ANTIFUNGAL EFFECTS OF ESSENTIAL OILS AGAINST MAJOR SOIL-BORNE FUNGAL DISEASE AGENTS OF STRAWBERRY

MERVE KARA¹, SONER SOYLU¹, EMINE MINE SOYLU¹

ABSTRACT

In this study, in vitro antifungal volatile phase effects of the essential oils, obtained from different plant species such as fennel (*Foeniculum vulgare* Mill.), laurel (*Laurus nobilis* L.) and myrtle (*Myrtus communis* L.) growing in the Eastern Mediterranean Region of Turkey, were investigated against mycelial growth of *Fusarium oxysporum*, *Macrophomina phaseolina* and *Rhizoctonia solani* as major soil-borne fungal pathogens of strawberry. The essential oils at different concentrations showed variable degree of antifungal activities against fungal pathogens. Although all essential oils have a marked antifungal effect against fungal isolates, among the essential oils used in the study, the strongest volatile fungicidal activity was caused by the essential oil of fennel followed by laurel and myrtle essential oils, respectively. Essential oil of fennel completely inhibited mycelial growth at relatively low concentration (5.0 μ l/plate concentration at volatile phase). Amongst the fungal disease agents, *R. solani* was found to be highly sensitive and *F. oxysporum* was highly resistant fungal species to essential oils tested. The essential oil of fennel was the most potent inhibitor with EC50 values 1.38, 1.92 and 2.68 μ l/plate against *M. phaseoli*, *R. solani* and *F. oxysporum*, respectively. Light and SEM observation on pathogen hyphae revealed considerable structural deformations such as cytoplasmic coagulation, vacuolations, hyphal lysis and protoplast leakage in fungal hyphae exposed to essential oils under light microscope. The results indicated that the essential oil of fennel, which exhibited significant antifungal activity, could be used as possible biofungicide alternative to synthetic fungicides against phytopathogenic soil-borne fungal disease agents.

KEYWORDS

Antifungal activity, essential oil, soil-borne fungal pathogens, fennel, laurel, myrtle.

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Poster Session 2

Submission ID: 275

EFFECT OF EXTRUSION ON THE ANTIOXIDANTS IN CAULIFLOWER-BASED SNACKS

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ABSTRACT

The incorporation of cauliflower trimmings into ready-to-eat expanded products and their effect on the textural and functional properties of extrudates have been studied. Dried and milled cauliflower at levels of 5-20% was added to the formulation mix. The results obtained from the analysis of the extrudates are discussed in terms of the effect of cauliflower co-products on nutritional and textural characteristics, and the effects of processing conditions. The samples were processed in a twin-screw extruder with a combination of parameters . It was found that addition of cauliflower significantly increased the dietary fibre. Extrusion cooking significantly increased the level of phenolic compounds and antioxidants but significantly decreased protein *in vitro* digestibility and fibre content in the extruded products. Sensory test panel indicated that cauliflower could be incorporated into ready-to-eat expanded products up to the level of 10%.

KEYWORDS

Cauliflower by-products, extrusion, antioxidant properties

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Poster Session 2

Submission ID: 276

CHEMICAL COMPOSITION AND ANTIBACTERIAL ACTIVITY OF ESSENTIAL OILS ISOLATED FROM MEDICINAL PLANTS AGAINST GALL FORMING PLANT PATHOGENIC BACTERIAL DISEASE AGENTS

İMAM ADEM BOZKURT¹, MERVE KARA¹, SONER SOYLU¹

ABSTRACT

The essential oils from thirteen taxonomically different medicinal plant species belonging to Lamiaceae, Lauraceae and Apiaceae families such as *Thymbra spicata* var. *spicata* L. (Tss), *Thymus serpyllum* L. (Tsrp), *Thymus sipyleus* Boiss. (Tspy), *Origanum syriacum* Ietswaart (Os), *Origanum majarana* L. (Om), *Ocimum basilicum* L. (Ob), *Mentha spicata* L. (Ms), *Melissa officinalis* L. (Mo), *Lavandula stoechas* L. var. *stoechas* (Lss), *Rosmarinus officinalis* L. (Ro), *Salvia officinalis* L. (So), *Laurus nobilis* L. (Ln) and *Foeniculum vulgare* Mill. (Fv), were isolated by hydrodistillation. The chemical compositions of the isolated essential oils were identified by gas chromatograph/mass spectrometer (GC/MS). Carvacrol for Tss and Oss, thymol for Tsrp, geranial for Tspy and Mo, 4-terpineol for Om, linalool for Ob, carvone for Ms, 1,8 cineole for Lss, Ln and Ro, camphor for So and trans-anethole for Fv were identified as the major constituents of the essential oils studied, respectively. The essential oils were tested for their antibacterial activity against the most important gall forming plant pathogenic bacterial disease agents, *Pseudomonas savastanoi* pv. *savastanoi* (Pss), *P. savastanoi* pv. *nerii* (Psn) and *Agrobacterium tumefaciens* (At). The essential oils showed variable degree of antibacterial activity against tested gall forming bacterial species. Based on inhibition zone diameter values, At and Psn were recorded as the most sensitive and resistant bacterial species against the majority of the tested essential oils, respectively. Generally plants belong to Lamiaceae family were found to be more efficient than those belong to Lauraceae and Apiaceae families. The essential oils of Tsrp, Tss and, Osb showed the highest antibacterial activities against all tested bacterial species. The findings of the present study suggest that the isolated oils have a potential to be used as antibacterial agents against gall forming bacterial disease agents.

KEYWORDS

Antibacterial, Essential oil, Gall forming bacteria, Pseudomonas, Agrobacterium

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Poster Session 2

Submission ID: 277

FOAM STABILITY OF LIQUORICE (GLYCYRRHIZA GLABRA) EXTRACT

SENOL İBANOĞLU¹, ESRA İBANOĞLU¹

ABSTRACT

Liquorice root, also known as sweet root, is known mostly for its use as a sweetener in candies and beverages. However, liquorice root has also been used for centuries for its medicinal benefits. Liquorice is available in many forms, either containing glycyrrhizin or as DGL, deglycyrrhizinated liquorice. Some of the reported positive effects of liquorice are soothing stomach, cleaning respiratory system, reducing stress and protecting skin and teeth. The foaming behaviour of liquorice extract was investigated using response-surface methodology with concentration (0.1-0.3 w/v %) and whipping time (5-25 s) being the independent variables. First-order kinetics was applied for the kinetic analyses of the foam collapse and foam decay rate constants were calculated. Regression equations for predicting overrun (O) and foam decay rate constant (k) were developed. Results suggest that concentration had a significant effect on overrun and foam stability. The overrun increased with concentration and whipping time. However, the effect of whipping time on O was less pronounced. Foam stability was enhanced with the increase in concentration. The foam decay rate was observed to be mainly dependent on the concentration of sample and decreased with the increase in concentration. The effect of whipping time on foam stability was observed to be insignificant compared with concentration. The magnitude of changes with whipping time was observed to be more pronounced for the overrun than for the stability of liquorice extract foam.

KEYWORDS

Liquorice, foaming behaviour

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Poster Session 2

Submission ID: 278

EFFECTS OF NaCl APPLICATIONS ON ROOT GROWTH AND SECONDARY METABOLITE PRODUCTION IN MADDER (*RUBIA TINCTORUM*) ROOT CULTURES

ÖZLEM ARAS AŞCI¹, TUNHAN DEMIRCI¹, NILGÜN GÖKTÜRK BAYDAR¹

ABSTRACT

Madder (*Rubia tinctorum* L.) is a perennial plant rich in anthraquinone (AQ) derivatives including alizarin and purpurin in its roots and rhizomes. AQs are important compounds not only in textile and food industries regarding dyeing properties but also in medicine and pharmaceutical industry because of its pharmacological and biological activities. AQs in the madder can be obtained economically from plants that are at least 3 years old, collected from the nature or cultivated. In this case, the number of plants may decrease and cause destruction. Consistently destruction of plants from in nature can also cause this plant to extinction in the future. Commercially, in the short time to maximum production of AQs can be achieved by applications elicitor both callus and roots obtained in vitro. Thus, from the callus and root obtained through tissue culture, existed two fold more AQs can be obtained compared to the normal plant. Phenolic compounds are another unique metabolite group for cosmeceuticals, foods and pharmaceutical industries. Because of their important properties it is necessary to get AQs and phenolics with high quality and quantity. In recent years, there has been an increased interest in in vitro techniques for secondary metabolite production because of their some advantages including no seasonal constraints and more rapid, efficient, reliable, simple and predictable production. In order to increase the metabolite synthesis in in vitro conditions elicitor applications could have been done effectively. Salinity is an important stress factor influencing growth and secondary metabolite metabolism in plants. This study was carried out to determine the effect of sodium chloride (NaCl) on root growth and secondary metabolite accumulation in madder. For this aim, madder roots obtained from stem explants in in vitro conditions were used as plant materials. Roots were cultured in MS medium containing different concentrations of NaCl (0, 1, 2, 3 and 4 g l⁻¹) for 7 days. Then roots were evaluated in terms of root growth index, total AQ, alizarin, purpurin and total phenolic contents. Based on the results, root growth decreased in line with the elevating level of NaCl while secondary metabolite accumulation significantly increased with NaCl applications compared to the controls. It was determined that NaCl at 3 g l⁻¹ concentration was the most effective application in terms of total AQ, alizarin, purpurin and phenolic accumulation.

KEYWORDS

Rubia tinctorum, root culture, in vitro, sodium chloride, secondary metabolite

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Poster Session 2

Submission ID: 280

EFFECT OF DIFFERENT NITROGEN AND PHOSPHORUS DOSES ON SOME ESSENTIAL OIL COMPONENTS OF MENTHA SPICATA L. AND MENTHA VILLOSO-NERVATA L. GENOTYPES

MERYEM YEŞİL¹, KEMALETTİN KARA²

ABSTRACT

Abstract This study was carried out in Erzurum in 2010 and 2011, in order to determine the effects of nitrogen and phosphorus doses on some essential oil components of *Mentha spicata* L. and *Mentha villosa-nervata* L. genotypes. An experiment using three nitrogen (0, 5 and 10 kg/da) and three phosphorous (0, 5, 10 kg/da) genotypes of two *Mentha spicata* (number 2 and 4) and one *Mentha villosa-nervata* (number 4) was carried out with three replications according to the "Randomized Full Blocks Experiment Plan". In the first year of the experiment, the highest α -pinene ratio was obtained at a dose of 5 kg nitrogen and phosphorus, whereas the highest rate in the second year was obtained from the parcels without fertilization. The highest β -plehellandrene ratio was determined in parcels with nitrogen applied at 5 kg / da in 2010, and in 2011 it was determined in parcels without nitrogen fertilization. The β -pinene ratio was found to be highest in nitrogen and phosphorus fertilization at 5 kg / da in the first year of the experiment and in the second year, at 0 kg / da nitrogen and 10 kg / da phosphorus doses. The fertilizer doses with the highest 3-octanol ratio were observed in the first year of the experiment in 5 kg nitrogen and phosphorus applied parcels and in the second year it was observed in the nitrogen-free parcels and 10 kg / da phosphorus applied parcels. The highest p-cymol ratio was obtained from parcels in which 10 kg of nitrogen was applied and no phosphorus was applied in the first year and parcels in which nitrogen was not applied and phosphorus was applied in 10 kg / da in the second year. In terms of α -pinene ratio, the genotype number 4 came to the forefront in the first year, whereas the highest rate was detected in the genotype number 6 in the second year. In terms of β -hellandrene, the highest ratio was detected in the genotype number 6 in both years of the experiment. The highest β -pinene, 3-octanol ratios were found in the genotype number 4 in the first year and in the genotype 2 in the second year, while in terms of p-cymol ratio, genotype number 6 came to the forefront in the first year and genotypes number 2 and 6 came to the forefront in the second year 4

KEYWORDS

Mentha spicata, *Mentha villosa-nervata*, essential oil

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Poster Session 2

Submission ID: 282

THE EFFECT OF DIFFERENT STORAGE CONDITIONS ON THE WEIGHT AND HEALTH OF TUNCELI GARLIC (*ALLIUM TUNCELIANUM* (KOLMAN) ÖZHATAY, B. MATHEW&ŞİRANECİ)

HÜSEYİN KARATAY¹, ZIYA POLAT², BASRI MUTLU³, NECATİ ÇOK⁴

ABSTRACT

In the World, about 25 million tons of garlic is produced, more than 100 thousand tons are produced in Turkey as dry and fresh. Besides, with the cultivation of Tunceli garlic (*Allium tuncelianum* (Kolman) Özhatay, B. Mathew&Şiraneci), known as the natural species of the Tunceli region, the establishment of storage conditions in which the quality and quantity of the product can be preserved has recently become important. The storage conditions of this product can be further improved by new studies to be carried out using different methods of moisture, temperature, physical conditions and methods which are not harmful to human health. In this study, the effects of storage conditions which created in different pots and occasions on product life and weight loss in Tunceli garlic during a 16-month observation period at room temperature and +4°C cooler were investigated. In the study, garlic weight averages were compared in a total of 13 different storage conditions including polyethylene bag, cloth bag, basket and soil, as well as a plastic bag with airless. When the residual weights of garlic were calculated as a percentage of the initial weight, the remaining weight in the treatments ranged from 21.68% (lowest weight in a glass beaker with room temperature) to 91.82% (the highest weight in a airborne polyethylene bags at the +4°C) of the initial weights. Besides, at the best storage condition, It was observed that all of the garlics were alive and stable for one year. But, after 12 months, 10% of the root tips were very small (about 0,5-1 mm) begun to appear and these developed to 1-3 mm after 16 months. At the end of the experiment, the garlics, stored at +4°C in different conditions, kept their average weights by 45% compared to room temperature conditions. After the measurement made at the end of the 16th month, planting was carried out for viability tests. In the first observations made in the spring, garlics generally has a loss of moisture between 14.4 % and 70.4 % germination rate was carried out between 4% and 40 % rate. The maximum germination rate was 40 % at the +4°C in the Cardboard box process with 32.8 % moisture loss. At the end of the storage period, the rate of germination in garlic is very low in condition of high (above 60%) and low (0-8 %) moisture losses. The highest germination occurred between 15-33% of moisture loss. After a certain level of moisture (15-20%) of garlic has been reduced, storing at the lower temperatures than room temperature or similar external environments has a positive effect on the long-term preservation and vitality of the garlic.

KEYWORDS

Tunceli garlic (Allium tuncelianum), Storage conditions, Weight loss, Moisture

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Poster Session 2

Submission ID: 288

NUTRITION FACTOR IN KIDNEY STONE FORMATION: CRANBERRY FRUIT

MEHMET ARİF İÇER¹, MAKBULE GEZMEN-KARADAĞ¹

ABSTRACT

Cranberrybush fruit (*Viburnum opulus*) which is used as a therapeutic tool by people since the beginning of recorded history, nowadays is widely used due to many positive effects on health (1). The genus *Viburnum*, belongs to the family *Caprifoliaceae*, is comprises of more than 230 species (1). The fruits of *Viburnum opulus* have been used to treat several diseases such as heart disease, coughs and colds, high blood pressure, digestive troubles, duodenal ulcers and kidney stones (1,2). There are four common species in Turkey, *Viburnum opulus* L., *V. orientale* Pallas, *V. lantana* L., and *V. tinus* L., which are common in South America and southeast Asia (2). This plant contains triterpenoids, diterpenoids, coumarins, anthocyanins, phenolic acids and organic acids (2). According to the data obtained from the studies done, there is a relationship between urinary citrate withdrawal and cranberrybush fruit juice consumption (2,3). Studies have shown that citrate and antioxidants significantly reduce the risk of stone recurrence (3,4,5). It is thought that *Viburnum opulus* can reduce the risk of stone formation by its antioxidant properties and citrate contents in the direction of these studies (3,5). In a study comparing the content of lemon juice and cranberrybush fruit which is thought to reduce the risk of stone formation due to citrate and potassium content, the potassium content of cranberrybush was found to be significantly higher than the lemon juice ($p=0.006$), but there was no significant difference between citrate contents (5). It was reported that İlhan and his colleagues evaluated the differences in the urine of rats after the administration of 50 g powdered cranberrybush fruit extracts to rats within 8 hours: reduction of urinary oxalate, uric acid and creatinine levels in the cranberrybush fruit watery group (2). As a result, the consumption of *Viburnum opulus* can be considered as a complementary treatment tool for prevention of kidney stone formation and repetition, provided that it is under physician control. However, it should not be forgotten that the right dose and the optimum duration of use are of utmost importance. REFERENCES 1. Saltan, G., Süntar, I., Özbilgin, S., İlhan, M., Demirel, M. A., Oz, B. E., ... & Akkol, E. K. (2016). *Viburnum opulus* L.: A remedy for the treatment of endometriosis demonstrated by rat model of surgically-induced endometriosis. *Journal of Ethnopharmacology*, 193, 450-455. 2. İlhan, M., Ergene, B., Süntar, I., Özbilgin, S., Saltan Çitođlu, G., Demirel, M. A., ... & Küpeli Akkol, E. (2014). Preclinical evaluation of antiurolithiatic activity of *Viburnum opulus* L. on sodium oxalate-induced urolithiasis rat model. *Evidence-Based Complementary and Alternative Medicine*, 2014. 3. Rop, O., Reznicek, V., Valsikova, M., Jurikova, T., Mlcek, J., & Kramarova, D. (2010). Antioxidant properties of European cranberrybush fruit (*Viburnum opulus* var. *edule*). *Molecules*, 15(6), 4467-4477. 4. Karaçelik, A. A., Küçük, M., İskefiyeli, Z., Aydemir, S., De Smet, S., Miserez, B., & Sandra, P. (2015). Antioxidant components of *Viburnum opulus* L. determined by on-line HPLC–UV–ABTS radical scavenging and LC–UV–ESI–MS methods. *Food chemistry*, 175, 106-114. 5. Tuglu, D., Yılmaz, E., Yuvanc, E., Erguder, I., Kisa, U., Bal, F., & Batislam, E. (2014). *Viburnum opulus*: Could it be a new alternative,

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such as lemon juice, to pharmacological therapy in hypocitraturic stone patients?. Archivio Italiano di Urologia e Andrologia, 86(4), 297-299.

KEYWORDS

Cranberrybush fruit, citrate, nephrolithiasis, Viburnum opulus

Poster Session 2

Submission ID: 289

CAN BITTER MELON BE USED IN THE TREATMENT OF DIABETES MELLITUS?

MEHMET ARİF İÇER¹, MAKBULE GEZMEN-KARADAĐI¹, HİLAL YILDIRAN¹

ABSTRACT

Since the beginning of written history, medical aromatic plants used by humans as a treatment tool have been used frequently due to many positive effects on health. The use of momordica charantia, known as "Kudret Nararı" in our country, is very common in our country and in the World (1). According to recent studies, consumption of Momordica charantia is found to be directly associated with regulation of blood sugar (2,3). Momordica charantia, also known as bitter melon, is the bitter taste that is caused by the alkaloid substance called 'momordicine' in this name (4). It is thought that bitter melon has many effects on health with the active compounds (charantin, momordicin, cucurbitacin B etc.) contained in it. In addition, bitter melon has phenolic acids such as gallic acid, catechin, and epicatechin which is the antioxidant that provides positive effects on many diseases (5). It is also stated that bitter melon exhibits an insulin-like effect when injected subcutaneously, due to a polypeptide-structured compound known as "p-insulin", "plant insulin" or "polypeptide-P" (2). It has been reported that serum glucose levels are reduced and insulin resistance is reduced as a result of giving bitter melon juice to diabetic rats at 10mL/kg/day for 14 days ($p<0.05$) (6). A study in which the effect of 10mL/kg bitter melon application on rats for nine weeks was evaluated on pancreatic islets, indicates that the level of insulin in the cells is increased significantly ($p<0.004$) (3). In a study conducted by Kasbia et al. on post-OGTT human subjects, it was reported that 50mg / dL and 100mg / dL bitter melon juice reinforcement caused an increase in plasma glucose and insulin levels (7). As a result, bitter melon can be considered as a complementary treatment tool in the treatment of DM with antioxidant properties and p-insulin which is carried. However, in order to reach definite jurisdictions, it is firstly necessary to increase the number of human studies, to reveal the mechanisms fully and to determine effective doses. REFERENCES 1. Paul A. Medicinal Uses and Molecular Identification of Two Momordica charantia Varieties – a review. Electronic Journal of Biology, 2010. 2. Rahman I., Serum sialic acid changes in NIDDM patients following Momordica Charantia and rosiglitazone treatment/Phytomedicine .2009. 3. Ahmed I, Effects of Momordica Charantia fruit juice on islet morphology in the pancreas of the STZ-diabetic rat./Diabet Research and Clinical Practic .1998. 4. Arslanođlu F. İklim Koşullarında Kudret Nararının Yetiştirilmesi. Biyoloji Bilimleri Araştırma Dergisi, (2012). 5. Horaxs R . Total Phenolic Contents and Phenolic Acid Constituents in 4 Varieties of Bitter Melons (Momordica charantia) 2005. 6. Mahmoud, M. F., El Ashry, F. E. Z. Z., El Maraghy, N. N., & Fahmy, A. (2017). Studies on the antidiabetic activities of Momordica charantia fruit juice in streptozotocin-induced diabetic rats. Pharmaceutical Biology, 55(1), 758-765. 7. G.S Kasbia, No effect of acute, single dose oral administration of M.C on glycemia, energy expenditure and appetite :a pilot study in non-diabetic overweight men Journal of Ethnopharmacolgy (2009)

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KEYWORDS

Bitter Melon, Momordica Charantia, Diabet, Phytotherapy

Poster Session 2

Submission ID: 290

ANTIOXIDANT ACTIVITY, PHENOLIC CONTENT, FATTY ACID COMPOSITION AND OXIDATIVE STABILITY OF BERRY SEED OILS

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ABSTRACT

Specialty oils like berry seed oils are major by-products of the berry processing industry which make them interesting from an economical point of view. Recently, they are gaining attention by consumer owing to their high content of polyunsaturated fatty acids (PUFA), especially essential fatty acids (with a favorable low n-6/n-3 ratio), and antioxidants. The amount of oil in the seeds ranges from 11% to 23% among varieties. In the present study, cold pressed blackberry and raspberry seed oils were evaluated for their antioxidant properties, total phenolic content (TPC), fatty acid composition and oxidative stability. Fatty acid profile of oil samples were analyzed by gas chromatography (GC). The results showed that raspberry seed oil (RSO) contains 31.37% α -linolenic acid and 51.6% linoleic acid whereas blackberry seed oil (BSO) contains 62.3% α -linolenic acid and 16.3% linoleic acid, which are essential fatty acids for human. Depending on its essential fatty acids amounts, the ratio n-6 to n-3 fatty acids was calculated as 1.64 and 3.82 for RSO and BSO, respectively. Total phenolic content was determined using the Folin-Ciocalteu method. The calibration curve was prepared using gallic acid at different concentrations. The antioxidant activity was assessed by diphenyl-1-picrylhydrazyl (DPPH). Both oils directly reacted with and quenched DPPH radicals. The TPC and DPPH were found to be highly correlated. Differential scanning calorimetry (DSC) and Rancimat were applied to evaluate oxidative stability of these seed oils at five different isothermal temperatures (100, 110, 120, 130 and 140°C). Oxidation Induction Time, OIT (min.) was calculated from exothermic DSC curves by extrapolated baseline and the tangent line of the peak. OIT of oil samples which were measured by Rancimat apparatus correlated with DSC results. It can be seen from results that the increasing the isothermal temperature by 10°C results in a decrease in OIT values significantly ($p < 0.05$). Based on results obtained, it can be stated that both oils may serve as good source of essential fatty acids and antioxidant properties with potential beneficial effects toward human health. On the other hand, low oxidative stability of both oil samples shows that care must be taken during packaging and storage of the oils.

KEYWORDS

antioxidant, berry seed oil

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Poster Session 2

Submission ID: 293

INVESTIGATION ON THE EFFECT OF AROMATHERAPY APPLICATION ON PAIN MANAGEMENT

SEHER GÖNEN ŞENTÜRK¹, FIGEN EROL URSAVAŞ²

ABSTRACT

Introduction: Aromatherapy application which is the one of a complementary treatment is increasing to use for the treatment on health field, and coming into prominence day by day. In our country, it is just started to study about to use of essential oils on pain management that is one of the independent role of nurses, and there is no much more study about this subject. That's why the purpose of this review is to investigate the effect of aromatherapy application on pain management and to present of summary of studies that were done. **Method:** It scanned databases of national thesis center, CINALH, Pubmed, EBSCOHOST, Scienedirect, Wiley Online Library, Google Scholar, from December 2016 to February 2017. It online scanned the words that Turkey, nurse, aromatherapy, essential oil, pain, pain management. **Results:** It was reached total 7 experimental researches about aromatherapy application on pain management; three of these are semi experimental and four of these are randomize controlled, in Turkey. It was determined that lavender oil was the most commonly used oil in essential oils. The other essential oils was used are; rose, sesame, rosemary, almond, mandarin, juniper tree and ylang ylang oils. According to studies in our country, it was reported that aromatherapy application is an effective method for dysmenorrhea, hemodialysis induced headache, pain associated with lymphedema, renal colic, rheumatoid arthritis, postoperative pain due to peripheral venous cannulation. The effect of massage and lavender oil on pain was examined in a study of nursing and midwifery undergraduate students who complained of dysmenorrhea and it was determined that massage is more effective than lavender oil, and lavender oil is more effective than control group. In another study with 100 patients who had primary dysmenorrhea; one group of them used an analgesic (diclofenac sodium) and the other group used an analgesic with rose oil. Pain was significantly reduced in both groups. At the end of the study, it was reported that rose oil could be used as a complementary treatment on pain management. According to a study in a group of patients who had hemodialysis induced headache; for 3 weeks, an oil consisting of a mixture of sesame lavender and rosemary was applied to the face area of the patients and It was reported that the pain was reduced significantly and complications did not develop. In the other study for prevention of complications due to lymphedema (pain, limitation of movement) and lymphedema after breast cancer operations; it was used almond and mandarin oil and it was reported that the intervention group's complaints of pain and limitation of movement was diminished on the 2nd and 4th month after surgery, when compared to control group. Another study with 100 patients with a diagnosis of renal colic, first group used analgesic (diclofenac sodium), second group used analgesic with lavender oil. In the second group, it was reported that pain management was more effective and longer. In a study of patients with a diagnosis of rheumatoid arthritis; reflexology and aromatherapy method (juniper tree, lavender, ylang ylang, rosemary) compared in pain management, both methods were found to be very effective on pain. In a randomized controlled study examining the effect of lavender oil on

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reducing pain and anxiety during peripheric venous cannulation after surgery and improving patient satisfaction; it was reported that pain and anxiety were reduced in the intervention group compared with control group and patient satisfaction was improved. Conclusions and Recommendations: Studies have shown that aromatherapy application is an effective method on pain management, but studies in our country are very limited. The application of aromatherapy should be tested with experimental studies in different patient groups and different pain types. Aromatherapy application, which is low cost, low side effect and easy to apply compared with medical treatment, is suggested to place in nursing interventions and disseminate to use with the current treatment as an additional application.

KEYWORDS

Turkey, pain management, aromatherapy application, essential oil

Poster Session 2

Submission ID: 294

PHYTOCHEMICALS, EPIGENOME AND CANCER: EFFECTS ON DNA METHYLATION AND HISTONE ACETYLATION

CANSU ÖZBAYER¹

ABSTRACT

Cancer is a fatal disease caused by the uncontrolled proliferation of tissue cells. In addition to environmental factors, genetic and epigenetic changes are known to cause cancer development. Genes that control important physiological pathways such as cell proliferation, DNA replication, and DNA repair, which play an important role in cancer physiology, are also under the control of epigenetic regulation defined as "gene expression changes that can be inherited as meiotic and / or mitotically without DNA sequence alteration". Epigenetic mechanisms can be classified as DNA methylation, histone modifications and non-coding RNAs. DNA methylation is one of the most important epigenetic alterations and occurs by methylation of cytosines after guanine in CpG dinucleotides and is catalyzed by DNA methyltransferase (DNMT) enzymes. DNA hypomethylation inhibits carcinogenesis through the activation of genes such as tumor suppressors that have been inactivated by methylation. Histone acetylation and methylation are post-translational modifications of histone proteins related to carcinogenesis. Histone acetylation is catalyzed by the histone acetyltransferases (HATs) whereas histone deacetylation is catalyzed by the histone deacetylase (HDACs) enzyme family. HAT activation and HDAC inhibition increase histone acetylation and increase acetylation activities of proteins such as transcription factors and tumor suppressor proteins, and exhibit anti-carcinogenic activity. Phytochemicals are biologically active chemical compounds naturally found in plants. Research on the effects of nutrition and phytochemicals on epigenetic mechanisms (nutri-epigenetic) has gained increasing interest in recent years. It has been determined that some phytochemicals such as epigallocatechin-3-gallate (green-black tea), curcumin (turmeric), sulforaphane (broccoli, brussel sprouts, cabbage), genistein (soybeans), indole-3-carbinol (broccoli, cabbage, cauliflower, mustard and radish), resveratrol (grapes, peanuts and some berries), lycopene (tomato and tomato products) and quercetin (citrus and buckwheat) are responsible for the inhibition of DNMTs involved in DNA methylation. The inhibition of DNMTs also influences the prevention of cancer by causing DNA hypomethylation and subsequent re-expression of tumor suppressor genes. Another epigenetic mechanism by which these phytochemicals act is histone modifications. Histone deacetylation caused by HDACs reduces tumor suppressor function and increases survival of cancer cells. Studies have shown that epigallocatechin-3-gallate, curcumin, sulforaphane, genistein, indole-3-carbinol, resveratrol, lycopene and quercetin have anti-carcinogenic effects by modifying these epigenetic changes in cancer cells via HDAC inhibition. In a conclusion, diet-induced phytochemicals may contribute to the prevention of carcinogenesis by acting on epigenetic mechanisms. However, there is a need for a large number of evidence-based clinical trials for phytochemicals to be accepted as anti-carcinogenic agents in medicine.

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KEYWORDS

Phytochemicals, epigenetics, DNA methylation, histone acetylation.

Poster Session 2

Submission ID: 295

CANNABIS, CANNABINOIDS AND CANNABIDIOL: MOLECULAR MECHANISMS IN NEURODEGENERATIVE DISEASES

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ABSTRACT

In our age, neurodegenerative diseases are increasing day by day and affect the quality of life of those suffering from the disease to a great extent. For this reason, the development of new treatment methods for the disease is gaining importance. Recently, complementary and alternative treatments have gained popularity as well as medical treatments. One of the most preferred of these treatment methods is herbal therapies. Cannabis is one of the plants used for this purpose. Cannabinoids have a long and colorful history, and the public acceptance of this material, which was originally thought to be prohibited even by the efforts of the scientific world, is increasing, even it called as 'medical marijuana' in some literatures. Studies on the use of cannabis for the treatment of neurodegenerative diseases are available. Cannabinoids have been reported to have neuroprotective effects in some neurological diseases including Alzheimer's, Parkinson's, Huntington's, multiple sclerosis and epilepsy. Synthetic cannabinoid receptor agonists / antagonists or compounds may provide control or relief of symptoms in neurological diseases. Cannabinoids can interact with neurotransmitters, neurotrophic factors, and neuropeptides through a number of mechanisms. The endogenous cannabinoid signaling system consists of endocannabinoid molecules (endogenous ligands) which bind and activate cannabinoid receptor type 1 and type 2 (CB1 and CB2) in the brain, 2-arachidonoyl (arachidonol) glycerol and anandamide. CB1 receptor is one of the G protein-bound receptors in the brain and is responsible for a variety of environmental and central processes. The endocannabinoid system also has an important role in physiological functions. Studies show that the endocannabinoid signaling system plays an important role in the pathology of many central nervous system diseases including MS, PD, AD, HD and epilepsy. It has been suggested that cannabinoids may be useful in the treatment of conditions such as spasticity, pain, chills and bladder dysfunction in MS. The neuroprotective mechanisms of the endocannabinoid system and potential therapeutic applications of cannabinoids in the ischemic and neurodegenerative disorders of the nervous system are increasing. Cannabis also has another compound called cannabidiol (CBD), and CBD is a compound thought to have therapeutic potential for schizophrenia, as well as treatment of psychosis, and it possibly better tolerated than current anti-psychotic treatments. Also, It is considered that CBD may have anti-inflammatory and neuroprotective properties. Cannabinoid agonists and endocannabinoid enhancers have been shown to enhance serotonin release in the hippocampus and neurogenic neuronal activity, to support neurogenesis at the same time. Studies have indicated that 30-40% of patients with bipolar disorder do not benefit from traditional medical therapy, and that cannabinoids may be beneficial to rehabilitation symptoms or reduce side effects of lithium in these patients. Despite all these therapeutic effects, an important issue that should not be forgotten when discussing the medical use of cannabinoids is appropriate dosage using. Excessive and unconscious use of this substance, which is also used for drug purposes, can lose its therapeutic character and affect the course of the disease in

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the worst way. It is thought that cannabinoids and active ingredients, which are known to be used for a long time and are now widely used, are potential therapeutic values in neurodegenerative diseases as well as in other medical fields. However, there is a need for scientific studies to elucidate the mechanisms of action for introducing these substances into the therapeutic field, and to reveal the potential therapeutic value and side effects.

KEYWORDS

Neurodegenerative Diseases, Hemp (Canabis), Neuroprotective effect.

Poster Session 2

Submission ID: 296

COMPLEMENTARY AND ALTERNATIVE THERAPIES IN CANCER: BITTER MELON AND ANTI-TUMORAL ACTIVITY

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ABSTRACT

Every year around the world, 14 million people are diagnosed with cancer and 8 million of them result in death. Cancer treatment can involve 4 different processes. These are surgery therapy, radiotherapy, chemotherapy, immunotherapy. All these methods are improving day by day, but cancer is still the second most common cause of death after cardiovascular disease. Complementary and alternative medicine (CAM) methods, which have become increasingly accepted around the world differently from traditional medical treatment, have become widespread in cancer patients as well. Many patients use CAM to improve survival and quality after diagnosis, to cope with symptoms and side effects of cancer treatments. It is also known that these treatments are also used because of the lack of side effects and strengthening of the immune system and are especially preferred by women, young people, more educated and socioeconomically advanced individuals. For this purpose, patients apply various herbal mixtures, vitamins, aromatherapy, yoga, meditation, religious practices. Herbal therapies are the most commonly used CAM method. Medical plants, especially nettle herbs, are the most commonly used herbal therapies for cancer patients. Besides, bitter melon, Aloe vera, donut grass, camel stud, ginseng species, Ginko biloba, birch tree, flaxseed, mistletoe, garlic, soybean, green tea, oleander, ginger are most commonly used plants in the treatment of cancer and many other diseases. Momordica charantia, commonly known as bitter melon, is one of these plants known for its biological activities used in the traditional drug system. It has been reported that the plant has anti-oxidant, anti-inflammatory, anti-cancer, anti-diabetic, anti-bacterial, anti-obesity and immunomodulator activities. Plant extract inhibits growth of cancer cells by inhibiting apoptosis, cell cycle arrest, autophagy and cancer stem cells. Crude bitter melon extract (BME) has been reported to have anti-tumor activity. It has been observed that this function realizes by inhibition of cell growth and apoptosis induction. In breast cancer cells, it has been shown that BME treatment inhibits the cell cycle by blocking G2 / M. Thus, it stops cancer cell division and prevents tumor growth. In addition, crude BME therapy has been shown to induce apoptosis in prostate and breast cancer cells. Apoptosis is cell death which realized with the activation of caspases. It has also been shown that BME administration leads to caspase activation in breast cancer cells. Prevention studies of Cancer, one of the biggest problems of our age, continue to evolve with the rapid integration of molecular approaches into research and clinical practice. The use of medicines to manage or stop the carcinogenic process may provide additional therapy with conventional medicine for the treatment of the disease. Studies on bitter melon suggest a promising anti-tumor effect. This natural product may serve as a powerful agent to enhance the therapeutic effects of chemotherapy, radiotherapy or other therapeutics for the treatment of human cancers.

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KEYWORDS

Bitter melon, Cancer, Anti-tumor effect.

Poster Session 2

Submission ID: 297

MICROENCAPSULATION OF SEED OIL BY HETEROPROTEIN COMPLEX COACERVATION

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ABSTRACT

Food industry has focused producing and developing novel food products containing health promoting bioactive compounds. Bioactive products (e.g. vitamins, minerals, antioxidants and fatty acids etc.) are usually highly susceptible to environmental, processing or gastrointestinal conditions. Hence, microencapsulation is a very useful tool to delivery of these compounds into foods and protects them from adverse conditions. Microencapsulation is the process of entrapping any active ingredient (core materials) within another substance (wall materials). In this study, red raspberry seed oil with high content of PUFAs and essential fatty acids (EFAs) was encapsulated using lactoferrin (LF) and pea protein isolate (PPI) by complex coacervation. Complex coacervation has gained much interest due to its unique high encapsulation efficiency when compared to other microencapsulation techniques. Optimum conditions for coacervate formation were achieved in our previous work which the heteroprotein complex coacervate forms with maxima at pH 5.4. Therefore, oil samples were mixed with wall materials at pH 5.4 (i.e. optimum pH for coacervation) and 7 to examine stability of emulsions. Initially, oil-in water emulsions stabilized by either LF or PPI at pH 7 to prepare single protein emulsions. Mixed emulsions were prepared at pH 5.4 and 7. The particle size, droplet size and creaming index of emulsions were measured and morphological properties were examined. According to droplet size results, PPI native coated emulsion has higher diameter than LF native coated emulsion which was lower than 1 μ m. For emulsion prepared by complex coacervation, the results were lower than 1 μ m at pH 7 while little higher than 1 μ m at pH 5.4. This might be due to protein aggregation in the pH range studied. Droplet charge of native LF and PPI coated emulsions were 52.3 and -40.7 (mV) at pH 7.0, respectively. For mixed emulsions, charge was negative at high pH value whereas it was positive at low pH value. Visual observation of the samples indicated that all samples were stable to gravitational separation after 1 day. Emulsion prepared with native PPI (1 wt%) and prepared with mixed protein at pH 5.4 were separated after 7 days whereas the emulsions prepared with native LF and prepared mixed protein at pH 7 were stable after 7 days. The emulsion prepared with LF and PPI solution added afterward sample was showed highest phase separation which was confirmed by Confocal fluorescent image. It can be concluded that complex coacervation between two globular proteins LF and PPI can be used to encapsulate seed oils successfully.

KEYWORDS

bioactive compound, complex coacervation, seed oil, lactoferrin, pea protein isolate

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Poster Session 2

Submission ID: 298

MEDICINAL AND AROMATIC PLANTS COMMON USED IN THE CUISINE OF GAZİANTEP

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ABSTRACT

Medicinal and aromatic plants are used for the treatment of various ailments for centuries. Since ancient times they have kept the place in areas such as medicine, food, perfumery and cosmetic industry. In recent years, with the prohibition of synthetic preservatives so researches has focused on the natural and additive-free products. In foods spices are mainly used in order to preservatives, to increase shelf life, to prevent oxidation, to reduce the burden of microbial, to give taste and aroma. Spices firstly used in Turkish cuisine after fifteenth centuries. Primarily used in palace for preparing sultan's majoon because of their prices, afterwards they used gradually in public cuisine. Today, spices are used not only for enrichment the flavor of the meal, but also used as antimicrobial, antioxidative, lowering blood pressure, diuretic, to force the transmitter, aphrodisiac, analgesic, sedative. While they are used in food, cosmetic, drug industries and maintaining diet programme because of their lower calorie content. Historical Silkroad reveals great value of Gaziantep city in Spice trade. Throughout the years, Gaziantep cuisine has a privileged place among the cuisines of the world and our country with its traditions and local flavors of meals. Gaziantep is the much-frequented place for the gastro-tourists with its cuisine. The diversity of material with much variety of spices has been used in Gaziantep cuisine for meals. When preparing meals the material is chosen exactly then spices and sauce are used abundantly in Gaziantep cuisine. So that 'hasbir' which is the necessary decor of yogurt meals, tarragon which is a kind of mint, sumac and lemon thyme which are decor of salad for their gastrokinetic effects are widely used in Gaziantep cuisine. In addition juices and herbal teas with local herbs are used abundantly in the cuisine of Gaziantep. In this review, the importance of medicinal and aromatic plants is mentioned and then some common used spices in cuisine of Gaziantep are reviewed.

KEYWORDS

Spice, Gaziantep cuisine, essential oil, medicinal and aromatic plants

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Poster Session 2

Submission ID: 299

OPTIMIZATION OF DRYING PROCESS PARAMETERS FOR FRUITS AND VEGETABLES

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ABSTRACT

OPTIMIZATION OF DRYING PROCESS PARAMETERS FOR FRUITS AND VEGETABLES Yeliz TEKGUL¹, Taner BAYSAL² 1Adnan Menderes University Kosk Vocational School, Department of Food Processing, 91100, Aydın, TURKEY 2Ege University, Faculty of Engineering, Department of Food Engineering, 35080, Izmir, TURKEY Fruit and vegetables are important sources of essential compounds for human consumption. Emissions from processed of waste and wastes are subject to microbial degradation and environmental pollution. Organic wastes can be recovered and can often be upgraded to higher value and useful products. Drying is one of the oldest methods in food preservation technique, used by human and commonly used for preservation of fruits and vegetables. Some important quality factors of the products such as colour, texture and chemical struture can be changed with drying. For this reason, for a production where the nutritional values, flavor and taste are at the highest level, the drying process has to be optimized in terms of controllability and product quality. In this review, studies about drying was investigated. Optimization of drying process parameters that are used for fruits and vegetables mostly were defined. It was determined that temperature, relative humidity, air velocity, initial characteristic of the material, drying time, vitamin contents of food, rehydration ration and enzymatic browning are the process variables that are focused on optimization.

KEYWORDS

drying, optimization, fruit, vegetable

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Poster Session 2

Submission ID: 301

ETHNOBOTANICAL OBSERVATIONS ON FLORA OF KSÜ AVŞAR CAMPUS (KAHRAMANMARAŞ) AND SURROUNDING AREAS

YUSUF ZIYA KOCABAŞ¹, ADEM EROL²

ABSTRACT

Kahramanmaraş is at the point of the intersection of Mediterranean and Irano-Turanian phytogeographical regions which are very important in terms of geographical location and plant geography. This area has a rich and various vegetation structure due to complex physical geographical structure and other environmental factors. It is crucial to protect by determinating this rich biodiversity. The research area is located in the Kahramanmaraş province and on the C6 square in grid system. The campus of KSU and its surrounding area is located in the Ceyhan Valley. The native flora of this area has been extensively destroyed by anthropogenic effects. This study was carried out between 2015 and 2017 and the plants used in medical and aromatic purposes of the native flora were investigated. As a result, it was determined that 56 plant taxa belonging to 34 families for used medically. In terms of species number, the largest families are as following; Labiatae (7), Asteraceae (5), Brassicaceae (4). These plant taxa were alphabetically indicated according to their family names, Latin and local names as well as with their used parts and usage purposes

KEYWORDS

Flora, Ethnobotany, Medicinal Plant, Kahramanmaraş

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Poster Session 2

Submission ID: 302

**RESEARCH ON ECONOMIC CONTRIBUTION OF FOREST VILLAGE
(CASTANEA SATIVA MILL.) BIOLOGICAL AND KASTAMONU
FOREST DIRECTORATE DIRECTORATE (KASTAMONU, SİNOP
PROVINCES)**

HÜSEYİN DİNÇER¹

ABSTRACT

1. Properties of Chestnut It is a family of chestnut tree wisteria whose scientific name is "Castanea" and which grows in all the temperate regions of the northern hemisphere. The homeland of the "Castanea sativa" (European chestnuts) belonging to the highest quality varieties of chestnuts in the world is Anatolia. The species of chestnut that grows in countries in the Mediterranean basin where our country is included is "Castanea sativa mill." Fruits are an important source of income, and their trees make valuable timber in furniture industry. Moreover, due to the rainy and sloping rains such as the Black Sea Region, and therefore the pile roots in erosion-friendly lands, chestnut stands contribute to the country's economy and prevent soil erosion. 2. Summary of the inventory and economic contribution studies: The results of the project made under the protocol signed between the General Directorate of Forestry and the Faculty of Forestry of Kastamonu University in 2016 have been brought down and suggestions have been put forward for benefiting from the results. Turkey has an important potential for biological diversity as a result of its geographical location. Chestnut (Castanea sativa Mill.), Especially in woody species, is one of the important tree species of our country which is used in the production of firewood as well as fruit and honey for the production of honey. The forests in Kestanenin (Castanea sativa) are located within the thermophile leafy forest group in the EUNIS habitat classification system. In this study, it was aimed to investigate the ecological, biologic and economic characteristics of Anatolian Chestnut (Castanea sativa Mill.) At Kastamonu Regional Directorate of Forestry (KOBM). The study was carried out in the areas of pure and other varieties spreading within the boundaries of the CMB and in the anatomical chestnut (Castanea sativa Mill.) Stands. When the edaphic results of the study are examined, it is observed that the amount of rainfall in the area is between the ideal annual precipitation amounts (600 mm - 1000 mm) specified for the most suitable growing environment of the chestnut trees, the light permeability characteristic ideal for chestnut soil (pH 5.04-5.86 and sandy clay Or sandy clay soil characteristics), dead cover amount, soil organic carbon and total nitrogen amounts were found to be above the average values in the literature. Also, in terms of soil macro and micro nutrients, the values were very high in the soil of chestnut forests (Organic Carbon Amount: 2.53% to 6.09% and total nitrogen co The amount of chestnut produced per tree in the study area was directly proportional to the tree diameter (average: 27 kg). But at the same time, it has been observed that diseased chestnut trees are weak in fruit production, even if they are thick. As a result of the calculations made, it was determined that the total potential chestnut amount within the boundaries of the CBD could be approximately 110 thousand tons. (28.5% were large, 54.4% were medium, and 17.1% were small). The economic value

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of total potential chestnut has an economic value of 413.009.777 TL. The amount of chestnut made in the field production is 4.282.071 kg, 2.832.952 kg of this amount is sold to earn an economy and 1.449.118 kg is evaluated as a hanelerce. The total economic value of the chestnut sold is 18.421.701 TL. The economical value of chestnut which is used in the potable subsistence economy and written as an input to the hills is 8.891.044 TL. As a result, 6.6% of the total potential economic value is reflected as an input to the economy. While 4,5% of the money is directly input to the market, 2.1% of the houses are evaluated in the subsistence economy of the houses and the dwellings are a plus input. A total of TL 1,880 is input, with the direct cost of TL 1,268 per household and the opportunity cost of the product not sold for TL 612. Seven chestnut honey forests were established in the area of Kastamonu Forestry Directorate between the years of 2011-2017 in 510.8 hectares of area, contributing to the production of chestnut bale of local people. 415 tons of chestnut bale are produced annually in the region and $415 * 120.000 = 49.800.000$ TL are added as economic inputs to the local people by 2017 year valuentent 0.226% to 0.301%). It is important to take protective measures to make effective use of chestnut forests. Chestnut cancer is one of the most important diseases in chestnut forests and is an important fungal disease that is common in chestnut areas in the world and in our country and mostly causes the drying of trees. Fungus, ascospores or conidia and infection on the trunk and branches of the wounds and cracks is realized. Due to the disease, it was determined that necrosis or scarring of the cambium and crust of the trunk and branches of the trunk and branches occurred in the research area and that the crust and sudden death of the cambium resulted in collapses. *Cryphonectria parasitica* is the name of the fungus that causes disease and causes dryness in *Castanea sativa* Mill. (Anatolian chestnut). According to the elevation steps, the active cancer tissues in the body are 800-1000 m. The cancer tissue that heals when it is in the altitude steps is 500-800 m. Was seen among the ascenders. In addition to *Cryphonectria parasitica*, which is a pathogen, *Phytophthora* spp., As a result of examination of the cancer tissues collected from the fields and brought to the laboratory and cultured. And *Fusarium solani* and saprophytic *Aspergillus niger* and *Penicillium* species were also identified. Our forestry directorate has achieved 80% success in the field of sanitation in order to combat cancer and ink disease in the field of chestnut in 747.5 ha between 2006-2017. In these areas, natural hypovirulents have formed and the forest has begun to cure itself. In addition, it was observed that local people complained about wild boar (*Sus scrofa*) especially in the wild animals during the chestnut fruit harvest due to the decrease of the number of chestnuts obtained and the yield. Images obtained from photocopies placed to detect this situation in the field have also been identified in the ending area, wild animals such as foxes (*Vulpes vulpes*), wild bears (*Canis aureus*) and wild cats (*Felis sylvestris*) besides wild boar (*Sus scrofa*).

KEYWORDS

Chestnut

Poster Session 2

Submission ID: 304

**DETERMINATION OF BIOLOGICAL ACTIVITY AND ACTIVE
SUBSTANCES OF ENDEMIC SPECIES OF DIANTHUS VANENSIS
(CARYOPHYLLACEAE).**

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ABSTRACT

The Caryophyllaceae Juss. is one of the major dicot family of angiosperms and is globally represented by 85 genera and 2.630 species (Mabberley, 2008). The family Caryophyllaceae is widely known for gardening herbs but medicinal importance of its members is sparsely known. Several species of the family Caryophyllaceae are widely used by many ethnic communities as traditional medicine throughout the world. The highest numbers of plants of the family are used in Chinese traditional medicine. The ethnopharmacological studies of this family indicate that plants of the family possess anticancer, antibacterial, antifungal, antiviral, antioxidant, and anti-inflammatory properties (Chandra and Rawat, 2015). The aim of the present study was to examine the biological activity and active substances of aerial part of *Dianthus vanensis* by different solvents and methods. First all the methanol extracts were used and then fractionated extracts (Acetone, Ethanol and water) were studied. The results were compared with each other. For this aim the total phenolic and flavonoid content, DPPH and FRAP activity were determined. Finally the active substances of methanol extract were examined. According to results; the DPPH inhibition percentage was calculated as 35,90 % at 0.1 mg/ml concentration. Total phenolic and flavonoids contents by methanol extracts were found as 20,46±2,01 mg/mg gallic acid and 36,74±5,38 rutin equivalent respectively. Also in fractionated method the total phenolic values were arranged 17,01±0,47 in acetone, 19,07±6,36 in ethanol and 11,89±0,56 in water extracts. For total phenolic contents in fractionated methods the results were calculated as 42,25±1,55 in acetone, 24,26±7,00 in ethanol and 52,55±3,21 in water extracts. FRAP activity of plant extract by methanol was estimated as 146,11±14,89 µmol Fe+2/g and in fractionated method the maximum value was found in acetone extraction with 134,19±0,01 umol Fe+2/g. Evaluation of volatile compound and fatty acid compositions on the plant extract the Octadecane, Hexatricontane, Octadecane, Cyclopentane and also Palmitic Acid, Linolelaidic Acid and γ-Linolenic Acid were detected. According to results the local endemic species of *Dianthus vanensis* can be used for medicinal studies.

KEYWORDS

Dianthus vanensis, , Endemic, Biological activity, Active substances

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Poster Session 2

Submission ID: 306

THE ANTIFUNGAL AND ANTIPHTHOTOXIC EFFECTS OF THE ESSENTIAL OILS OBTAINED FROM MEDICAL AND AROMATIC PLANTS

MEHMET UFUK KASIM¹, PINAR ŐANLIBABA², REZZAN KASIM¹

ABSTRACT

Mycotoxins; Are low molecular weight, natural toxins of a wide variety of chemical structures resulting from the secondary metabolism of fungal species such as *Aspergillus*, *Penicillium*, *Fusarium*, *Alternaria* and *Claviceps*. They create powerful and various toxic effects on human and animal health. Mycotoxin producing fungi can infect plants pre-harvest and postharvest when appropriate environmental conditions are established, and they can produce mycotoxin production. Commonly known mycotoxins are aflatoxins, trichothecenes, fumonisin, ochratoxins, patulin, zearalenone. Essential oils are natural ingredients that can be used to prevent fungal growth and phytotoxin development in food due to their antifungal and antifitotoxicological properties. Therefore, it will not be a harmful effect in terms of residue and human health. There is also the potential to be active ingredient for organic agriculture and integrated pest management. This study will be aimed to compile studies about the effects of essential oils obtained from medicinal and aromatic plants such as turmeric (*Curcuma longa*), thyme (*Thymus vulgaris*), cumin (*Cuminum cyminum*), cinnamon (*Cinnamomum zeylanicum*), mentha (*Mentha spicata*), clove (*Eugenia caryophyllata*), caraway (*Carum carvi*), rosemary (*Rosmarinus officinalis*), sage (*Salvia officinalis*), lemongrass (*Cymbopogon citratus*), eucalyptus (*Eucalyptus globulus*), oregano (*Origanum vulgare*), rue (*Ruta graveolens*), winter savory (*Satureja montana*) to prevent antifungal, antibacterial and phytotoxins.

KEYWORDS

Essential oils, antifungal, phytotoxins, medicinal and aromatic plants

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Poster Session 2

Submission ID: 308

THE EFFECT OF DIFFERENT HARVEST TIMES ON LAVENDER (LAVANDULA ANGUSTIFOLIA L.) VOLATILE OIL CONTENT AND QUALITY IN AFYONKARAHISAR CLIMATE CONDITIONS

AMİR SOLTANBEİĞİ¹, HARUN DIRAMAN¹, EMEL YILDIZ²

ABSTRACT

Lavender has been always known as a valuable plant and its volatile oil obtained from flowers has wide application in cosmetics, perfumery, medicine and food industries and especially is used in aromatherapy. This research was carried out to determine the optimum harvesting time (related with the highest volatile oil content and its quality) of lavender (*Lavandula angustifolia* L.) plants grown in Afyonkarahisar Medicinal and Aromatic Plants Center that located in the passage climate zone. To achieve this purpose, the flower samples were taken at the beginin of flowering, full flowering, after flowering and seed set stages and plants were dried in the shade. Volatile oils of the flowers that have been separated from the stems were extracted by hydrodistillation method. The highest and lowest volatile oil contents were obtained in full flowering (7.3%) and the begining of flowering (3.3%) stages, respectively. To determine the quality of the obtained volatile oils, samples were analyzed by GC-MS and the components were separated. According to the results of analyses, linalool in particular, borneol, 4-terpineol, camphor and 1.8-cineole were formed as the major components. Accordingly, linalool ratios were found in full flowering (48.195%) and seed set (22.340%) stages, respectively. On the other, the highest and lowest camphor contents, which affects lavender volatile oil negatively, were identified at the beginning of flowering (26.835%) and after flowering (9.694%) stages, respectively. In the direction of our results, the optimum harvesting time in terms of volatile oil content and its quality should be at full flowering stage and mid-July.

KEYWORDS

GC-MS, Harvest time, Lavander, Volatile oil

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Poster Session 2

Submission ID: 309

CHANGES IN EXPRESSIONS OF ENZYMES INVOLVED IN METABOLISM OF SOME CHEMOTHERAPEUTIC DRUGS BY SALVIA FRUTICOSA MILL.

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ABSTRACT

Xenobiotic biotransformation is the principle mechanism for maintaining homeostasis during exposure of organisms to small foreign molecules. Xenobiotic biotransforming enzymes are generally divided into two groups, called as phase I and phase II. While liver is the richest source of enzymes catalyzing biotransformation reactions, these enzymes are widely distributed throughout the body including gastrointestinal tract, lung, kidney, heart and brain. Salvia sages have been used for more than 60 different ailments ranging from aches to epilepsy. There are around 900 species of Salvia in the worldwide, 95 of which are currently represented in Turkey. Salvia fruticosa Mill. spontaneously grows mainly in Western and Southern Anatolia. The leaves of the plant is regularly consumed as herbal tea and to treat some disorders in Anatolian folk medicine. Tamoxifen, a chemotherapeutic prodrug, is metabolized by CYP2D6, CYP2C9 and CYP3A4 enzymes into its active forms N-desmethyltamoxifen and N-desmethyl-4-hydroxytamoxifen. On the other hand, SULT1A1, UGT1A8, UGT1A10 and UGT2B7 are primary enzymes converting tamoxifen metabolites to a form to be excreted. In addition, cyclophosphamide & ifosfamide, chemotherapeutic prodrugs, are metabolized mainly by CYP2B6 and CYP3A4 into their active forms phosphamide mustard. ADH and ALDH enzymes converts aldophosphamide to alcohosphamide and carboxyphosphamide, which are less toxic compounds. In this study our major aim is to observe as in vitro how metabolism of some chemotherapeutic drugs is affected when treated with water extract of Salvia fruticosa on HT-29 colorectal adenocarcinoma cells. Panel assay, a preferred technique to establish differentially expressed genes, was used to elucidate the effects of the extract on gene expression profiles of phase I and phase II enzymes playing notable roles in the metabolisms of chemotherapeutic drugs; tamoxifen, cyclophosphamide and ifosfamide. Web based Kyoto Encyclopedia of Genes and Genomes (KEGG) software was used for analyzing the results of pathway panels. Our results showed that metabolism of chemotherapeutic drugs aforementioned was modified by Salvia extract. The only significant change in gene expression of CYP's involved in tamoxifen metabolism was CYP3A4 (13,5 fold), While a small amount of increase was observed in the expression of CYP2D6 (1,12 fold) and CYP2C9 (1,66 fold). Consequently, treatment of the cells with the extract moderately affects conversion of tamoxifen into active secondary metabolites. However, deactivation of tamoxifen metabolites through conjugation was also affected by the extract treatment. SULT1A1 and UGT2B7 expressions increased up to 4,5 fold and 60 fold in response to treatment. Increase in expression of phase II enzymes at such a high amount would lead to removing of the affects of secondary active metabolites of tamoxifen.

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Similar results were observed in the metabolism of Cyclophosphamide & ifosfamide. As a result, on the light of the observation data, consuming of *salvia fruticosa* together with chemotherapeutic drugs does not cause accumulation of toxic metabolites in the investigated cells due to the much higher expressions of phase II enzymes than phase I enzymes.

KEYWORDS

Salvia fruticosa Mill., phase-I and II enzymes, chemotherapeutic prodrugs

Poster Session 2

Submission ID: 311

ENDEMIC PLANTS CONTAINING ECONOMICAL VALUE IN THE AEGEAN REGION

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ABSTRACT

The rich flora of our country, occupies an important place as it is the economic aspect ecological aspect also amongst our national resources. Plants has an important place with medicinal and aromatic properties in different fields as food, medicines, cosmetics, decorative and in addition to their use for cultures. Especially nowadays in the health is observed spreading use in the form of phytotherapy, aromatherapy, life cures. It is growing the volume of the world market because of creasing usage areas with new researches. However, the evaluation of these plants are raw and/or semi-manufactured leads to fail to benefit from obtaining added value by their processing, therefore significant loss of foreign exchange. In recent years environmental degradation because of industrialization and urbanization, wrong land use decisions, increasing energy needs with the increasing load on the ecological system leads to damaged habitats and being threatened a lot of taxa with undiscovered yet. In this study, we identified endemic species which has economic value in the Aegean region and gave information their usage areas.

KEYWORDS

Economic value, endemism, Aegean Region

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Poster Session 2

Submission ID: 314

MASTIC SEEDLING GROWING IN İZMİR REGIONAL DIRECTORATE OF FORESTRY

ŞAHİN AYBAL¹, ZÜLAL TOTAN¹, YAVUZ SELİM SAĞLAM¹, MERVE NEZAHAT DURDAĞI¹

ABSTRACT

Mastic tree whose latin name is *Pistacia lentiscus* var. *chia* grows only in Mastic Island of Greece and Çeşme coasts in Türkiye. This tree has been growing since antic eras and protecting by legal regulations. Mastic gum that is obtained from mastic tree has known since Pharaoh Era, mentioned in holy books, used because of healing feature. Therefore it is important species. Female individuals also secrete mastic but it has unfavorable quality. Therefore male individuals of *Pistacia lentiscus* var. *chia* have been used for mastic producing. Mastic tree starts to secrete mastic on six years old. On years 12-15 it reaches productive time and these years per trees secretes 320 gr mastic gums. In 40-50 years it reaches optimum conditions. Mastic gums obtained by injuring bark of trunk and thick branches in June-July months. There are some regulation in Greece about planting Mastic tree, and Greece is a monopol its production and trade. Annual production is 250 metric tone in Mastic Islands. There is 3-5 kg production that is produced by amateur people in Çeşme and around in Türkiye Mastic tree growing studies have been ongoing since 2003 year, in İzmir Regional Directorate of Forestry. At the end of these studies, Mastic Action Plan has been prepared in Forestry General Directorate. The purpose of these studies is to obtain plants those suitable to produce mastic gums economically. In this case, grafting on *Pistacia atlantica* seedling, grafting on wild *Pistacia lentiscus* individuals, to obtain seedlings by overhead rooting and rooting with dipping by long stick are studies continuous. Different work schedules have been applied in different working days. All applications have been done separately in controlled greenhouse conditions and open air. As a result, the most suitable grafting method and time, the most suitable overhead rooting method and time and the most suitable dipping method and time will identified that has not been studied before. In this paper, the result of mastic seedling production studies which has continued since 2003 will be submit

KEYWORDS

Keywords: Mastic, Pistacia lentiscus var. *chia*, İzmir Regional Directorate of Forestry, NWFP

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Poster Session 2

Submission ID: 315

**THE PRODUCTION TECHNIQUE FROM SEED OF THE
STRAWBERRY TREE (ARBUTUS UNEDO), WILD CRAB APPLE
(MALUS SYLVETRIS) AND CHECKER TREE (SORBUS
TORMINALIS) FROM NATURAL PLANTS OF KOCAELI**

BİRGÜL AYAR UÇUM¹, OKAN KURŞUN², HACER DILAVER³

ABSTRACT

The demand for medicinal and aromatic plants in the world is increasing every day. Our country is different climate and ecological conditions in which it is located, has a rich plant species and diversity. It contains a large number of medicinal and aromatic plants in our rich flora. As in the world in our country, medicinal and aromatic plants are used and are produced for many different purposes. Some of these plants have been used since centuries among the population. The using areas of these plants are very wide. The using areas of medicinal plants; especially spices, as manufacturing medical and relaxing tea, pharmaceuticals, paint, insecticide, veterinary cure, resin, glue, essential oil, beverages, perfumes and cosmetic industry can be classified. Kocaeli city with about 147 thousand hectares of forest is among the greenest cities of our country. Kocaeli vegetation, generally indicates the characteristic of the Marmara region, also has a rich flora, including plant communities unique to the Black Sea and Mediterranean coasts due to significant differences between the coastal and mountainous areas. Among these are many plant species in the form of shrubs, trees collected especially by the people and consumed for healing purposes. Strawberry tree (*Arbutus unedo*), Wild crab apple (*Malus sylvestris*) and Checker tree (*Sorbus torminalis*) also are used as medicinal plants for centuries by the Turkish people. In this study, it is given information about collection by the İzmit Nursey and pre-sowing process, sowing technique of fruits of *Arbutus unedo*, *Malus sylvestris* and *Sorbus torminalis* which naturally occurring in the forest areas within borders of Central and Kandıra sub-district affiliated Sakarya Forest District Directorate, is collected and consumed in various forms as healing by the people living in there.

KEYWORDS

Strawberry tree, Wild crab apple, Checker tree, sowing technique

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Poster Session 2

Submission ID: 320

**DAMAGE AND ECONOMIC IMPACT OF THE MINT APHID,
EUCARAZIA ELEGANS (FERRARI) (HEMIPTERA: APHIDIDAE) ON
COMMON SAGE (SALVIA OFFICINALIS L.) IN IZMIR, TURKEY**

AGUSTIN ZARKANI¹, FERİT TURANLI¹, ÇIĞDEM SÖNMEZ², EMİNE BAYRAM², İŞİL ÖZDEMİR³

ABSTRACT

A survey and experimental simulations of the mint aphid, *Eucarzia elegans* (Hemiptera: Aphididae) were performed to predict incidence rates and its economic impact on *Salvia officinalis* L. The investigations were purposively conducted on conventionally grown sage plants in the experimental form of Field Crops Department, Faculty of Agriculture, Ege University and Aegean Agricultural Research Institute, Menemen, Izmir-Turkey between January to December 2016. Normal-double populations and economic injury level (EIL) experiments were set up at each of the randomized complete design in laboratory. In the normal population treatment was the sage plant was infested by 100-200 aphids, while double population was set up by infesting the plants with 300-400 aphids. The corresponding treatments 0 (no exposure), 2, 4, 6, 8, 10 and 12 weeks (complete exposure) were used for evaluating EIL. In this study, *E. elegans* attacked on old hibernated leaves with incidence rate of 9,5% in the early spring and then migrated to young leaves and blossom at the beginning of the summer with incidence rate of 1,1%. Although the aphid attack revealed no differences on quantity of essential oil, however the oil quality was greatly reduced compared to control. The total fresh and dry weight production in double infestation was about 1/3 and 1/2 for the control and normal aphid infestation, respectively. Aphids feed on sage plants beyond 8-10 weeks resulted in more than 50 % yield loss. The highest benefit-to-cost ratio was obtained at six-weeks of exposure when initiation of insecticide application was most economical. The correlation between aphids attack and dry weight production was described by a linear regression equation: $y = 1,488 - 0,010x$.

KEYWORDS

Salvia officinalis L., *Eucarzia elegans*, mint aphid, incidence rate, economic impact

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Poster Session 2

Submission ID: 321

VOLATILE COMPOUNDS OF PLANE TREE (PLATANUS ORIENTALIS) LEAVES WITH SOLID PHASE MICROEXTRACTION (SPME) TECHNIQUE

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ABSTRACT

Plane tree, known for its grandeur and longevity, belongs to Platanaceae family. Plane variety growing in Turkey is *Platanus orientalis*. Nowadays, there is a widespread belief that *Platanus orientalis* leaves (POLs) have beneficial effects on joint disorders. Therefore many people consume POLs as tea. The available data in literature on POLs reported that POLs have an anti-nociceptive effect on arthritis and knee pain. To our knowledge, there is no study on volatile compounds (VCs) of POLs. Therefore, we objected to determine the VCs in POLs obtained from *Platanus orientalis* trees grown in Hatay province, Turkey. The VCs were extracted using solid phase micro-extraction (SPME) and analyzed by gas chromatography-mass spectrometry (GC-MS). A total of 140 VCs were found in POLs. Aldehydes, alcohols, ketones, terpenes and alkenes were determined in POLs as major VCs groups, which accounted for 32.40 %, 23.51 %, 18.08 %, 10.24 % and 4.82 % of total VCs identified in leaves, respectively. Trans, trans-2,4-heptadienal (6.62 %), nonanal (6.46 %), benzaldehyde (6.42 %), cis-3-hexen-1-ol (6.32 %), benzenemethanol (6.13 %) were the first most abundant VCs identified in POLs. Trans-2-hexenal (3.46 %), 3-phenyl-2-butanone (2.87 %), trans-3,5-dimethyl-1,6-octadiene (2.80 %), 6-methyl-5-hepten-2-one (2.56 %), octan-1-ol (2.43 %), transgeranyl acetone (2.17 %), trans-4,8-dimethyl-1,3,7-nonatriene (1.98 %), phenyl methyl ketone (1.69 %), 6-methyl-3,5-heptadiene-2-one (1.57 %) were the second most plentiful compounds found in POLs. Additionally, 11H-dibenzo[b,e][1,4]diazepin-11-one, 5,10-dihydro-5-[3-(methylamino)propyl] (1.38 %), benzeneethanol (1.36 %) and β -ionone (1.02 %) were found as the third most abundant VCs. The relative proportions of these VCs were accounted for about 57 % of total VCs identified in POLs. The remaining VCs were below 1.00 %, that is, found at trace levels.

KEYWORDS

Platanus orientalis leaf, volatile compounds, SPME

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Poster Session 2

Submission ID: 325

CHEMICAL COMPOSITION OF THE ESSENTIAL OILS OF LAUREL LEAVES GROWN IN HATAY REGION

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ABSTRACT

Medicinal and aromatic plants have a broad market in the world especially in medicine and food industry as raw material. Due to geographical location and climatic characteristics, Hatay city have a wide range of medicinal and aromatic plants variety. There are around 300 registered endemic plants in Hatay province. *Laurus nobilis* L. is a Mediterranean plant which grows wild in coastal provenances of Turkey, and it is also widely used in industry. *Laurus nobilis* L. is a naturally grown plant with significant market potential in the Hatay region. Two major parts of *Laurus nobilis* L are used in industry: one of them is laurel leaf, other part is laurel berry. In spite of the fact that laurel leaf is mainly used in Food Industry, it is also widely used in perfumery and cosmetic. The essential oil content shows variations depending on geographic location, exposure to sun light, age, different parts of tree, drying process, storage and extraction method. The main objective of the present study was to investigate the changes in content and chemical composition of the essential oil from the leaves of *Laurus nobilis* depending on harvesting time. The *Laurus nobilis* leaves were harvested during the August-November period in 2015 in 30 days intervals from the one and the same tree in Antakya. Air-dried leaves were subjected to hydrodistillation using a Clevenger-type apparatus and the essential oil composition and yield of the leaves of *Laurus nobilis* L. were determined. *Laurus nobilis* L. essential oil is very rich in monoterpene hydrocarbons. Monocyclic monoterpenes such as 1,8-cineole (59.87%), α -terpinyl acetate (9.2%), and terpinene-4-ol (4.75%) formed the largest fraction. References: 1. Gül, A., Çelik, A. D., Journal of Agricultural Faculty of Mustafa Kemal University, 21(2), 227-235, 2016. 2. Yalcin, H., Akin, M., Sanda, M. A., Cakir, Journal of Medical Food, 10 (4), 715-719, 2007. 3. Guenane, H., Gherib, A., Carbonell-Barrachina, Á., Cano-Lamadrid, M., Krika, F., Berrabah, M., Maatallah M. and Bakchiche, J. Mater. Environ. Sci. 7 (11), 4253-4261, 2016.

KEYWORDS

Essential oil, Laurus Nobilis L.

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Poster Session 2

Submission ID: 327

FIRST TRICKS IN ARCHEOLOGY OF MEDICAL AND AROMATIC PLANTS

FATMA ŐEKER¹, TUĐBA DEMİR¹

ABSTRACT

Archeology knowledge; Almost 99% of human history deals with basic information sources that interest us. Research materials are sometimes made of various tools and weapons made of stone and bone, and sometimes pottery grain remains can be quarry ash. In the most primitive societies, wise women, sorcerers, and shamans have started medical history by discovering the therapeutic aspects of plants growing in their environment through trial and error. In northern Iraq; The excavations carried out at Őanidar Cave are on the server; There are pollen analyzes carried out in a Neanderthal grave, which is referred to literally as "Flowering Burial" dating from 60 thousand years ago. As a result, plants such as Achillea sp., Senecio sp., Alcea sp., Centaurea sp., Ephedra sp., Which are widely known among the public today, And the history of the human-medicinal plant relationship. In recent studies, El Sidron, who was dated to 42-50 thousand years ago in El Sidron Cave in Spain, reported that 1 individual treated tooth acnes using plants such as yarrow (Achillea sp.) And chamomile (Anthemis nabilis). Self-medication and cognitive development. When these plants are compared to current studies, high bioactive contents are important.

KEYWORDS

Plant Archeology, Ethnobotany, Treatment with plants

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Poster Session 2

Submission ID: 328

MEDICAL AND AROMATIC PLANTS IN ANCIENT EGYPT PERIOD

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ABSTRACT

From the beginning of history; Human beings have faced medical problems such as sickness. And initiated attempts to address these issues. B.C. The second half of the year four thousand; In Neopotamia, the Sumerians' written nail-writing tablets reaching elimination with the invention are the first written sources to reach the elimination of the use of medical plants. In Egypt; B.C. 2000; It has been shown that approximately 850 prescriptions in the dated papyrus are used in the treatment of herbal materials. Some of the plants mentioned in the prescriptions are; Juniper, poppy, cigdem, Indian oil plant, fig, pomegranate, onion, garlic and cinnamon. Today's scientific studies; It has been shown that a considerable part of the plants used by the Egyptians in medicine is also medically effective. As a result of our archaeological studies; The obtained papyrus prescriptions are used for consumption of onions and garlic for medical purposes in the workers working on the pyramids in Ancient Egypt. The measures against the risk of infections could be taken at this point; It is a clear indication that these plants are being used for antimicrobial treatment from ancient times. Such that; Many of the plants prescribed in papyrus; Nowadays Antimicrobial, Antioxidant, Antikanser confirm these findings. How long ago the alternative treatment started; Medical and aromatic plants in archeology is a very important place once again revealed.

KEYWORDS

Egypt, Antiquity, papyrus, treatment with plants

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Poster Session 2

Submission ID: 330

THE USA OF SPICES AS ANTIMICROBIAL IN FUNCTIONAL MEAT AND MEAT PRODUCTS

CEMALETTİN SARIÇOBAN¹, SABİRE YERLİKAYA²

ABSTRACT

One of the most proper places for microorganisms is meat and meat products. This kind of foods has high moisture content are rich in terms of amount of mineral matter, nutritional elements and has some glycogen too. Because of this reason meat and meat products has characteristic as spoiling easily. This spoilage can be faster because of meat's pH value that convenient for many microorganisms. Consumer tendency can be towards different foods because of this negatively. So demand for meat and meat product decrease. Various modification studies are carried out to prevent demand decreasing. This modification can be made as adding useful components or decreasing the amount of harmful components or destroying the all harmful components. For this purpose, natural extracts which have antioxidant and antimicrobial properties are added to meat and meat products. There are many studies about using the extracts as angelica root, bay, caraway seed, thyme, rosemary, clove, pimento etc. It is found that these extracts have inhibitory effect on pathogen microorganisms as *L. monocytogenes* and *Aeromonas hydrophile* in meat products have shelf life. In another study, it is indicated that rosemary extracts has inhibitory effect on *L. monocytogenes* in some meat products. Besides, the extracts make only lactic acid bacteria numbers decrease in meatball. Rosemary extract decelerate growth rate of *Lactobacillus curvatus* at the same time. Fermented foods are thought as a sample that spices are used in. Lots of chemical, biochemical and microbiological events occur during production of these foods. At the end, characteristic taste, odour, flavour and colour growth are observed. The importance of spices is big in growing these organoleptic properties. In history, the purpose of production fermented meats is to extend the shelf life with using the antimicrobial properties of spices. But now, it is producing the products that consumer demand.

KEYWORDS

meat, meat product, antimicrobial, rosemary, spice

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Poster Session 2

Submission ID: 331

IMPORTANT BIOACTIVE COMPONENTS OF OLIVE OIL AS A FUNCTIONAL FOOD

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ABSTRACT

Olive oil is a valuable vegetable oil in Mediterranean diet that obtained by mechanical treatment without any chemical treatment from fruit of olive (*Olea europaea* L.) tree and is regarded as functional food due to its rich bioactive components. Sterols, tocopherols, phospholipids, chlorophylls, carotenoids, phenolic substances and squalene are bioactive compounds in natural olive oil and known as useful compounds for human health. Squalene, the most prominent hydrocarbon in olive oil, is a triterpene and the intermediate product of cholesterol biosynthesis pathway. Extra virgin olive oil contains 400-450 mg squalene per 100 grams, olive oil contains squalene at the highest level compared to other vegetable oils. Polyphenols and tocopherols are phenolic compounds that act as natural antioxidants prevent oxidation in extra virgin olive oil. Olive oil contains α -, β -, γ - and δ -tocopherol in the range of 12-150 ppm, of which 88.5% is α -tocopherol, 9.9% is β - and γ -tocopherol and 1.6% is δ -tocopherol. Tyrosol and hydroxytyrosol are the most characteristic phenolic components of olive oil and they constitute 30% of the phenolic substances in olive oil. Another phenolic substances oleuropein and lignans are %50 of phenolic substances of olive oil. Extra virgin olive oil contains 180-265 mg sterols per 100 g and sterols constitute 20% of the unsaponified fraction of olive oil. Olive oil contains primarily β -sitosterol, Δ 5-avenasterol, campesterol and small amount of stigmasterol, cholesterol, 24methylenecholesterol, Δ 7-campesterol, Δ 5,23-stigmastadienol, Δ 5,24-stigmastadienol, sitostanol, Δ 7-stigmastenol, Δ 7-avenasterol. It is known that some antioxidant substances in olive oil reduce coronary heart disease and some types of cancer. In this study, information was given about the bioactive components that enable the olive oil to be identified as functional food.

KEYWORDS

olive oil, squalen, tocopherol, polyphenol

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Poster Session 2

Submission ID: 333

SOME ETNOBOTANIC PLANTS IN TRABZON

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ABSTRACT

Although we have a very rich flora and ethnobotanic studies are carried out in different regions by many researchers in our country, we still do not know how many of the plants are used by our people in our country. With this study, it was aimed to introduce rich diversity of species in terms of ethnobotanic in Trabzon by Trabzon Regional Forest Directorate of Non-wood products and Services Directorate. The study was conducted between December 20, 2016 and January 20, 2017 in the provinces of Trabzon as a result of the face of interviews made with sellers of medicinal herbs and local people. Within the scope of this research, some plant species grown naturally in Trabzon Provided the by sellers of medicinal herbs from other regions were obtained. Also, the plant usage habits of the local people were evaluated. It has been tried to determine the plant usage frequency, plant consumption and utilization habit of local people. In this study, 36 plant taxa which were used for food, treatment and ornamental purposes in Trabzon region were determined by interviews with villagers in 15 central villages and 6 sellers of medicinal herbs in Trabzon. Most of the plants with ethnobotanic characteristics are collected from the nature while some of them are cultured. The cultivation of high economic value ethnobotanic plants, the establishment of policies related to trade, the supply of internal and external market for increasing consumption can be obtained the millions of pounds in every year. Thus, local people will benefit from economic and social direction. It is important that plants are registered in accordance with scientific literature as well as authentic (local, ethnic) names. Due to the different interpretation of scientific names and local names of plant species, It is important that the results come up to the death of the users in the world and in our country. This shows that sellers of medicinal herbs can not be an organization under the stairs, on the contrary, this profession should be done with supervised and expert persons such as a pharmacy.

KEYWORDS

Ethnobotanic, sellers of medicinal herbs, medicinal and aromatic plants

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Poster Session 2

Submission ID: 334

**THE EFFECTS OF CULTIVATION AREA AND ALTITUDE
VARIATION ON COMPOSITION OF ESSENTIAL OIL OF LAURUS
NOBILIS L. GROWN IN EASTERN, WESTERN AND CENTRAL
KARADENİZ REGION.**

BILGE YILMAZ¹, İLHAN DENİZ¹

ABSTRACT

The Effects of Cultivation Area and Altitude Variation on Composition of Essential Oil of *Laurus nobilis* L. Grown in Eastern, Western and Central Karadeniz Region. *Laurus nobilis* L. is one of the most valuable non-wood forest products on world export market and Turkey is the biggest provider country for *Laurus nobilis* in the world. Because approximately % 80 of *Laurus nobilis* in world is produced in Turkey. Therefore laurel is an important commercial product for our country. *Laurus nobilis* L. belongs to Lauraceae family. It includes 32 genera and about 2,000-2,500 species. Laurel leaf has antiepileptic, anticonvulsive, antimicrobial and antibacterial effects. These effects stem from volatile compounds which are in essential oil. In this study, the effects of cultivation area and altitude variation on essential oil yield and volatile compounds of laurel leaves which grown in Trabzon, Bartın and Samsun, were examined. *Laurus nobilis* L. leaves were collected in three different height ranges. These are 0-100 m, 100-300 m, 300-600 m. Leaves were shade-dried and crushed. A device called "Clevenger" was used for getting volatile oil. After getting volatile oils of leaves, they were stored glass vials at 4 °C until analyzed. The GC-MS analysis of the essential oils were performed with Agilent 5975 GC-MSD system. Innovax FSC column (60 mx0.25mm, 0.25µm film thickness) was used with helium as carrier gas (0.8 ml/min). GC oven temperature was kept at 60 °C for 10 min programmed to 220 at a rate of 4 °C/min, and kept constant at 220 °C for 10 min. and then programmed to 240 °C at a rate of 1 °C/min. The injector temperature was set at 250 °C. Mass spectra were recorded at 70 eV. Mass range was from m/z 35 to 450. The essential oil yield of leaves range between 0.92% and 1.58%. The highest amount of essential oil yield in leaves was obtained in Trabzon (100-300 m). The lowest amount of essential oil yield in leaves was obtained in Bartın (100-300 m). According to GC-MSD results, 1,8- cineole (19.71 % - 35.63%), α -terpinyl acetate (12.86%-21.24%), sabinene (5.98%-8.56%), α - pinene (3.67%-8.45%) and β - pinene (2.91%-5.87%), were the most abundant volatile compounds in the leaves of bay.

KEYWORDS

Laurus nobilis, essential oil, volatile compounds,

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Poster Session 2

Submission ID: 335

GRAPE SEED AND LIFE SPAN IN DROSOPHILA

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ABSTRACT

The free radical theory of aging postulates that the accumulation of macromolecular damage induced by toxic reactive oxygen species plays a central role in the aging process. This process is now the major cause of death in the developed countries. In addition to the protective effects of endogenous enzymatic antioxidant defenses, consumption of dietary antioxidants appears to be of great importance. Adding antioxidants to the diet, which changes the balance between oxidants and antioxidants, may increase longevity. The aim of this study was to investigate the effects of a grape (*Vitis vinifera*) seed rich diet on life span and catalase enzyme activities in the aging process of *Drosophila*. *Drosophila* are useful model organisms because of their small size and short generation time, and are commonly used to facilitate experimental laboratory research. Female reproductive functions may effect some physiological properties, therefore only wild type (Oregon) male flies were used in the experiments. Flies were housed in glass tubes and incubated at 25 °C and 12 hours day–night cycle. Experimental meal medium was 0,7 g grape seed /100 ml corn meal. Catalase activity was measured as recommended by Luck (1963) using H₂O₂ as substrate, based on determination of decreasing on H₂O₂ amounts at 240 nm. Proteins were determined by the Bradford method. There were no differences in catalase activity results between control and grape seed groups. However the life span increased statistically significant in the grape seed feed group. Polyphenols of grape seed extract have long been recognized to possess many properties, including antioxidant, anti-inflammatory, anticarcinogenic and are also known to improve overall human health. These include increased nitric oxide production, down-regulation of vasoactive peptides, lowered levels of oxidized low-density lipoprotein, cyclooxygenase inhibition, breakdown of beta-amyloid, modulation of signal transduction. Grapes have been used for their medicinal and nutritional value for thousands of years. Human ate grapes at least 6000 years ago. Grape seed may have positive effects on human life span.

KEYWORDS

Grape seed; Life span; Aging; Catalase; Drosophila

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Poster Session 2

Submission ID: 336

VIBURNUM L.

HASAN KESKİN¹, SEYFETTİN KİNİŞ¹

ABSTRACT

Viburnum is a species of Caprifoliaceae that grows in the winter as a conifer, 2-4 meters in height. Viburnum's fruits are evaluated in various forms such as dried fruits, pickles and jam. The spreading regions of Viburnum are Turkestan, Europe, North West Africa and Canada. This species has been scattered in the country in both Europe and North Africa. Viburnum breeding in Turkey is not much more than that. Gilaburu 's shells, fruits, flowers and water are used in traditional medicine in various places. There are located 7,81% water soluble dry matter, 5,83% reducing sugar, 6,71% crude protein, 19,86% crude cellulose and 560 mg / kg ascorbic acid, 2473,8 mg / kg potassium, 402,62 mg / kg sodium in the composition of fresh Gilaburu fruit. In this study, it's been tried to detect natural distribution areas of Viburnum that little-known by local people in Bolu. In the region, this plant, which has been shown interest by those suffering from kidney trouble, kidney stone or sand trouble. Viburnum fruit which is sold in herbalist is consumed in the form of water. Viburnum was found in Bolu province. It is usually seen on the edge of the village. Not in the form of large groups or clusters, individual or double or up to 3 shrubs. It is necessary to extensively determine the presence of viburnum within the boundaries of Bolu Forest Regional Directorate. This requires a widespread survey and inventory study. After the widespread detection work within the boundaries of the Bolu Forest Regional Directorate, it will be ensured that Viburnum is brought into the field of medical aromatic plants.

KEYWORDS

Viburnum, Bolu, Medical Aromatic plants.

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Poster Session 2

Submission ID: 338

EVALUATION OF ESSENTIAL FATTY ACIDS OF COLD PRESSED FIG AND ROSEHIP OILS AS UNCONVENTIONAL BIO-OILS IN EDIBLE OIL AND PHARMACEUTICAL INDUSTRIES

RAZIYE NUR TENEKECI¹, HUSEYİN KARA¹

ABSTRACT

Industrially, there are different techniques for obtaining edible oil such as screw press, organic solvent extraction and cold press. Cold pressed seed oils have important nutritional and chemical properties. Due to their high nutritional value and health beneficial factors, new and unconventional seeds species have been researched and evaluated as alternative lipid sources for human consumption. Fig and rosehip seeds contain oil about 26.44% and 30.00% in dry matter based, respectively. Fatty acid composition is an important marker used in determining the nutritional value and chemical properties of edible seed oils. Cold pressed figs and rosehip oils have unsaturated fatty acids, omega-3 and omega-6 that reduced risk of cardiovascular disease and the lipid levels in experimental animals have been observed in observational studies. In this study, essential fatty acid properties of cold pressed rosehip and fig seed oils have been evaluated by using gas chromatography (GC) and gas chromatography-mass spectrometry (GC-MS). Obtained results show that the cold pressed fig and rosehip oils are good sources in terms of unsaturated fatty acid as linoleic and linolenic acids. Linolenic acid was found to be dominant (34.05%) followed by linoleic acid (33.74%) and oleic acid (19.60%) in cold pressed fig oil. Linoleic acid (50.18%), linolenic acid (20.44%) and oleic acid (20.65%) were found in cold pressed rosehip oil.

KEYWORDS

Cold Pressed Fig Oil, Cold Rosehip Oil, Essential Fatty Acids

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Poster Session 2

Submission ID: 344

FERULA ELAEOCHYTRIS IN KONYA REGIONAL DIRECTORATE OF FORESTRY

MEHMET VEHBI TEMİRCİ¹, ERDAL TUNÇEZ¹

ABSTRACT

Ferula is a perennial herbaceous plant that grows up to 2 meters in length and yellow-blooming. It contains tannin, resin, starch, alkaloid, saponin and volatile oil. This plant is used as food, as animal feed, and for medical field treatment purposes. This plant which has medical characteristics and economic value is spreading within the boundaries of Göktepe Forest Management Chief of Forest Sub-district Directorate of Ermenek under Konya Regional Directorate of Forestry. On the importance of this plant, Ferula elaeochytris inventory and planning has been completed in addition to ODÜH (Non-Wood Forest Products and Services) MANAGEMENT PLAN which covers the years 2013-2025. In the result of field inventory made in the total area of 50820.5 hectares of Göktepe Forest Management Chief whose management plan was made, this plant shows spread. As a result of the wealth inventory made in these areas where the product is spreading, Annual yield of 668376.00 kilograms was determined. Within the supply-demand balance, rotative production planning is envisaged. The result of overgrazing and unconscious using for years, Ferula areas have been degenerated and have lost their yields. The main aims of Ferula elaeochytris inventory and planning studies are to provide the highest quality and quantitative yield from these sites and to meet the demand for increasing non-wood forest products in recent years. Thus, this studies will contribute to the economy of the local people.

KEYWORDS

Apiaceae, Ferula, Inventory and Planning, ODÜH (Non-Wood Forest Products and Services) Management Plan, Rotation, Economic Benefit.

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Poster Session 2

Submission ID: 345

(TRICHOLOMA ANATOLICUM DOĐAN & İNTINI) IN KONYA
REGIONAL DIRECTORATE OF FORESTRY

MEHMET VEHBİ TEMİRCİ¹, ERDAL TUNÇEZ²

ABSTRACT

Tricholoma Anatolicum Dogan & İntini is the first time was determined by Prof. Dr. Hasan Hüseyin DOĐAN Who is Science Faculty Member of Selcuk University when he is doing his doctoral thesis in Karaman-Başıyayla Katranlı village's plateau in 2001. it was published as a new species in a scientific journal abroad in 2003. This mushroom, which has medical characteristics and economic value, shows spread within the working areas of Forest Sub-district Directorate of Beysehir, Ermenek and Konya under Konya Regional Directorate of Forestry. On the importance of this mushroom,, Tricholoma Anatolicum inventory and planning has been completed. In addition, ODÜH (Non-Wood Forest Products and Services) MANAGEMENT PLANS which covers the years 2013-2025 were done. The Product whose Management plans were done shows spread in a total of 10018.6 hectare area within the boundaries of Konya Regional Directorate of Forestry. Total annual yield is 760833,02 Kilogram. The annual utilization (production) amount is 204841,00 Kilogram. Because of tricholoma anatolicum has been unconsciously harvested by peasants and collectors, Tricholoma Anatolicum beds are spoiled. The goat which is common in the region, consumes mushrooms by eating. The result of condensation of soil by crowded collectors, overgrazing and unconscious using for years the mushroom quality has fallen and has lost its yields. The main aims of tricholoma anatolicum inventory and planning studies are to provide the highest quality and quantitative yield from these sites and to meet the demand for increasing non-wood forest products in recent years, without destroying this generation that has economic value, also to make production in accordance with the principle of sustainability and to inform the local people and those who are engaged in this issue.

KEYWORDS

Tricholoma Anatolicum, Inventory and Planning, ODÜH (Non-Wood Forest Products and Services) Management Plan, Economic Benefit, Ectomycorrhizal.

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Poster Session 2

Submission ID: 348

ETHNOBOTANICAL APPROACH TO ANIMAL DISEASES AND BIOLOGICAL CONTROL IN ANTALYA (SOUTHERN TURKEY)

SÜLEYMAN ARI¹, MUSTAFA KARGIOĞLU¹

ABSTRACT

ABSTRACT The majority of Antalya population originates from nomadic culture ethnically. Therefore, animal husbandry and agriculture are advanced considerably. People who reside in especially areas far from the settlement have commonly used ethnobotanical culture in the treatment of their animal diseases and in the biological control. We conducted a semi-structured questionnaire of 163 informants in the field visits who have maintained this traditional ethnobotanical culture for many years in Alanya and Gazipaşa city centers with 46 villages and towns between 2012 and 2013. Samples of plants used in animal diseases for medicinal purposes and of particularly wild plants used in biological control were collected and usage information were recorded after identifying. The results of study suggest that 31 plants of 19 families and 21 plants of 14 families were used in many different ways by local people in veterinary field and biological control, respectively. Use value (UV) of plants was calculated. We obtained new usage information and methods based on these findings. This study highlights that wild plants are predominantly effective in fighting against animal diseases. Therefore, the promising results from this study provide new insights into further studies that will be conducted to develop new drugs in veterinary field. In addition, this study will be able to add a new and different dimension to biological control, considering to provide a basis for further studies.

KEYWORDS

Key words: Animal diseases, Biological control, ethnobotany, Antalya

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Poster Session 2

Submission ID: 349

NEUROPROTECTIVE EFFECTS OF RUTIN AND QUERCETIN FLAVONOIDS IN GLAUCIUM CORNICULATUM METHANOL AND WATER EXTRACTS

FATMA GONCA KOÇANCI¹, BUKET HAMAMCIOĞLU¹, BELMA ASLIM¹

ABSTRACT

Neurodegenerative diseases (ND); defined as chronic and progressive diseases, are characterized by loss of neurons in motor, sensory or cognitive systems. It is known that approximately 30 million people worldwide are affected by ND and it is estimated that until 2040, casualties caused by ND will only be surpassed by cancer. Although the exact cause(s) of ND is not well-understood, it is known that ND is associated with neuronal loss, triggered by neurodegenerative agents leading to the accumulation of intracellular ROS and the development of inflammation. Inflammation is a series of responses of live tissues to all kinds of living/lifeless foreign influences or internal/external tissue damage. It is known that, many tumor types contain activated fibroblasts and macrophages, in addition to a gene expression profile with an inflammatory signature. According to some research the use of anti-inflammatory agents reduce the risk of NDs development. Existing drugs against these diseases only delay the disease progression by alleviating the symptoms; however, they do not provide a cure. In recent years, the studies for the discovery of novel drugs and biomarkers for the treatment of ND focused on strategies to discover natural products that have the potential of anti-inhibition and anti-radical properties. Flavonoids are plant-derived secondary metabolites, attracts the attention of researchers because they are free radical scavengers and act like anti-inflammatory drugs. The Papaveraceae family members are important for the synthesis of pharmaceutically important compounds such as alkaloids, flavonoids, phenolic acids and proteins, and for their anti-inflammatory effects. In this study, methanol and water extracts of *Glaucium corniculatum*, a member of the Papaveraceae family, were analysed for flavonoid compounds by HPLC method. To determine whether the extracts had neurotoxic effects, the effects of extracts on neuronal PC12 cells viability was determined by MTT method. Furthermore in this study, anti-inflammatory effects of extracts were assessed by measuring the levels of IL-6 and IL-10 cytokines on H₂O₂- stimulated PC12 cells. As a result of our studies, Rutin and Quercetin flavonoids were found as major and the other flavonoid contents were less than a substantial degree. The amount of the Rutin was higher in methanol (45 µg/ml) than in water (41 µg/ml). Quercetin was also better extracted with methanol (12 µg/ml) than with water (10 µg/ml). In our results none of the tested extracts were cytotoxic even at the highest dose and time to PC12 cells (IC₅₀ concentrations 1287 µg/mL for methanol and 1150 µg/mL for water). Whereas both extracts showed the anti-inflammatory effect in dose dependant manner. The water extract showed the maximum anti-inflammatory effect, with IL-6 secretion was decreased 79 fold according to the H₂O₂ treated group and IL-10 secretion was increased to 87 fold according to the control group. According to these results, *G. corniculatum* extracts may have favourable pharmacological profile in the treatment of inflammation without damaging the PC12 cells. Also, this

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study is evidence that the Rutin and Quercetin flavonoids detected in *G. corniculatum* methanol and water extracts have a neuroprotective effect through anti-inflammation.

KEYWORDS

Glaucium corniculatum, flavonoid, neurodegenerative diseases, anti-inflammation

Poster Session 2

Submission ID: 350

SILENCING OF MIDKINE POTENTIATES NARINGIN-INDUCED ANTIPROLIFERATIVE EFFECTS THROUGH APOPTOSIS AND CELL CYCLE ARREST IN CD133+/44+ PROSTATE CANCER STEM CELLS

SUAT ERDOGAN¹, OGUZHAN DOGANLAR¹, ZEYNEP BANU DOGANLAR¹, KADER TURKEKUL¹, ILKER DIBIRDIK¹, AYHAN BILIR²

ABSTRACT

Prostate cancer (PCa) represents a major public health problem for men in Western countries, and its incidence is rising in other areas of the world. In the early stages of the disease, most patients respond to the current therapy strategies such as prostatectomy, hormonal therapy, radiotherapy and chemotherapy. However, an androgen-independent stage of malignancy in aggressive and spreading cancer is challenging to treat. Cancer stem cells (CSCs) have been identified as rare cell population within a tumor that is involved in drug resistance, metastasis and recurrence of cancers. Flavonoids are an important group of secondary metabolites and a source of bioactive compounds in plants. Naringin, a bioflavonoid found in grapefruit and other citrus fruits, possesses antioxidant, anti-carcinogenic properties. Midkine (MK) is a heparin-binding growth factor that promotes many tumor-specific functions, such as cell growth, tumor cell survival, cell migrations, and carcinogenesis. However, the possible effect of naringin and MK inhibition on cell survival and apoptosis properties were not extensively analyzed in CSCs. The objectives of this study were to investigate the influence and mechanism(s) of naringin treatment and the functions of MK in prostate cancer stem cells (PCSC). CD133+/44+ PCSCs were isolated from the human prostate cancer PC3 cells using a magnetic-activated cell sorting system. Cell viability was measured by MTT assay. Endogenous MK mRNA expression was knocked down by siRNA. RT-qPCR, Western blot analyses and image-based cytometry were used to investigate apoptosis and cell cycle progression as well as their underlying molecular mechanisms. The cells were treated with different concentrations of naringin for 24, 48 or 72 h. Naringin dose- and time-dependently inhibited PCSCs survival. siRNA-mediated knockdown of MK induced significant growth inhibition. Next our studies sought to verify whether the combination treatment could synergistically increase apoptosis and/or cell death of PCSCs. Indeed, treatment of MK knock-downed cells with the IC₅₀ value of naringin (150 μ M) enhanced cell death to a significantly greater extent than treatment with either agent alone. The combination therapy strengthens the apoptosis and cell cycle arrest at the S and G₂/M transition phases of naringin. Naringin therapy significantly reduces spheroid diameter of three-dimensional (3D) PCSC cell culture, and the combination of MK siRNA with naringin enhanced the therapeutic efficacy of naringin. In conclusion, these results indicate that naringin could inhibit growth potential of PCSCs by encouraging apoptosis and cell cycle arrest, and down-regulation of MK expression could enhance the therapeutic effect of naringin.

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KEYWORDS

cancer stem cells, midkine, naringin, PC3, prostate cancer,

Poster Session 2

Submission ID: 352

THE PLACE AND IMPORTANCE OF MEDICAL AROMATIC PLANTS IN ANIMAL BREEDING

SİBEL ALAPALA DEMİRHAN¹, NURAY ŞAHİNLER¹, AYŞEN MELDA ÇOLAK¹, MAHMUT İSLAMOĞLU¹

ABSTRACT

Today, it is known that medical and aromatic plants and essential oils derived from them have many positive effects on animals such as resistance to environmental conditions; protection against herbal insecticide, pests and pathogens; increasing the taste of feed; increasing utilization rate of feed; stimulation of ingestion and their antiseptic features. Though their effects vary depending on their active ingredients, many essential oils have antimicrobial, carminative, diuretic, antispasmodic effects. Moreover, all the volatile oils derived from plants strengthen the immune system by increasing IgG and IgA production. In the treatment of hoof injuries of the cattle, fomenting with the mixture of chamomile oil, thyme oil and balm oil dissolved in olive oil can be useful. Addition of the mixtures of essential oils of thyme, daphne leaf, sage leaf, gale, fennel seed and citrus skin to their diets; when compared to organic acids and probiotics, leads to more live weight increases, better feed utilization and carcass performance in broilers. Chamomile can be added to their feed to calm horses; in the treatment of wounds in horses, mugwort can be used and in the treatment of their itches, medical peppermint oil can be used. Essential oil of hyssop seems to be a promising ecological tool to be used in the fight against *Varroa destructor* parasite in bees and when used in winter, it decreases the population of *Varroa* in bee colonies. 1-2 drops of citronella oil added to shampoos used to get rid of lice and ticks in cats and dogs force these pests to leave the animals. In addition, cedar oil and pine oil can also be used for the same purpose. In this article, information is provided about the use of various medical and aromatic plants in animal breeding, protection of their feed and improving the quality, in fight against animal parasites and in the treatment of animal diseases.

KEYWORDS

Medical and aromatic plants, animal breeding, treatment, utilization of feed

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Poster Session 2

Submission ID: 354

DETERMINATION OF FACTOR INFLUENCING STUDENTS' MEDICINAL PLANTS USE; CASE STUDY OF ATATURK UNIVERSITY

AHMET SEMİH UZUNDUMLU¹, MEHMET MUHAMMED SARI¹, ZEINAB MOKHTARI

ABSTRACT

It is commonly known that regions and cultural properties significantly impact on individuals' medical plant consumption. As for students, faculties, formal education, consumption habits, social, economic and demographic factors are investigated whether there is any correlation with consumption. 445 students of Ataturk University from 15 different faculties were selected to conduct questionnaires face to face. While being at 3.rd grade, being from TRA sub-region, mint-lemon and rose-hip tea consumption, one or more family members' medical plant consumption, raise of education level of students' father, having health insurance and students' choice of medical plants for health influence positively according to the results of study, residing with family, studying medicinal departments, having formal education, doing sports and consuming fruit juice affect medical plant consumption negatively.

KEYWORDS

Cultural habits, Erzurum, Health, Medicinal plant use, Tobit model

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Poster Session 2

Submission ID: 357

ANTI-OBESITY AND CARDIOVASCULAR PROTECTIVE EFFECT MECHANISMS OF CURCUMIN (ACTIVE INGREDIENT OF TURMERIC)

MERYEM ELIF ÖZTÜRK¹, NURCAN YABANCI AYHAN¹

ABSTRACT

Turmeric (*Curcuma longa*) has been described in the literature of Ayurveda (science of long life), dating from about 3000 BC, for a wide variety of ailments including obesity. Turmeric has been found to contain more than 100 different chemicals. Most research on turmeric has centered on its active ingredient curcumin and curcuminoids. Increasing evidence from numerous *in vitro* and *in vivo* studies have shown that curcumin possesses anti-inflammatory, antioxidant, and hypolipidemic properties. The researches focused on curcumin effect on obesity revealed that; curcumin may suppress preadipocyte differentiation and thus reduce the number of adipocytes and fat content of adipose tissue. Curcumin is making this effect through several mechanisms. Firstly curcumin may stimulate 5' AMP-activated protein kinase (AMPK) activity and down-regulate peroxisome proliferator-activated receptor gamma (PPAR γ). PPAR γ regulates fatty acid storage and glucose metabolism. The genes activated by PPAR γ stimulate lipid uptake and adipogenesis by fat cells. Thus curcumin plays a crucial role for the inhibition of differentiation or growth in both adipocytes. Another part of the effect of curcumin on inhibition of preadipocyte differentiation has been proposed to be through modulation of the canonical Wnt signaling pathway in preadipocytes. The Wnt signaling pathways are a group of signal transduction pathways made of proteins that pass signals into a cell through cell surface receptors. The canonical Wnt signaling system serves as an adipogenic switch: the initiation of adipogenesis requires inactivation of canonical Wnt signaling. When Wnt signaling is on, preadipocyte differentiation is inhibited. Curcumin can make this effect though increasing the mRNA expression of Wnt10b, Fz2 (Wnt direct receptor), and LRP5 (Wnt coreceptor). Curcumin makes cardiovascular protective effects through several mechanisms. The anti-thrombotic, anti-proliferative, and anti-inflammatory effects of curcumin and the effect of curcumin in decreasing the serum cholesterol level may protect against the pathological changes occurring with atherosclerosis. Researches exerted that curcumin shows its antithrombotic effect by inhibiting collagen and adrenaline-induced aggregation of platelets. Aggregation of platelets plays a vital role in initiation of thrombosis. Thus curcumin prevents thrombosis. Curcumin makes antiproliferative effect by inducing Heme oxygenase-1 (HO-1) enzyme. This enzyme possesses important antioxidant and anti-inflammatory functions and acts in concert with other pivotal enzymes in the maintenance of cellular homeostasis. Also it is a down-regulator of growth in vascular smooth muscle cells. Curcumin exerts anti-inflammatory effect via down regulating the nuclear factor- κ B (NF- κ B), resulting in a decrease in the expression of inflammatory markers such as tumor necrotic factor- α (TNF- α), interleukin-1 (IL-1) and interleukin-6 (IL-6) Curcumin also suppress the hepatic enzymes HMG-CoA reductase and Acyl CoA cholesteryl acyl transferase (ACAT), lowers the hepatic cholesterol, total cholesterol. In addition,

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curcumin may influence key enzymes necessary for the proper functioning of the cardiovascular system, such as nitric oxide synthase (NOS). Curcumin down regulates NOS expression. Since nitric oxide-mediated oxidative stress has been associated with chronic diabetes, down regulating NO production could be beneficial in treating cardiovascular complications. The effective reduction in NO by curcumin is thought to be mediated by NF κ B, AP-1, and various vasoactive factors. Although the positive effects of turmeric on obesity and cardiovascular diseases are explained, clinical trials on humans are scarce. However, turmeric can be used as a supplement in the treatment of obesity and prevention of cardiovascular diseases.

KEYWORDS

Curcumin, anti-obesity, cardiovascular protective, turmeric, health

Poster Session 2

Submission ID: 360

CHEMICAL COMPOSITION OF BLACK CUMIN OIL AND USING IT AS A FUNCTIONAL FOOD INGREDIENT

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ABSTRACT

Black cumin (*Nigella sativa* L.), belonging to Ranunculaceae family, is an annual herbaceous plant whose growth area extends from the countries of the southern and eastern-rim of the Mediterranean basin to Iran, Pakistan and India. Black cumin seeds have been used as a supplement to help maintain good health and well-being. Black cumin seeds, on account of their aromatic nature, are used as a spice in cooking. Commonly the seeds are used primarily as a spice and food preservative. Black cumin seeds have a strong and hot peppery taste and have been used in coffee, tea, casseroles, salads, and breads. It is also used as a natural remedy for asthma, hypertension, diabetes, inflammation, cough, bronchitis, headache, eczema, fever, dizziness, and influenza. In folk medicinal practices they are ingested with food or mixed with honey. The seeds have also been used as diuretics, anti-hypertensive, muscle relaxants and as immunity enhancers in immune-compromised people. More studies have reported this seed's proximate contents for moisture, oil, protein, ash and total carbohydrate in the following range 3.8–8.65%, 24.48–40.35%, 20.8–26.7%, 3.7–4.86% and 24.9–40.0%, respectively. The chemical composition of black cumin seeds is rich, and diverse active chemical components have been isolated from them. The seeds contain a fixed oil (>30%, wt/wt) and a volatile oil (0.40–0.45%). The oil is prepared by solvent- or cold press-extraction. The lipid oil from the seed of *Nigella sativa* L. is rich in linoleic and oleic acids. Their unique fatty acid composition, relatively high polyphenol content and quality and hence high protection against oxidative stress, relatively good shelf life, and other desirable physicochemical characteristics lead to more diverse and novel applications of black cumin seed oil in the food, pharmaceutical, cosmetic and other non-food industries.

KEYWORDS

Black cumin seed, Nigella sativa L., black cumin seed oil, chemical properties, functional food

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Poster Session 2

Submission ID: 361

AN IMPORTANT FUNCTIONAL FOOD INGREDIENT SPECIFIC TO GRAPE SEED AND OIL: RESVERATROL

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ABSTRACT

Grape is one of the fruit crop grown widely in many areas of the world. Grape seed is a worldwide well known oilseed from the waste residue which is made about 15% of solid waste in the wine industry. It contains approximately 60–70% of total extractable grape phenolic compounds. The grape seed contains about 10-20% of oil. Grape seed oil is composed of average 90% poly- and monounsaturated fatty acids, which are responsible for its value as nutritive edible oil, particularly of linoleic acid (58–78%, 18:2n-6) followed by oleic acid (3–15%, 18:1n-9) and minor amounts of saturated fatty acids (10%). The main phenolic compounds generally present in grape seed and oil are anthocyanins, flavan-3-ols, flavonols, phenolic acids and resveratrol. Resveratrol (3,4',5-trihydroxy-trans-stilbene) is a polyphenol from the stilbene family that is found at relatively high levels in grape skins. Resveratrol, a well-known polyphenolic compound, has been widely explored for its multiple therapeutic activities against a wide variety of diseases. It is known to possess many pharmacological properties including anti-inflammatory activities, cardio protective, antioxidant properties and anticancer effects. It is of interest to the food and pharmaceutical fields due to its potential beneficial effects on human health, including cardio-protective, neuro-protective, antioxidant, anti-inflammatory, anti-carcinogenic, and anti-obesity effects.

KEYWORDS

Resveratrol, polyphenolic compound, functional food ingredient, grape seed oil

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Poster Session 2

Submission ID: 362

INVESTIGATION OF THE EFFECT OF NUTRITION PROGRAMS APPLIED TO PSYCHIATRIC PATIENTS WITH OBESITY ON INDIVIDUAL'S PSYCHOLOGICAL HEALTH: A SYSTEMATIC REVIEW

REYHAN ESKİYURT¹, BİRGÜL ÖZKAN²

ABSTRACT

This study was conducted to gather information on the common results of studies that examine the effects of nutrition programs on psychiatric patients with obesity on the psychiatric health of the individual. Obesity is a risk factor for health and is defined as excess or excess fat accumulation in the body. Obesity is a major risk factor for a number of chronic diseases such as cancer, diabetes and cardiovascular diseases. Treatment options for obesity include obesity surgery and non-surgical treatment of obesity. Non-surgical treatments generally include multi-component methods and include low-calorie diet regimen, physical activity enhancement, behavior modification, psychosocial support and drug treatment. It is reported that the proportion of mood, anxiety, somatoform, depression and eating disorders is high among obese individuals as a result of the studies done. The aim of treatment of obesity behavior change; "lifestyle" by changing undesired behaviors related to eating and physical activity that cause obesity to desired behaviors or reducing unwanted behaviors and reinforcing desired behaviors.

KEYWORDS

Obesity, Psychiatric Patient, Nutrition Programs, Mental Health

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Poster Session 2

Submission ID: 984

CLASSIFICATION AND USAGE AREAS OF SOME MEDICINAL PLANTS OF TURKISH FLORA ACCORDING TO THEIR SECONDARY METABOLITES

EBRU ATAŞLAR¹

ABSTRACT

Turkey flora is very rich in terms of plant diversity as well as in terms of medical plants. Due to the different climatic conditions and the presence of three floristic regions, the flora that is enriched is home to about 10.000 plant species. It is estimated that about 500 of this number are medical plants. Medical plants have been used for treatment since prehistoric times due to the therapeutic properties of the secondary metabolites their contain. In this study, some medicinal plants distributed in our country are classified according to their secondary metabolites: alkaloids, terpenoids (monoterpenes, sesquiterpenes, diterpenes, triterpenoids), phenolics, resins and mucilages, and their medical use areas are mentioned in general.

KEYWORDS

Flora of Turkey, medicinal plant, secondary metabolite

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Poster Session 3

Submission ID: 364

SUPER FOOD: GOJI BERRY

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ABSTRACT

Goji Berry or wolfberry are two closely related species of the Solanaceae family, *Lycium barbarum* and *Lycium chinense*. Fruits have orange-red colors. Goji Berry is a fruit of Asian origin and is used in traditional Chinese medicine over 2000 years. With a low calorie, good fiber source and a very high antioxidant capacity, this fruit helps people fighting diseases, improving their weight control and digestive system functions. Versatile goji grapes that can be consumed in raw, dried, liquid or powder form contain phytonutrients, vitamins and trace minerals. It contains the richest and most comprehensive spectrum of antioxidant carotenoids of all known nutrients. Many experts call goji berry super nutrition. Because goji, which are a positive contributor to health, contain very high amounts of antioxidants. Antioxidants eliminate free radicals and reactive oxygen species that form in the human body. Goji's high antioxidant capacity helps strengthen the immune system and prevent inflammation in the body. The awareness of such a valuable fruit in Turkey is not enough. The aim of our study is to increase the consumption of Goji Berry in Turkey by displaying the flavonoid and phenolic amount and antioxidant power. For this purpose in dry fruit were performed DPPH (2,2-diphenyl-1-picrylhydrazyl) radical scavenging capacity, FRAP (iron ion reductive antioxidant power), phenolic compound, flavonoid, acidity, pH, color, sensory and total dry matter analyzes. The results of the analyzes made on the goji berry are as follows: the amount of phenolic compound is 26758 mg catechin equivalent / kg, the flavonoid amount is 11194 mg catechin equivalent / kg, the dry matter content is 92.99 %, pH 5.31, color L is 41.93, a is 29.47, b is 29.50, acidity 0.37 g / 100 ml (in citric acid), DPPH 1900 µg trolox equivalent / g and FRAP 73625 mg / g.

KEYWORDS

Goji Berry; Antioxidant; DPPH; FRAP; Phytochemical

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Poster Session 3

Submission ID: 366

SAFFRON PRODUCTION AND ECONOMIC IMPORTANCE IN AFGHANISTAN

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ABSTRACT

Saffron with its general name "Safran" and scientific name "Crocus sativus" (Red Gold) is defined as an agricultural, endemic medical plant. The countries where this important agricultural plant is first known are Greece, Turkey and Iran. Production and trade of saffron plant is done in many countries around the world. Every year, approximately 300 tons of saffron production is taking place in the world. Iran is the world's largest saffron producer with more than 250 tons of production per year. Likewise, trade and export of saffron plant take place in Asia, Europe, Africa and as well as America. It is worth mentioning that Spain is the largest exporter of the plant. This important plant has been known in Afghanistan since very long years ago and is produced even if in small amounts. However, during the Soviet invasion and civil wars in Afghanistan between 1970-2000, production of saffron decreased and instead the poppy cultivation and production of narcotic drugs started to spread very rapidly. As of 2000, saffron production has gained its importance again and production has begun. With the support provided by both the Afghan state and various international institutions and organizations, the production of saffron is increasing rapidly. The saffron plant is now known as an alternative to poppy cultivation. Today saffron production is now taking place in almost every part of the country. In the Herat region of Afghanistan, annual production of saffron taking place is up to 5 tons. Positive developments in production and trade of saffron increase the socio-economic development of producers in the country. In addition, saffron production is seen as a solution to many problems in the country (unemployment, immigration, poverty, etc.). This study mainly focuses on the importance of saffron plant, its uses and production and exports in Afghanistan. In addition, the impacts of saffron production on development of the country will be evaluated.

KEYWORDS

Saffron, production, trade, economic analyze, Afghanistan, Herat

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Poster Session 3

Submission ID: 367

INVESTIGATION OF HERBICIDE EFFECTS ON CRESS (*LEPIDIUM SATIVUM L.*) SEEDS OF SOME TETRASUBSTITUTED-IMIDAZOLE COMPOUNDS

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ABSTRACT

The good agricultural products are on the agenda recently. The good agricultural products can be farmed with the right pesticide on the right time. The one of the biggest problems in the agriculture is the weed. For this purpose, the compounds called herbicide are used. The development of the herbicides is very important[1]. In this study, the herbicide effect was tested on the previously published 30 compounds. The herbicide effect was studied according to germinate of the cress (*Lepidium sativum L.*) seeds and the results were given as TD50 values. This study was supported by the project numbered 1919B011400419 under the TÜBİTAK 2209-A program. Reference 1. Duke, S.O. (1990). Overview of Herbicide Mechanisms of Action. Environmental Health Perspectives 87: 263-271.

KEYWORDS

*Tetrasubstituted-imidazole, Cress (*Lepidium sativum L.*) seeds, Herbicide effect*

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Poster Session 3

Submission ID: 370

DETERMINATION OF SOME TRACE ELEMENTS IN APPLE SAMPLES BY ICP-OES

YASIN ARSLAN¹, ERDAL KENDÜZLER², FATMA TOMUL²

ABSTRACT

The excessive trace elements can cause toxic effects. Long-term and excessive biological accumulation of trace elements can result in gradual damage of living organisms. In recent years, metal ionization has become one of the most important issues in environmental and toxicological studies. In general, toxicity depends on the biological and chemical forms of an element [1]. Because of this, it is necessary that the trace elements taken into living organisms, their transport and their effects should be monitored carefully [2]. Hg, Cd, As and Pb are the most dangerous of trace elements. The concentration of the elements required for human body can be determined by some analytical techniques. There have been a series of analytical techniques to accurately determine the rather low concentration of trace elements in biological systems and environment at adequate sensitivity such as electrothermal atomic absorption spectrometry (ET-AAS), inductively coupled plasma optic emission spectrometry (ICP-OES) and inductively coupled plasma mass spectrometry (ICP-MS). In this study, to determine heavy metal in apple samples, ICP-OES technique has been used. For this reason, apple samples taken from Antalya Korkuteli region were dissolved using nitric acid (HNO₃) by dry ashing method and standard addition was also applied to check the accuracy of the method. The results are given as mg/kg. As, Bi, Cd, Co, Mn, Mo, Ni, Pb, Sb and V concentrations in both Apple samples are lower than LOD (limit of detection) as mg/kg. On the other hand, Cu and Zn concentrations in Apple 1 were found as 1.5±0.1 mg/kg and 5.5±0.1, respectively. Cu and Zn concentrations in Apple 2 were found as 2.0±0.8 mg/kg and 5.5±0.1 mg/kg, respectively. REFERENCES 1- Vassileva, E., Becker, A. and Broekaert, J.A.C. (2012) Determination of arsenic and selenium species in ground water and soil extracts by ion chromatography coupled to inductively coupled plasma mass spectrometry, Anal. Chim. Acta, 441 (1): 135-146. 2- Dushenkov, V., Kumar, P.B.A., Motto H. and Raskin I., (1995) Rhizofiltration: the use of plants to remove heavy metals from aqueous streams, Environ. Sci.Technol., 29 (5): 1239-1245.

KEYWORDS

Toxicity, Trace Elements, ICP-OES, Heavy Metals, Apple, Spectroscopy

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Poster Session 3

Submission ID: 372

DETERMINATION OF SOME HEAVY METALS BY ICP-OES IN THE CORN SAMPLES

ERDAL KENDÜZLER¹, YASIN ARSLAN², FATMA TOMUL¹

ABSTRACT

The environmental pollution caused by human stress factors has reached serious dimensions for many countries that have increased industrial activity in recent years. Industrial enterprises such as food and beverage production, textile, leather, chemical and petrochemical, casting, coating, mining, urban, agricultural and commercial wastes are among the sources causing environmental pollution [1]. Heavy metals are the main sources of pollution of the environment, which disturb the ecological balance, affecting vigorous growth and development in a significant way [2]. Heavy metals are elements whose density is greater than 5 g/mL including transition elements. In this group, there are some heavy metals which are important in ecological issue such as Fe, Mn, Zn, Cu, V, Mo, Co, Ni, Cr, Pb, Be, Cd, Tl, Sb, Se, Hg, Al. In this study, some heavy metals were determined in the corn samples taken from Askeriye district in Burdur, Turkey by Inductively Coupled Plasma Optic Emission Spectrometry (ICP-OES). The corn is identified as wheatgrass family. It is an annual herbaceous plant and may be between 1.5 and 3 meters in height depending on the area in which it is growing. The samples were firstly powdered and then they were held at 105 oC for 12 hours in an oven. Powdered corn samples were weighed to approximately 0.8 g. Afterwards, wet ashing was carried out in two different ways. In the first method, samples were dissolved in 8 mL of aqua regia (HCl: HNO₃, 3:1) and in the second method, nitric acid (3.3 mL), hydrogen peroxide (1.7 mL) and water (1 mL) were used. The heating was carried out after addition of acids in the dissolving processes. The resulting solutions were filtered with black band filter paper. The filtrates were taken up in 50 mL measuring flasks and their final volumes were supplemented with ultrapure water. Heavy metal concentrations in the solutions were determined by ICP-OES Thermo iCap 6500 instrument. The results are given as mg/kg. As, Bi, Cd, Co, Cu, Mn, Mo, Ni, Pb, Sb and V concentrations in both Corn samples are lower than LOD (limit of detection) as mg/kg. On the other hand, Zn concentration in Corn 1 and Corn 2 is found as 43.8±0.3 mg/kg and 43.8±0.6 mg/kg, respectively. REFERENCES 1- Nellesen, J.E., and Flethcher J.S., (1993) Assessment of published literature on the uptake, accumulation and translocation of heavy metals by vascular plants, *Chemosphere*, 9: 1669-1680. 2- Ruis-Jiménez, J., Luque-García, J.L., and Luque de Castro, M.D., (2003) Dynamic ultrasound-assisted extraction of cadmium and lead from plants prior to electrothermal atomic absorption spectrometry, *Anal. Chim. Acta*, 480: 231-237.

KEYWORDS

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Toxicity, Corn, Heavy Metals, Spectroscopy



Poster Session 3

Submission ID: 375

SULFORAPHANE AND HEALTH RELATION

EMİNE KOÇYİĞİT¹, EDA KÖKSAL¹

ABSTRACT

Phytochemicals are active compounds in the prevention of chronic diseases and the protection of health naturally found in plants. They act directly on genes and act indirectly as conjugates with various molecules. Sulforaphane, a bioactive component of broccoli, is found in the class of organosulphides among phytochemicals. Sulforaphane is the isothiocyanate present in broccoli. The effect of broccoli and other cruciform vegetables (radish, cabbage, cauliflower, brussel cabbage) on diseases is also affected by isothiocyanate. Isothiocyanates are stored as glucosinolate precursors in plants; harvesting, chewing, cutting, chopping, etc., activity of myrosinase enzyme glucosinolates hydrolyze to isothiocyanates. In the organism, studies have been made on the effect mechanisms such as stimulation of phase II enzymes, inhibition of histone deacetylase enzyme activity with phase I enzymes and increase of thioredoxin reductase enzyme expression and positive results on many diseases such as cancer, diabetes, oxidative stress, helicobacter pylori infection. Research has shown that the toxic effect of sulforafen is not found and is safe. In this study, the metabolism of sulforafen, the mechanisms of action, the effects on health, the bioavailability and the factors affecting it and their effective doses are emphasized.

KEYWORDS

sulforaphane, glucosinolates, broccoli, health

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Poster Session 3

Submission ID: 376

PLANT INTERACTIONS WITH DRUGS USED IN CARDIOVASCULAR DISEASE

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ABSTRACT

Herbal products have been used from day to day for remedial and protective purposes in traditional medicine. The main causes include belief in the therapeutic property of plants. However, in the treatment of diseases is used with medical treatment applied to herbal products can lead to unexpected adversities by interact. Drugs used in the treatment of cardiovascular diseases are at the forefront of drug-plant / herbal product interactions. In general, herbal products are metabolized by the same pathway as medicines, which affects the bioavailability of the drug and is associated with cardiac side effects such as hypertension, arrhythmia, delayed clotting time. Studies have been carried out on cardiovascular medicines, especially Ginkgo, Ginseng, Garlic, Echinacea, Milk thistle, Motherwort, St. John's wort, Black Cohosh, Licorice root, Nettle, Senna, Aloe vera, Ma-huang (ephedra), interacitons offers evidence of the plant. In order to get in front of these scientific researches and health workers, increasing the level of consumers with information related to the creation of awareness on the importance of the topic.

KEYWORDS

Cardiovascular disease, drug, herbal product, interaction

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Poster Session 3

Submission ID: 377

THE EFFECT OF FRUIT ADDED BEFORE FERMENTATION TO ANTIOXIDANT CAPACITY IN KEFIR PRODUCTION

DERIA CHATZI MOUSTAFA¹, CEMAL KASNAK¹, RECEP PALAMUTOĐLU¹

ABSTRACT

Kefir is a milk drink with a historical background of Caucasian originated ethical alcohol and lactic acid fermentations, which are obtained with kefir grains. Encouragement and alternatives to increase consumption of kefir which regulates digestion and strengthens the immune system is required. We enriched the kefir with banana and blueberries. Three types of kefir were produced, plain, blueberries (5%) and banana (10%). Fruits added milk before fermentation. Analysis of phenolic compounds, antioxidants, flavonoids, pH, acidity, color, sensory and dry matter were carried out in kefir. While the dry matter is 10.90% in plain kefir, it is found as 11.17% in banana kefir and 16.75% in blueberry kefir respectively. The highest acidity and lowest pH were found in the blueberries kefir. The highest value of L was found to be plain kefir with 76.50, the lowest L value of was seen in blueberry kefir with 64.42. The highest phenolic compound 331,42 mg / l, the highest flavonoid 291,12 mg / kg and the highest FRAP value 725 mg / kg was found in plain kefir. The antioxidant power and phytochemical amount of fruit kefir were lower than that of plain kefir. Sensory analysis using five-point Likert was the most appreciated plain kefir in terms of color, smell, taste and consistency. Followed by blueberry and banana kefir, respectively.

KEYWORDS

Kefir, Blueberry, Banana, Antioxidant

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Poster Session 3

Submission ID: 379

COMPARISON OF THE AMINO ACID COMPOSITION OF QUINOA SEED AND CORN AND WHEAT SEED CULTIVATED IN MEDITERRANEAN CLIMATE CONDITIONS

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ABSTRACT

Undernourishment is one of the problems faced to human for healthy lifestyle. It is claimed that quinoa seed is stand out with content of groups of essential nutrients in especially to high amino acids rates. And also, claimed that the amino acid balance is better than that of wheat or maize, because some essentials amino acids are present in relatively higher amounts in quinoa seeds. Therefore, the study was set up Adnan Menderes University, Agriculture Faculty's experimental lands in Aydın location west part of Turkey under Mediterranean climate conditions in order to determined differences among amino acid composition of quinoa and corn and wheat seeds. The plants were growth standard conditions as a winter (wheat) and a summer (quinoa and corn) growing periods in 2015. Amino acids values (Histidine, Valine, Methionine, Threonine, Isoleucine, Lösin, Lysine, Phenylalanine, Glycine, Proline, Tyrosine, Arginine and Cysteine) in the plants seeds (quinoa, corn and wheat) were measured with Shimadzu Nexara XR HPLC. Expect for Proline, all amino acid rates measured quinoa seed were higher values than corn and wheat. The highest amino acid values, among the values obtained from the quinoa seed were measured Lysine (1,427), Arginine (1,375) and Lösin (0,891) respectively. Besides highest amino acid values were measured Proline (1,050) and Lösin (0,740) in wheat seed and Lösin (0,731) and Proline (0,646) in corn seed. Some essential amino acid such as Lysine, Cysteine and Arginine rates measured in quinoa were about three times that measured in average of corn and wheat. And the others such as Threonine, İzölösün and Glycine rates measured in quinoa were about twice that measured in average of corn and wheat. The results of the study are showed that quinoa seed cultivated in Mediterranean climate conditions can be used for balanced nutrition. Therefore, we can suggest the quinoa seed to complete the deficiency which is the low levels of some amino acids rates in wheat and corn seed.

KEYWORDS

Quinoa, Corn, Wheat, Amino Acids Rates, Mediterranean Climate Conditions

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Poster Session 3

Submission ID: 380

EFFECT OF SOIL PROPERTIES ON SEED MORPHOLOGICAL CHARACTERISTICS IN CHESTNUT (CASTANEA SATIVA MILL.)

TUĞBA BOZLAR¹, VILDANE GERÇEK¹, NUR DİKTAŞ BULUT¹, SELVİNİZ YILMAZ²

ABSTRACT

Chestnut (*Castanea sativa* Mill.) is a forest tree that naturally grows in the Black Sea, Marmara and Aegean regions. Chestnut seed is consumed as food with together, it is an extremely important food source in terms of medicine. When the natural growth environment of the Eastern Black Sea Region of Chestnut was screened, it was observed that the seed characteristics were different according to the origin. Studies on chestnut and other species have determined that the percentage of germination and the growth of seedlings change depending on seed size and weight. Seed size can affect the both germination and after germination health and development of the plant. Generally, large size seeds have the advantage of higher seeding rate and stronger seedling than small size seeds. The purpose of this study is to determine the effect of soil characteristics on chestnut seed weight and size. In this study, chestnut fruit (seed) was collected together with green husks from six different growth medium regions (Giresun-Görece, Trabzon-Araklı, Samsun-Salıpazarı, Artvin-Arhavi, Rize-Ardeşen and Rize-Çayeli regions) where chestnut was pure or dominant species. Samples of seeds; seed weight, seed width, height and size were measured. In addition, soil profiles were opened with three replications from 6 different growing environments and soil samples were taken from 0-10cm, 10-20cm, 20-40cm, 40-60cm, 60-100cm levels. Samples of soil; Sand, dust, clay, pH, EC and organic matter analyzes. At the end of the study; There are differences in $p < 0.01$ significance level between seed size, width, height and weight with sand, dust, clay, pH, EC and organic matter.

KEYWORDS

Chestnut (Castanea sativa Mill.), Seed dimensions and weight, Soil properties.

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Poster Session 3

Submission ID: 381

SALEP ORCHIDS AND SALEP IN KAHRAMANMARAŞ REGION

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ABSTRACT

Orchids are perennial, wire rooted, with some varieties having (e.g. Orchis, Ophrys, Dactylorhiza, Serapias, Platanthera) two tuberous roots, herbaceous plants; In Europe and the Middle East, the most orchid variety is found in Turkey. Also known in native language as dilçikık, dildamak, çam çiçeği, çayır or salep otu, it is known that there are about 154 orchid species in 24 varieties in Turkey. 13% of them (20 species and 1 subspecies) are unique to Turkey. Ovoid- root tuberous species which are common in Turkey, used for obtaining salep, belong to Orchis, Ophrys, Anacamptis, Serapias, Himantoglossum, Barlia, Aceras genus, and species with tubercles belong to genus Dactylorhiza and Platanthera. Turkey's North, South, Southeast and Eastern Anatolia regions especially are richer in terms of wild orchids. There are 25 species belonging to 9 genera in Kahramanmaraş region, with 2 species (Orchis palustris and Dactylorhiza osmanica) being common and other species rare and rarely grown. Salep is obtained by grinding dried tubers of wild orchid species belonging to Orchidaceae family, which are perennial, wire rooted, with some types having two tuberous roots, after a series of treatments. It has been known to be used for centuries as a type of medicine in traditional medicine and in various forms as an additive in the food sector. For example, there are information given on the usage as a medicine in the book *Materia Medica* (Medical Materials) a collection of work of Pedanius Dioscorides (MS 20-79), a physician born in Anazarba, near the Kozan district of Adana in the Romans period, and in the 5th volume of *Kanun fit Tıp* (Canon) book of Ibn Sina (Avicenna) (MS 980-1037). Salep, usage of which is unique to Turkey as a traditional beverage and additive ingredient, is still used in many Balkan and Middle Eastern countries, especially once ruled by the Ottomans, under the influence of Turkish culture. In Turkey, salep is mainly obtained from Kastamonu, Muğla, Antalya, Silifke, Kahramanmaraş and Van regions of North, South, South East and Eastern Anatolia and is generally known for the name of the region in its trade. Commercial saleps are tuber mixtures of different orchid species that grow in the area, but they contain more of the orchids that are common in the region. In Kahramanmaraş region, salep is mostly obtained from the center periphery of the province and the north and west parts. In the Kahramanmaraş region, in order to obtain high quality salep, tubers of rather uncommon species of *Orchis anatolica*, *O. mascula* ssp. *Pinetorum*, *O. spitzelii*, *O. tridentata*, *O. morio*, *Anacamptis pyramidalis*, *Dactylorhiza romana*, *Himantoglossum affine* and *Ophrys holosericea* are used. The salep obtained from the tubers of these orchid species is called Maraş salep. Maraş salep obtained from white, red and purple flowered species is collected from the pine fields especially on the slopes of Amanos Mountain and Helete, Tanır, Tekir, Süleymanlı, Kürtül, Kösurge, Kayışlı, Dönüklü regions. Salep in Maraş obtained from the species *O. palustris* and *O. coriophora* which are considered to be of low quality in the region and of *D. osmanica* with tubercles are called Meadow salep. Salep is used in Kahramanmaraş for the first time in Turkey in making ice cream. It has spread to other regions of the country from Kahramanmaraş. The use of salep in the production of ice cream in the region has

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become almost indispensable due to the characteristics it gives to the ice cream. Salep is used in powder form in ice cream production, usually 0.5-1.0% ratio depending on the amount of glycomannan and affects the properties of the ice cream. With the increasing use of Salep in ice cream production, especially since the 1930s, Kahramanmaraş has become an important center of salep trade, and Maraş salep has become very famous due to Maraş ice cream. However, in Kahramanmaraş, which is an important region of the country in terms of the diversity of wild orchids, the area in which salep is obtained is limited.

KEYWORDS

Orchid, Salep

Poster Session 3

Submission ID: 384

ANALYSIS OF FACTORS AFFECTING GILABURU CONSUMPTION IN KAYSERİ PROVINCE

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ABSTRACT

The homeland of Gilaburu plant is known as Turkey and it is a wild plant grows in Kayseri province and its surroundings which show cold climate features and Black Sea region. Gilaburu fruit has been used for various purposes from past to present. Gilaburu consumption has increased due to the rapidly growing population searching for different regional flavors, to offer raw materials opportunity in agriculture-based industry, and the use of medicinal plants as medicines and it has made an important place in the Kayseri province food sector. In this study, it was aimed to determine the factors which are effective in the consumption of Gilaburu and to investigate the level of consciousness about the benefits of Gilaburu fruit. For this purpose, face-to-face survey was conducted with 384 persons determined by proportional sampling method in Kayseri city center. Different statistical analysis techniques were used for the purposes of studying the data obtained from the surveys. In the study, descriptive statistics are expressed in terms of averages, frequency and percentage values. Chi-Square (X²) analysis is used to determine the degree of the relationship between the two intermittent variables (Nonparametric nominal or ordinal scale variable). In this study, chi-square tests were applied between consumers consumption of Gilaburu fruit and settlement status, to know the benefit of the fruit in terms of health, age groups and possession of kidney diseases. As a result of the analyzes made, it was determined that 90% of the consumers had knowledge about the fruit, 93% of them tasted the fruit before and 38% liked the taste of the Gilaburu fruit. Consumers are evaluating Gilaburu as fruit, juice, pickle, jam and pulp. Gilaburu fruit can be difficult to obtain in the country general because of the limited field of growing. As a result of the surveys made, 77% of consumers can easily supply Gilaburu fruit and 23% of consumers cannot supply. Gilaburu fruit is mostly used as a medicinal plant in the region. According to 91% of consumers, it has been determined that Gilaburu can be used as a medicinal plant. It can be said that there is no inconvenience to use because %1 of the consumers are suffering from consumption of Gilaburu for medical use and it is very low in this value. The chi-square test between the consumer's ages and Gilaburu fruit consumption was found to be statistically significant ($p < 0,05$) and Gilaburu consumption is increasing as the ages of the people progresses. The chi-square test between the possession of kidney disease and Gilaburu consumption was also found to be statistically significant ($p < 0,05$) and it was found that people with kidney disease consumed more gilaburu fruit. This fruit is mostly consumed against the kidney disease in the region.

KEYWORDS

Gilaburu, medicinal and aromatic plant, chi-square, Kayseri.

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Poster Session 3

Submission ID: 385

A NOVEL NUTRITIVE GARLIC PRODUCT FOR INCREASING GARLIC CONSUMPTION; BLACK GARLIC

SELİN ALİHANOĐLU¹, HASAN VARDİN¹, MEHMET KARAASLAN¹

ABSTRACT

Garlic (*Allium sativum* L.) is a species of the onion genus and among the oldest cultivated plants. It has been widely used as a spice and also as a medicinal agent for treatment of multiple human diseases and disorders. Garlic has organosulfur compounds and bioactive enzymes in its composition. Garlic has been shown to display anti-bacterial, anti-fungal, anti-atherosclerotic, hypoglycemia, detoxification, and carcinogenic effects due to its bioactive components. Although garlic has been widely used as one of the popular condiment for foods and traditional medicine against various disease, consumption of garlic is very limited due to its unpleasant odor and taste. In recent years various processing methods were applied to obtain new garlic products to eliminate undesirable odor of garlic without damage its health benefits. Black garlic is a heat treated and fermented garlic product at controlled high temperature (60-90 C°) and controlled high humidity (80-90%) for a period of time without any additives. As a result of this fermentation process white-fresh garlic cloves turns to black and get sweet taste, chewy and jelly-like structure. Garlic lose its pungent taste and irritative odor during the ageing process due to the conversion of allicin into water-soluble antioxidant compounds including S-allylcysteine and S-allylmercaptocysteine moreover many sulfur-containing compounds are formed, which contribute to health benefits. Black garlic has stronger antioxidant activity than fresh garlic, and better efficacy in preventing metabolic diseases. Furthermore, non enzymatic browning reactions are take place like Maillard reaction, the chemical oxidation of phenols and caramelisation during aging process. The results of these reactions color of garlic samples turn to dark brown and some antioxidant compounds formation is occur. Process time, process temperature and applied relative humidity effect the black garlic physical, chemical and sensorial properties thus several studies revealed that effect these parameters on black garlic. But all process conditions there was a decrease in moisture content, pH, reducing sugar and increase in browning intensity, antioxidant, SAC content in garlic samples after fermentation. Aim of this study is review the composition, bioactivity, production and applications of black garlic during production process and compare them with fresh garlic at different process conditions.

KEYWORDS

black garlic, allicin, S-allylcysteine, antioxidant, anti-carcinogen

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Poster Session 3

Submission ID: 387

EFFECTIVENESS OF CALENDULA OIL IN RADIODERMATITIS REHABILITATION

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ABSTRACT

After receiving radiotherapy, up to 95% of patients suffer from radiation-induced skin damage, which can lead to dose restriction. In particular, acute radiodermatitis occurs after 90 days of dosing with generalized erythematous bleeding. The National Cancer Institute lists the severity of this dermatitis using a scale of 1 to 4. Acute skin toxicity and moist desquamation tend to occur in skin contact areas such as axilla or skin folds. Management of this important side effect is important because of its high incidence and very negative impact on quality of life. Most patients seek complementary and alternative therapies to provide a solution for this condition. In a particular study, New Zealand regional cancer center found that 49% of 200 patients received radiotherapy use complementary and alternative therapies. A radiation in Queensland uses complementary and alternative therapies in 38% of 101 patients on the oncology clinic. Cancer rehabilitation practices; Restorative, supportive, preventive, palliative. Restorative rehabilitation; Low-level losses and attempts to return to the patient's premorbid functional status when the disorder is anticipated. Restorative rehabilitation is an example of restoring the functional capacity of the exercises to the shoulder joints and exercises to strengthen the upper extremity muscles in patients with breast cancer. Supportive rehabilitation is an attempt to prevent and control the permanent loss of disease or treatment in a patient with cancer. Ambulatory exercises and equilibrium are applied in extremity-preserving surgery in bone and soft-tissue tumors to rehabilitate to support deep sensory rehabilitation. Preventive rehabilitation attempts to reduce the expected functional morbidity with cancer and its treatment. EHA exercises prior to radiotherapy, exercises suitable for extremities with sensory and motor impairments, skin care and orthosis preventive rehabilitation. Exposure to radiation causes DNA damage from direct ionization of radical oxygen species, which promotes dimer formation of water molecules, base changes, and double strand breaks lasting up to 8 hours for repair. Kumar et al. Conducted a meta-analysis of topical treatments in the treatment of radiodermatitis and indicated that most therapies have very limited data. Calendula inhibits oxidative stress, which is theoretically the ideal treatment for radiodermatitis. It is thought to be found in numerous polyphenols found in its extracts. Polyphenols have potentially therapeutic roles as antioxidants on the skin. Calendula affects skin architecture as well as antioxidant potential. Using a cutter, Akhtar et al. Skin hardening and viscoelasticity, which are the direct indicators of the epidermis and water content in the dermis. It is known that Calendula flower, which is known to have antifedematic and anti-inflammatory effects, is effective in removing edema and pain in the tendon. Tissue extracts and massage and tissue renewal were found in tendinitis treatment. Calendula has been shown to improve oral mucositis skin healing compared to a control gel base. Similarly, in a randomized study of 40 head and neck cancer patients receiving radiotherapy, patients with calendula oral wash therapy were found to have significantly lower oropharyngeal mucositis severity at 2, 3, and 6 weeks of treatment compared with placebo.

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Calendula appears to be a safe topical therapy in the treatment and prevention of radiation-induced skin toxicity. The lack of controlled studies of radiation-induced skin toxicity limits the interpretation of the effectiveness of topical treatments. In cancer rehabilitation, approach to radiodermatitis, which often limits rehabilitation, is very important. Loss of tissue elasticity and consequent loss of mobility in joints and structures prevents the targeted steps in the rehabilitation steps. We think that calendula plant extract and oil, which will be applied to radiodermatids as a result of the studies done, will support rehabilitation.

KEYWORDS

calendula, Radiodermatitis, rehabilitation

Poster Session 3

Submission ID: 388

USE OF YELLOW KANTARON (*HYPERICUM PERFORATUM L.*) IN LARYNX MOBILIZATION AFTER RADIOTHERAPY

NESLIHAN ALTUNTAS YILMAZ¹, MUHAMMED NECATI TAT¹, AYŞE MERVE TAT¹

ABSTRACT

In 2002, the World Health Organization declared the hypericum perforatum as a medicinal plant. The yellow centaury, formerly known as the wounded good, is a medical herb that has recently proved its antidepressant activity as a result of clinical trials and has become widespread in the world. It is also used for throat infections, colds, antiseptic and wound healing, as well as cancer, diabetes, chronic rheumatism, gastric ulcer, gastrointestinal diseases, diuretic sedative, liver-bile disorders, jaundice, bronchitis, diarrhea and dysentery. It has also been determined that the herbicide, hyperisin, can be used in the treatment of AIDS because it is effective against a large number of viruses. Due to its cell renewal properties, yellow centaury oil is particularly effective in wounds and burns. In addition, centaury oil, antiseptic feature prevents the formation of germs in the wound, anti-inflammatory feature prevents the formation of inflammation in the wound, Shortening the bleeding with a vasoconstrictor effect, allowing the wound to close quickly with its cell renewal feature, and at the same time it relieves the pain and sores caused by the wound. Radiotherapy alone or with chemotherapy is the most preferred method of cancer treatment for the last 20 years. The main goal of the radiotherapy method is to provide organ protection other than treatment. In the treatment of head and neck cancers, radiotherapy is used definitively in the postoperative period. After radiotherapy, changes in muscle tissue occur over the years. After radiotherapy, muscle tissue becomes a collagen reservoir. This leads to scar formation, decreased blood supply and normal tissue oxygenation. Together with hyalin, fibrillar collagen bundles replace muscle cells. Thus, the muscle strength begins to decrease with soft touch hardening. The problem is that we call fibrosis in irradiated tissues arises. Radiation-induced swallowing is a widely accepted comorbid associated with cancer treatment. The swallowing mechanism is extremely complex and not fully understood; However, poor hypolaryngeal excretion and later inadequate opening of the upper esophageal sphincter cause post-radiation treatment dysphagia most often. Fibrosis leads to restriction of tongue, tongue root, pharynx and mobility of the larynx. For this reason, swallowing disorders (dysphagia) are seen after treatment in patients with any of the primary tumors. Patients with oropharynx cancer are expected to develop laryngeal motility problems as well as pharyngeal motility disorders. After laryngeal cancers, there is a decrease in laryngeal elevation after chemoradiotherapy, and difficulties in oral preparation and oral delivery phases, valvular and pyriform sinuses are found. It is important to acquire laryngeal mobility in the dysphagia rehabilitation, which results in diminished morbidity of scar tissue after larynx after head and neck radiotherapy. The use of certain oils in the field of radiation therapy is contraindicated because it may leave a coating that increases the radiation effect on the skin. Lotions containing alcohol and metals; Delays deep recovery. Alcohol can dry the skin and metals such as zinc oxide or aluminum stearate can cause skin rashes. Elevation of the laryngeal elevation is crucial in ensuring loosening of the upper esophageal sphincter. Decreased laryngeal elevation is the primary predictor of

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aspiration and is usually associated with radiation-induced dysphagia. It is considered that the special mobilization methods that are applied to increase laryngeal mobility in patients with restricted laryngeal motility, made with yellow corn oil, will accelerate tissue elasticity and skin healing

KEYWORDS

Yellow centaury, radiotherapy, larynx mobilization

Poster Session 3

Submission ID: 390

THE INFLUENCE OF ST. JOHN'S WORT ON MILD AND MODERATE LEVEL DEPRESSION

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ABSTRACT

The Influence of St. John's Wort on Mild and Moderate Level Depression Introduction: In our contemporary period, psychiatric disorders are encountered commonly while depression is the most frequent incident. In depression cases, complementary therapies are administered broadly besides the standard treatment procedures. Herbal treatment method known as aromatherapy is one of the complementary treatments applied frequently. Mild and moderate level depression term is considered as mental problem described by a mood chart described by scales. This term should not be confused with major depression description. Major depression is mental illness that could be diagnosed on the basis of the DSM V diagnosis system. Therefore the present study was conducted in order to determine influence of St. John's Wort on mild and moderate level depressions and to compile basic evidences relevant with this field. Findings: Hypericum Perforatum is usually known as St. John's Wort. In 2002, World Health Organization (WHO) declared St. John's Wort as a medicinal plant licensed as antidepressant medicine in Germany. It is administered in numbers of disorders such as insomnia, anxiety disorders and liver dysfunctions as well as especially for mild and moderate depression. In clinical treatments, 600-900 mg/day dosage is found to be effective. Whereas St. John's Wort treatments yield 56% recovery from depression; placebo treatments yield 35% success rate. With regard to the treatment of mild and moderate level depression disorders, it is reported that St. John's Wort extracts are more effective in treatment in comparison with placebo treatments; and that their adverse effects are more limited. Finally, St. John's Wort utilized in many culture is intensively used in treatment of mild and moderate depression; and the relevant scientific studies on its administration has increased progressively. Resources 1. Alataş G, Kahiloğulları AK, Yanık M. T.C. Sağlık Bakanlığı Ulusal Ruh Sağlığı Eylem Planı (2011-2023) (Ed. Erkoç Y, Çom S, Torunoğlu MA, Alataş G, Kahiloğulları AK.). Erişim: 24 Haziran 2015, <http://www.saglik.gov.tr/TR/dosya/1-73168/h/ulusal-ruh-sagligi-eylem-planı.pdf> 2. Demirkıran F, Terakye G. Depresif hastaların ilaç tedavisine uyumları ve destekleyici hemşirelik uygulamalarının uyum düzeyine etkisi. *Kriz Dergisi* 2001; 9:29-39. 3. Sağduyu A, Ögel K, Özmen E, Boratov C. Birinci basamak sağlık hizmetlerinde depresyon. *Türk Psikiyatri Dergisi*. 2000; 11(1):3-6. 4. Linde K, Kriston L, Rucker G, Jamil S, Schumann I, Meissner K, Sigterman K, Schneider A. Efficacy and acceptability of pharmacological treatments for depressive disorders in primary care: systematic review and network metaanalysis. *Ann F am Med*. 2015;13(1):69-79. 5. Apaydin EA, Maher AR, Shanman R, Booth MS, Miles JNV, Sorbero ME, Hempel S. A systematic review of St. John's wort for major depressive disorder. *Systematic Reviews*. 2016;5(148):1-25. DOI 10.1186/s13643-016-0325-2 6. Ng OX, Venkatanarayanan N, Hoc CYX.

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KEYWORDS

St. John's Wort, depression, aromatherapy

Poster Session 3

Submission ID: 391

THE ANTIOXIDANT EFFECTS OF BERRY FRUITS

REZZAN KASIM¹, PINAR ŞANLIBABA², MEHMET UFUK KASIM¹

ABSTRACT

Anthocyanins, which are responsible for the red and blue colors displayed by many vegetables and fruits, belong to secondary plant metabolites. Nowadays, there is an increasing interest on their biological activities as they are claimed to enhance health by protecting against some chronic diseases. In recent years, the developed world has become very aware of the health-promoting properties of the berry fruit group, which has created a strong world market within this fruit sector. The term 'berry fruits' encompasses the so-called 'soft fruits', primarily strawberry, currants, gooseberry, blackberry, raspberry, blueberry and cranberry. Berries constitute a rich dietary source of phenolic antioxidants. Blueberries (*Vaccinium L. species*), blackberries (*Rubus L. Hybrids*) and blackcurrants (*Ribes nigrum L.*) are especially rich sources of dietary anthocyanins and antioxidants. Consumption of small fruits has been associated with diverse health benefits, such as prevention of heart disease, hypertension, certain forms of cancer and other degenerative or age-related diseases. These beneficial health effects of small berry fruits could mostly be due to their particularly high concentrations of natural antioxidants. Antioxidants neutralize free radicals and thus protect the organism from the oxidative damage of lipids, proteins, and nucleic acids. Because of the high contents and wide diversity of health-promoting substances in berries, these fruits are often referred to as natural functional products. The objective of this review is to highlight the nutraceutical value and to summarize the health-promoting effect of berry fruit antioxidants.

KEYWORDS

Berries, antioxidant, nutraceutical.

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Poster Session 3

Submission ID: 392

SOCIO-ECONOMIC IMPORTANCE OF USING NATURAL GROWING AROMATIC PLANTS AS SUSPENSUS

OKAN YELER¹

ABSTRACT

Medical aromatic plants is quite important in terms of human health. These hydroponic plants, which are widely used in the present day, are often located in different places in the direction of their competence. Some species are naturally grown and some species are being tried to be grown in different environments in order to benefit from visual effects and medical benefits. Every effort has been made to reach these healing plants, which have medicinal benefits in each season. These plants are not able to contribute to socio-economic development, especially because the existing natural medicinal aromatic plants can not be properly transported to marketing channels, and because it is not possible to tell exactly what kind of plant is beneficial. For this reason, it is important to move towards alternative marketing channels. In recent years, some medicinal aromatic plant species have been very important in the sector, especially in the shrubs sector, which creates a great market by entering the country from the western and northern societies and has a serious usage share in social relations, aesthetic and environmental regulation applications. In this study, some medicinal aromatic plants such as Tilia (Ihlamur), Orchis (Salep), Vaccinium myrtillus (Yaban Mersini) and Cassia (Sinamaki) which are included in production and marketing fields of ornamental plants are examined on species basis and put on the importance of visualization and treatment of these plants. In addition, evaluation of these species in social development in production and marketing has tried to reveal both the added value that can be obtained in the economy and the importance of medicinal and aromatic plants on species basis.

KEYWORDS

Natural Medicinal Aromatic Species, Socio-Economic Importance of Medical Aromatic Plants, Natural Ornamental Plants

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Poster Session 3

Submission ID: 393

THE USE OF ACTIVATED WALNUT SHELL TO REMOVE LEAD IONS WITH BIOSORPTION METHOD

FATMA TOMUL¹, YASIN ARSLAN², ERDAL KENDÜZLER¹

ABSTRACT

The contamination of surface waters with toxic heavy metals such as Pb is one of the major environmental problems and the development of suitable technologies for the effective and economical removal of toxic metals such as Pb from water is needed for environmental and human health. In this context, the biosorption method, which is economical and environmental wastewater treatment method in which significant amounts of by-products used as biosorbents is used to remove toxic metals from the water. In this study, the removal of lead ions from water by biosorption method using walnut shell and sodium hydroxide activated walnut shell biosorbents was investigated. The original and activated walnut shells were characterized by SEM-EDS and FTIR analyzes to determine the effect of activation on the surface structure of the walnut shell. In the SEM photographs, the presence of irregularly shaped and stratified structures was observed before the activation. On the other hand, after the activation with the base, more porous and curved surfaces were formed. The high C and O contents obtained from the EDS analysis confirm the presence of polysaccharides such as cellulose, hemicellulose and lignin. The peak in the FTIR spectrum for the C = O peak observed at 1742 cm⁻¹ was not observed after activation with sodium hydroxide. The effects of various parameters such as adsorbent concentration, pH, temperature and contact time were investigated to determine optimal biosorption conditions. Biosorption experiments have shown that lead removal increases as the biosorbent concentration increases and the highest biosorption efficiency for the biosorbent concentrations is reached at a concentration of 10 g/L biosorbent. It has also been found that base activation is effective for increasing the biosorption yield. It was found that for the adsorbent concentration of 10 g/L, adsorbent yield was 81% with the original walnut shell. However, at same concentration, adsorbent yield was increased to 99% in the case of NaOH-modified walnut shell. It was found that the biosorption efficiency was dependent on the pH and the highest biosorption efficiency was achieved at pH 6. The decrease in biosorption yield with increasing temperature confirms that the biosorption process is exothermic and spontaneous. Furthermore, biosorption experiments have shown that more than 50% of the lead ions are removed within the first 10 min and the equilibrium is reached in 120 min. These results reveal that the biosorption rate can be defined by a pseudo second order kinetic model. According to the results obtained, base activated walnut shell can be used as effective biosorbent to remove lead ions from water. Acknowledgment: This work was supported by TÜBİTAK BİDEP 2209-A Domestic Projects Support Program for University Students (Project application no: 1919B011401094).

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KEYWORDS

walnut shell, activation, lead, removal, toxic metal

Poster Session 3

Submission ID: 394

EFFECT OF ACID ACTIVATION ON THE ADSORPTION CAPACITY OF LEMON PEEL

FATMA TOMUL¹, ERDAL KENDÜZLER¹, YASIN ARSLAN²

ABSTRACT

In this study, lemon peel itself and lemon peel activated with nitric acid were used as biosorbent to remove lead ions from water. The effect of activation on biosorbent structure was investigated by SEM-EDS and FTIR analysis techniques. It has been observed that the activation process is effective in pore formation. The FTIR spectrum of the original lemon peel sample was not shown significantly changes after modification with nitric acid but peak intensity for cellulose observed at 1000-1200 cm⁻¹ in the fingerprint region and the peak intensity for free and esterified carboxyl groups and pectins observed at 1600 and 1800 cm⁻¹ were decreased. The effects of various parameters such as adsorbent concentration, pH, temperature and contact time on lead adsorption processes were investigated. It was observed that the adsorption efficiency increased with nitric acid activation and increasing adsorbent concentration and pH and decreased with increasing the temperature. Approximately 99% adsorption yield was obtained using optimum experimental conditions of 20 mg/L lead, T= 25°C, pH = 6 and 10 g/L adsorbent concentration. Acknowledgment: This work was supported by TÜBİTAK BİDEP 2209-A Domestic Project Support Program for University Students (Project application no: 1919B011401094).

KEYWORDS

lemon peel, adsorption capacity, lead, toxicity

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Poster Session 3

Submission ID: 397

EFFECTS OF THE SUPPLEMENTATION OF ESSENTIAL OIL ISOLATED FROM ORANGE PEEL (CITRUS SINENSIS L.) TO BROILER DIETS ON THE PERFORMANCE

AHMET AYDIN¹, AHMET ALÇİÇEK²

ABSTRACT

ABSTRACT: In this study, the effects of essential oil isolated from orange peel (OEO) added to broiler diets on the performance were examined. In the research, 432 broiler chickens were used and the experiment lasted for six weeks. In the experiment, 0 (1st group), 50 (2nd group), 100 (3rd group) and 150 mg/kg (4th group) of OEO (*Citrus sinensis* L.) were added to broiler diets and 4 different diets were used. The effect of OEO added to broiler diets on the live weights were found significant ($P < 0.05$), except for 1st and 5th weeks. The more the doses of the OEO were the more the live weights increased, the dose of 150 mg/kg had the maximum increase. Feed intake was found significant ($P < 0.05$), except for the 2nd week. The addition of 150 mg/kg of OEO improved the feed efficiency ($P < 0.05$). Carcass weight, carcass yield, things, breast, back, wing, abdominal fat and heart weights significantly increased ($P < 0.05$) as OEO dose added to diets increased.

KEYWORDS

Orange Essential Oil (Citrus sinensis L.), Broiler, Performance

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Poster Session 3

Submission ID: 398

FROM TRADITIONAL TO MODERN; THYME PROCESS IN MEDICAL HISTORY

NURIYE DEĞİRMEN¹

ABSTRACT

The species in Lamiaceae family and containing carvacrol, thymol are considered as "thyme". In Europe and America, Turkish thyme (*Origanum onites* L.), Greek thyme (*Origanum vulgare* L. spp. *viridi* (Boiss) Hayak), Spanish thyme (*Coridothymus capitatus* L. Hoffmann ve Link) and Mexican thyme (*Lippia graveolens* HBK) are important in economic terms. *Origanum*, *Thymus*, *Satureja*, *Thymbra* and *Coridothymus* are important in terms of distribution and economy in Turkey. Approximately 70% of the world's thyme trade is provided from Turkey. Among the thyme species in the Aegean and Mediterranean regions in Turkey are *Origanum onites* (Izmir thyme), *Origanum majorana* (white thyme), *Origanum minutiflorum* (Sutculer tyme, an endemic species), *Origanum syriacum* var. *Bevanii*, *Thymbra spicata* or *T. sintenisii* (Zahter, Black thyme, Pointed thyme), *Coridathymus capitatus* (Spanish thyme). Leaves and flowers of *Origanum onites* are consumed as spices, used in pharmacy and perfumery industry. Main ingredients of the thyme essential oil are carvacrol, cineol, borneol, linalool and γ -terpinen. Today, complementary medicine has popularity due to the increased side effects of modern medicines. Thyme has been widely used in folk medicine for centuries. A new regulation has been issued in Official Gazette of the Republic of Turkey (date: 27.10.2014, number: 29158) to regulate the practices of traditional and complementary medical practices for human health, training and empowerment of persons to apply, regulation of working principles of health institutions to be implemented. The traditional use of plants continues among the population despite the publication of these regulations. There is needed to be informing about the correct use of thyme. In this study, we would like to emphasize the usage of thyme in folk medicine and medicinal plants' books and current studies. In the history of medicine; which thyme species was used is not mentioned. Thyme has been used for therapeutic purposes in Anatolia since the past, thyme tea drinks for the thought of facilitating birth. In Mesopotamia thyme was used as a drog, Sumerians used thyme for wheezing, callus and eczema, 5000 years ago, the Egyptians also used it in the mummification process. Hippocrates used thyme for the treatment of asthma, shortness of breath and poisoning, low and stillbirth women, sore throat (mixed with mustard and drove to the outer surface of the throat), prevent of blood coagulation (mixed with a honey). Dioscorides indicated that thyme can be used as a drug, has curvy branches, thorns are located on branches. This plant use is widespread in Islamic medicine. According to a story; Hz. Muhammad (S.A.V) come across the thyme one day; thyme said that "Prophet, take me, I swear to God who sent you as a truth prophet, I can cure all diseases". Thyme was used in 41 ways in Aegean and South Marmara of Anatolia. Thyme was used in the 3. position among the medicinal plants in Konya in 2009. People used thyme (*Thymus capitatus*) for rheumatism pain in Anatolia. Thyme (*Origanum syriacum*) was used as antiseptic and antibiotic in Cyprus. Specific thyme was used for shortness of breath as also for diarrhea, late walking and paralyzed children. People use flowers and leaves of thyme; raw, spice, infusion, mist, mouthwash,

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paste, tea, water, extract, oil and enema, and are applied in different cures; diabetes, stomach discomfort, nausea, abdominal pain, stomach burn, indigestion, cholesterol, headache, rheumatic disorders, sore throat, cough and flu ailments; blood sugar and cholesterol lowering, germicide, digestion facilitator, blood pressure balancer, bile enhancer, pain reliever, body strength enhancer, appetizer, regulating the function of the secretory glands in the liver and pancreas, libido enhancer, immune system strengthening, nerves strengthening, diuretic, menstrual irregularities, astringent, fungus, for healing of skin disorders and antioxidant effects. Thyme is also take place in the books of medicinal plants. In this books it has been indicated that thyme may be used for the curing of menstruation, lung diseases, indigestion, uterine cancer, uterine pain, uterine disease, prostate diseases. Today, many national and international research related to thyme is available. In the national research investigated that 8 different extracts of *Thymus vulgaris* has an antimicrobial activity on *Bacillus subtilis*. In the international research determined that essential oil of *Thymus vulgaris* has a bacteriostatic activity on 9 gram negative bacteria and 8 gram positive bacteria. As a result, thyme agriculture is easy and it has a lot of benefits. There is a need to increase of thyme cultivation, researches, public awareness of the use of plant, inform health workers about the subject and encouraging them to apply, must be applied regulations into practice. Because of the thyme is widely used among the public it is necessary to inform by professionals for the using of correct doses, correct method, in appropriate disease and it is also necessary to explain the correct use in the media and educational institutions in Turkey.

KEYWORDS

Thyme, traditional medicine, modern medicine

Poster Session 3

Submission ID: 399

THE POTENTIAL OF MEDICINAL AND AROMATIC PLANTS IN THE CENTRAL ANATOLIAN STEPPE RANGELAND AND THE ACTIONS TO BE TAKEN FOR THESE PLANTS

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ABSTRACT

The plant formation destroyed by giving way difficult conditions resulted from high evaporation, lack of rainfall in summer season developing depending on spring precipitation is known as steppe. The tree with short plant height or the bush species are run across more or less amount with these steppe sometimes. The steppe of the Turkey have got marvelous biodiversity. But also the areas to have the most genetic erosion and ecocide are these steppe rangelands. These rangelands are worthful and rich areas in terms of medicinal and aromatic plants like *Astragalus* sp., *Tymus* sp., *Salvia* sp., etc. It's have an importance about particularly the preservation of the steppe areas had local endemic plants. The secondary metabolite of medicinal and aromatic plants which are grown in these areas can be have various and richer content. There are a large number of medicinal and aromatic plants within plants which are determined in the vegetation survey. For this reason, these steppe rangeland should be prevented, and the medicinal and aromatic plants in there should be agricultural production.

KEYWORDS

Aromatic Plants, Biodiversity, Endemism, the Steppe Rangelands, Medicinal Plants

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Poster Session 3

Submission ID: 401

CYTOTOXIC EFFECTS OF EREMURUS SPECTABILIS BIEB. EXTRACTS ON CANCER CELL LINES

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ABSTRACT

Eremurus spectabilis Bieb., belonging to Liliaceae family, is geographically distributed in the region of central Asia and middle East. *Eremurus spectabilis* Bieb. commonly used as a wild edible vegetable. Its leaves and roots have been traditionally used in folk medicine to treat some ailments such as hemorrhoids, diabetes, pains of eyes, jaundice, pimples, eczema and fungal injection. Natural products and related drugs are used to treat 87% of all categorized human diseases. Recently, traditional herbal drugs are gaining importance in the search for new anticancer drugs due to their low toxicity and combined effects. Although antioxidant and antimicrobial effects of *Eremurus spectabilis* Bieb. are known, there is no study about anticancer effect. In this study, the cytotoxic effects of aqueous extracts of *Eremurus spectabilis* Bieb. were investigated on NIH3T3 (murine fibroblast), HL-60 (human promyelocytic leukemia) and K562 (human chronic myeloid leukemia) by MTT \square 3- (4,5-dimethylthiazol-2-yl) -2,5-diphenyltetrazolium bromide \square assay. Plant materials were washed with distilled water and dried at room temperature. The aqueous extract was prepared by using distilled water and lyophilized. The cytotoxic effects of *Eremurus spectabilis* extract was tested at different concentrations (50-500 μ g/ml) on cell lines. Dose-response curves were performed to calculate IC50 (concentration inhibiting growth of 50% of cells) of the compounds. The efficacy of the extract was compared according to this value. The aqueous extract of *Eremurus spectabilis* Bieb. had cytotoxic activity in the range of 180-400 μ g/ml in all cells. IC50 values of cells were determined NIH3T3> HL-60> K562 respectively. The aqueous extract of *Eremurus spectabilis* Bieb. had cytotoxic activity in higher concentrations compared to leukemia cells (K562 and HL-60) in normal diploid 3T3 fibroblast cells. These results suggested that anticancer molecules present in this plant may be selective antileukemic drug potential.

KEYWORDS

Eremurus spectabilis Bieb., Cancer Cell Lines, Cytotoxic Effects

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Poster Session 3

Submission ID: 402

THE İMPORTANCE OF ESSENTIAL OIL ISOLATED FROM ORANGE PEEL (CITRUS SINENSIS L.)

AHMET AYDIN¹, MEDET KORKUÇ¹, DİLEK ŞENTÜRK DEMİREL², SEVİLAY GÜL³

ABSTRACT

Abstract The essential oils isolated from Orange peel (*Citrus sinensis* L.) as a natural feed additive and have antimicrobial activity interest increased. Many researches have been made for use as natural feed additive in poultry nutrition. In this research, the essential oils improvement in parameters such as live weight gain, feed intake, feed efficiency, egg production and carcass yield significant has been reported. In a particular study, 150 mg / kg of orange peel essential oil had a positive effect on performance compared control group and found positive effects on cholesterol and albumin values of blood parameters. It has also been reported that when the intestinal flora is examined, the *E. coli* ratio is reduced significantly ($P < 0.05$). In another study, it was reported that mixtures containing orange peel essential oil significantly increased body weight gain and feed utilization in broiler chickens ($P < 0.01$) and significantly ($P < 0.05$) against many pathogenic microorganisms that threatening chickens.

KEYWORDS

Medical and aromatic plants, Orange Peel, Essential oil, Performance

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Poster Session 3

Submission ID: 403

HARVEST AMOUNTS AND ETHNOBOTANICAL USES OF THE MUSHROOM (BOLETUS SP.) IN TURKEY

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ABSTRACT

Mushrooms are organisms without chlorophyll. By creating spores, reproduce themselves as asexual and without spores as sexual. They could be found in particularly humid places all over the world. In a humid environment, after rains, mushrooms easily occurs by germinating spores in the soil. Mushrooms are the small tubes called "huf" in the shape of the spinning organs and the yarns that make up the basic structures. The parts collected and utilized by humans are the sexual reproduction organ formed by the specialization of huf in the form of yarn. People have been using mushrooms for many years, especially as food and medicine. In addition, the poisonous ones are used in the chemical industry because they cause chemical changes, and they also contain antibiotic substances. Of the mushrooms identified on the earth, about 5,000 are edible. Porcini or Penny bun (*Boletus* sp.) which is the edible tasty mushroom; food, pasta sauce, soup making and drying in factories. At the same time, *Boletus* sp., which is exported abroad and contributes to the Turkish economy. According to the data received from General Directorate of Forestry, Department of Non-Wood Products and Services. First record belongs to year 1989 in the period of 1989-2015. In 1989, for the first time, 4.000 kg mushroom collected and gained 2 TL incomes in the territory of The Forest Regional Directorate Bursa. Mushrooms were harvested from The Forest Regional Directorate Bursa, Amasya, Balıkesir, İstanbul, Giresun and Bolu till now. When analyzed 26 years of data; in total, 2.102.737 kg of mushroom harvested and was earned as revenue 451.758 TL. Maximum amount of mushroom harvested while performing from The Forest Regional Directorate İstanbul with 1.225.402 kg, and minimum amount of harvest was carried out from The Forest Regional Directorate Bolu as 700 kg.

KEYWORDS

Boletus sp., Edible mushroom, Harvest, Ethnobotanical uses, Turkey.

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Poster Session 3

Submission ID: 404

CHEMICAL COMPOSITION AND MEDICINAL USE OF THE ESSENTIAL OILS OF BRYOPHYTES

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ABSTRACT

Bryophytes belong to the group of the oldest known land plants, which includes liverworts, hornworts and mosses. More than 22.000 members of the mosses are exist (Bryophyte) in the world. Many studies were done on some bryophyte taxa because of their effective substance as anti-microbial, antibiotic, antifungal, insecticidal, chemical, cosmetic, medicine, antifeedant and biomonitoring usages. Essential oils and their constituents are widely used in cosmetics as fragrances, in medicine as parts of different medical products, and in the food industry as flavoring additives. The essential oils of mosses generate a pleasant, sometimes distinct smell in the fresh state and have been used as traditional medicines. Because of the chemical content, bryophyte usage in various fields as follows; Use of bryophytes as antimicrobial and antifungal agents: Some bryophytes of which were reported active against microbes. Biologically active substances: Some bryophyte in fact manufacture broad-range antibiotics. Their usage in dressing, diapers production, and other human medicinal applications are recognized in various parts of the world. Antiviral Activity: Bryophytes have used to treat venereal ailment by packing Sphagnum on the infected organs. It produces several active humic acids against viruses. Anti-tumor Properties: According to the some study results; anti-cancer action against Sarcoma 37 in mice, using extracts of Polytrichum juniperinum. The peat preparations hold some guarantee against some types of human cancer. Gynecology: Ploytrichum commune moss used as an aid in gynecology. Sphagnum is helpful in speeding up the process of labor. It has also been used as a contraceptive to obstruct the access of sperm, along with grass, sponge and other fiber. Laxatives and Diuretics: Ploytrichum commune used as diuretic and laxative agent. It's also used as detergent and hemostatic agent. Muscle relaxing drugs: Marchantin A (Marchantia sp.) and the associated cyclic bis-bibenzylyls are structurally analogous to bis-bibenzyloquinoline alkaloids such as d-tubocurarine, which are pharmacologically important muscle relaxing active drugs. Cardiotonic and vasopressin antagonist action: Marchantin A (Marchantia sp.) was reported as potent cardiotonic. Mosses also contain polyunsaturated fatty acids that are already known to have important potentials in human medicine, such as preventing atherosclerosis and cardiovascular disease, reducing collagen-induced thrombocyte aggregation, and lowering triacylglycerols and cholesterol in plasma. Lung diseases: Marchantia polymorpha liverwort were used in the treatment of pulmonary tuberculosis. Treatment of skin: Local people of Himalayan regions use a mixture of moss ashes with honey and little fat to heal cuts, burns and injuries. Marchantia polymorpha and Marchantia palmata liverwort are used to treat abscesses and boils. Filters: Species of Anomodon, Entodon, Hypnum, and Scapania wrapped in a cone of Rhodobryum campanulatum leaves, to serve as smoking filters by the natives of Himalayas. Transgenic Pharmaceutical Production: Physcomitrella patens is able to produce human proteins and is

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the solitary plant being used to produce the blood-clotting factor IX for pharmaceutical use. Bryophytes are source of many incredibly interesting and useful bioactive compounds. The majority of the compounds reported in the bryophytes are lipophilic terpenoids (mono-, sesqui, and diterpenoids) and fragrant compounds. Few of them are nitrogen- or sulfur-containing compounds. Presently, only about 5 % of the total bryophytes have been studied chemically. Hence, there is an insightful call for their proper assessment regarding their useful chemical constituents and activities. By taking into account the results of those studies carried out in Turkey, randomized controlled studies between health professionals and disciplines is recommended.

KEYWORDS

Bryophyte, Chemical Composition, Drug, Essential Oils, Health

Poster Session 3

Submission ID: 405

HARVEST AMOUNTS AND ETHNOBOTANICAL USES OF THE LAVENDER (*LAVANDULA SP.*) IN TURKEY

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ABSTRACT

Medical and aromatic plants are commonly used in Turkey and in the World as an adjunct product for the prevention, treatment and healing of diseases and for the protection of health. In addition to that, it is used as food, herbal tea, spices and seasonings. Increasing demand on the market causes that plant to be faced with extinction of some species in nature. For this reason, cultivation of medicinal and aromatic plants is getting more and more important. Lavender, one of the most important medicinal and aromatic plants in Turkey, has been cultivated since the 1960's, and today's planting areas are increasing day by day. Lavender oil perfume, which is one of the most popular essential oils in the world, is used in cosmetics and pharmaceutical industry. Lavender has also been used for decorative purposes in the past and various industrial branches in the following years. Today, the use of lavender for medical and food purposes has been increasing considerably. Lightly bitter, strong-scented flowers are used in food, jam and tea making; Fresh leaves are used in meat and fish dishes, salads, sweet and syrup. Lavender flowers contain tannins, glycosides, saponins, organic acids and essential oils. Lavender has medically painkiller, antiseptic, antibacterial, antifungal, wound healing, sedative, expectorant, gas remover, muscle spasmolytic, nerve and heart strengthening effects. According to the data received from General Directorate of Forestry, Department of Non-Wood Products and Services. First record belongs to year 2000 in the period of 1989-2015. In 2000, for the first time, 17.100 kg lavender collected and gained 342 TL incomes in the territory of The Forest Regional Directorate Muđla. Lavender was harvested from The Forest Regional Directorate Muđla, Bursa and Balıkesir until now. When analyzed 26 years of data; in total, 80.488 kg of lavender harvested and was earned as revenue 2.674 TL. Maximum amount of lavender harvested while performing from The Forest Regional Directorate Muđla with 71.470 kg, and minimum amount of harvest was carried out from The Forest Regional Directorate Balıkesir as 4.018 kg of lavender harvested and was earned as revenue 141 TL

KEYWORDS

Lavandula sp., Lavender, Harvest, Ethnobotanical uses, Turkey.

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Poster Session 3

Submission ID: 406

MEDICINAL AND AROMATIC VALUE OF THE MADONNA LILY

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ABSTRACT

Turkey has a very good potential for bulbous, tuberous and rhizomous plants. There are about 12000 plant taxa and 3000 endemic species, 800 bulbous, tuberous and rhizomous species of these species. Bulbs, tubers and rhizomes of these plants have been used as medicinal plants for centuries and also their flowers are used as ornamental plants. Turkey incomes approximately 2 million dollar every year from exporting of bulbous, tuberous and rhizomous plants. The collection, cultivation and exporting of bulbous, tuberous and rhizomous plants are controlled by the regulation on the uprooting, production and trade of natural flower bulbs. *Lilium candidum* L. (Madonna Lily) bulbs propagated are allowed to be exported by the regulation. The bulbs of Madonna lily with over 16 cm circumference are exported. Naturally Madonna lily is spread in Aydın, İzmir, Mersin, Muğla, Antalya, Balıkesir, Çanakkale, İstanbul and Mardin in Because of its beautiful flowers and pleasant smell, it is used as ornamental plant or perfume plant. The watery bulbs and leaves are eaten by some animals such as pigs, sheep and goats. Madonna lily bulbs are randomly collected by humans in some regions. This study aims to give some information about morphological properties, ecological requirements, common names, distribution areas, cultivation, propagation, ingredients, usage areas, economic value and exports of *Lilium candidum* L. plant which is a medicinal and aromatic value.

KEYWORDS

Lilium candidum, Madonna lily, Medicinal and aromatic plants, Ornamental plants

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Poster Session 3

Submission ID: 407

HARVEST AMOUNTS AND ETHNOBOTANICAL USES OF THE MISTLETOE (*VISCUM ALBUM L.*) IN TURKEY

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ABSTRACT

Viscum L. is represented in our country with one species (*Viscum album L.*) and three subspecies. The mistletoe grass is a green half-parasitic shrub that grows on forest trees and shrubs. Its fruit is covered with bright white color and an inner sticky substance in pea size. Today, *Viscum album*'s dried fruits and leafy branches are used in the content of many medicines. In addition, with the chemical studies carried out, it has been determined that *Viscum album* includes lectins, viscotoxins, polysaccharides, polycholates, flavonoids, phenylpropons, lignans, biogenic amines, other nitrogen compounds and caffeic acid derivatives. The plant used in the treatment of many diseases has constipation, diuretic, digestive, emetic, emetic, cholesterol-lowering, nervous soothing, antifungal and hypotensive effects. It is also used such as a safener against both the cancer and tumor, and in the treatment of different types of cancer and cardiovascular diseases. According to the data received from General Directorate of Forestry, Department of Non-Wood Products and Services. First record belongs to year 1992 in the period of 1989-2015. In 1992, for the first time, 4.700 kg mistletoe collected and gained 0,2 TL incomes in the territory of The Forest Regional Directorate Eskişehir. Mistletoe were harvested from The Forest Regional Directorate Bolu, Adana, Kütahya, Bursa, Konya and Eskişehir till now. When analyzed 26 years of data; in total, 52,287 kg of mistletoe harvested and was earned as revenue 1.080 TL. Maximum amount of mistletoe harvested while performing from The Forest Regional Directorate Adana with 28.000 kg, and minimum amount of harvest was carried out from The Forest Regional Directorate Konya as 1.000 kg of mistletoe harvested and was earned as revenue 10 TL.

KEYWORDS

Viscum album sp., Mistletoe, Harvest, Ethnobotanical uses, Turkey.

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Poster Session 3

Submission ID: 408

HARVEST AMOUNTS AND ETHNOBOTANICAL USES OF THE STINGING NETTLE (URTICA SP.) IN TURKEY

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ABSTRACT

Utilizing plants is as old as human history. Humankind has used some plants for nutrition, and some plants have been curing their troubles, and some of them in the treatment of diseases. Stinging nettle (*Urtica sp.*) is one of the most frequently used medicinal herbs in Turkey. It contains potassium salts, organic acids (formic acid), histamine, acetylcholine and vitamin C. It is used as an assistant product in many diseases which have nettle root, leafy branches and seeds blood purifier, cell renewal, blood maker, anti-bleeding, urine enhancer, appetizer, blood sugar lowering, laxative, muscle relaxant and stimulating effects. That plant might cure cancer, blood diseases, rheumatism, diabetes, asthma, kidney diseases, urinary tract diseases, hemorrhoids, hair loss, constipation biliary diseases etc. Nettle, which is common in the village markets as vegetables, is used for making food, soup, roasting, scalding, salads, pies, spices and tea. According to the data received from General Directorate of Forestry, Department of Non-Wood Products and Services. First record belongs to year 1989 in the period of 1989-2015. In 1989, for the first time, 300 kg stinging nettle collected and gained 0.01 TL incomes in the territory of The Forest Regional Directorate İzmir. Stinging nettle were harvested from The Forest Regional Directorate Balıkesir, Bursa, Çanakkale, Isparta, İzmir, Mersin, Muğla, Kastamonu, Kütahya and Konya until now. When analyzed 26 years of data; in total, 27.545 kg of stinging nettle harvested and was earned as revenue 1.821 TL. Maximum amount of stinging nettle harvested while performing from The Forest Regional Directorate Kütahya with 15.215 kg, and minimum amount of harvest was carried out from The Forest Regional Directorate Bursa as 100 kg of stinging nettle harvested and was earned as revenue 2 TL.

KEYWORDS

Urtica sp., Stinging nettle, Harvest, Ethnobotanical uses, Turkey.

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Poster Session 3

Submission ID: 409

THE ROLE OF MIDKINE AND MYRICETIN IN CD133+/44+ PROSTATE CANCER STEM CELLS SURVIVAL

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AYHAN BILIR²

ABSTRACT

Prostate cancer (PCa) is a leading cause of morbidity and mortality within the male population. Midkine (MK) is a heparin-binding growth factor and is overexpressed in various types of whose expression is weak or undetectable in normal adult tissues. Plant derived natural flavonoids have received considerable attention in recent years due to their diverse therapeutic benefits. In the present study we investigated the effect and mechanism(s) of MK and myricetin, a natural flavonoid, treatment in prostate cancer stem cells (PCSC). Stem cells (CD133+/44+) were isolated from the human PCa PC3 cell lines using a magnetic-activated cell sorting system. Endogenous MK mRNA expression was knocked-down by synthetic siRNA. Cell survival was measured by MTT assay. RT-qPCR and image-based cytometry were used to investigate apoptosis and cell cycle progression. PCSCs were treated with various concentrations of myricetin for up 24 - 72 h. The PCSC survival was dose- and time-dependently inhibited by myricetin. Downregulation of MK led to significant growth inhibition. Treatment of MK knock-downed cells with the IC50 value of myricetin (35 μ M) enhanced cell death to a significantly greater extent than treatment with either agent alone. The combined therapy strengthens the apoptosis and cell cycle arrest at the S phase of myricetin treatment. Myricetin therapy significantly reduces the cell migration and spheroid diameter of three-dimensional cell culture. Taken together, MK plays an important role in PCSC survival and co-treatment with myricetin might provide a promising treatment for patients with prostate cancer.

KEYWORDS

Cancer stem cells, flavonoid, midkine, myricetin, prostate cancer

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Poster Session 3

Submission ID: 410

THE EFFECTS OF ECOLOGICAL FACTORS ON SOME POMOLOGICAL PROPERTIES OF FRUITS IN VACCINIUM ARCTOSTAPHYLOS (L.) POPULATIONS IN THE FIRTINA VALLEY

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ABSTRACT

In this study, it was tried to determine the effect of environmental factors such as altitude, geological formation and canopy cover on certain pomological properties of fruit in the whortleberry populations in the Firtina Valley. For this purpose, Total 30 experimental sites with three replicates were taken in three different levels of altitude (1000-1200 m, 1300-1500 m, 1800-1900 m. a.s.l.), two different geological formations (Kaçkar Granitoyidi and Çatak) and two different canopy covers (0% and 40-60%). Pomological characteristics such as width, height, weight, dry matter amount of fruit were measured in fruit samples collected from experimental plots. As a result of the research, it was found that fruit width varied between 4.04 and 12.91 mm, fruit length ranged from 4.94 to 13.92 mm, the 100 berry weight varied between 24.61 and 87.05 g, and the total dry matter amount varied between 10.21% and 17.35%. It was determined that ecological factors, especially elevation, changed fruit characteristics statistically significant. As the altitude increased, fruit width, fruit height and 100 berry weight showed irregular change. Pomologically, the best fruit characteristics the populations were found on the Çatak geological formation at the second elevation (1300-1500 m a.s.l.). The wild caucasian whortleberry populations in the second elevation can be selected as one of the genetic resource conservation areas in the valley.

KEYWORDS

Vaccinium arctostaphylos (L.), fruit, pomological traits, altitude, geological formation

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Poster Session 3

Submission ID: 413

THE IMPORTANCE OF PHENOLIC COMPOUNDS AND EXERCISE IN CHRONIC INFLAMMATION

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ABSTRACT

Inflammation is the biological complex defense response that the body has shown to wipe out or restrict harmful stimuli after necrotic structures have been removed from damaged tissues and cells. Inflammation is part of a non-specific immune response. Inflammation can be acute (short-term) or chronic (long-term). Acute inflammation is the first response of blood and plasma to leukocytes in injured tissues, mainly by the movement of neutrophils, but then by the movement of monocytic cells. There is limited beneficial effect of acute inflammation especially when fighting infection. Chronic inflammation is also associated with the presence of cells such as macrophages and lymphocytes histologically identified with the breakdown and recovery of synaptic tissue, leading to progressive transformation in cell types at the same time. A number of chemical events shape the inflammation and allow it to spread around. Free oxygen radicals (FOR) can cause oxidative damage to lipids, proteins and nucleic acids; leading to many different diseases and chronic inflammation, leading to degradation of cellular structures and biochemical compounds in DNA structure. FOR are important mediators that trigger or sustain inflammatory processes. It releases inflammation by stimulating the release of cytokines (IL-1, TNF- α). Clinically, steroidal or non-steroidal anti-inflammatory drugs are given in inflammatory diseases. Plants show a large part of the natural antioxidants that could lead to the development of new drugs. In studies conducted with phytochemicals, compounds obtained from medicinal plants perform anti-inflammatory activities by suppressing the release of several important pro-inflammatory mediators. There is a negative correlation between consumption of some fruits and vegetables and chronic inflammation. The physiological characteristics of these fruits and vegetables are partly due to the multiplicity of phenolics. Phenolic compounds have strong antioxidant activity. The antioxidant capacities of phenolic compounds vary according to their chemical structure. They inhibit the peroxide radicals by retaining the aromatic rings and hydroxyl groups (OH⁻) in their structure and do not allow FOR to accumulate. At the same time, they have been shown to inhibit pro-inflammatory cell proliferation which they have organized enzymatic activities. For example, 35-45% of dietary antioxidants consist of tea flavanoids; It has been reported that the amount of antioxidant which is passed through the temperature during brewing also increases. It is suggested that 1 g / day tea consumption can provide 200-300 mg / day flavanoid intake, which is higher than the daily recommended C and E vitamins and β -carotene total (70 mg / day), emphasizing the importance of tea as an antioxidant source. Another antioxidant-rich fruit is apricot that include Lycopene, β -carotene, vitamins A and E are important for feeding. Chestnut is a mixture of triterpenic saponins with strong anti-inflammatory properties. Pectin and vitamins ingredient in apple may protect against colon and lung cancer formation due to antioxidants and may protect against liver and breast cancer. More specifically, foods rich in ω -3 fatty acids, vitamins and various polyphenolic plant secondary metabolite groups have been shown to be effective against oxidative stress and inflammation in

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various chronic pathologies such as Alzheimer's disease. Exercise in the acute phase of inflammation is not recommended too often. Protective reactions exhibit such as pain, muscle spasm and temperature increase in tissues. Exercises to be performed during this period may lead to complications such as subluxation, dislocation, tendinitis . However, in chronic inflammation conditions, the appropriate and individualized exercise program tailored by physiotherapists will remove FOR and reduce the inflammatory effect that damages the body. The aim is to reveal the interaction between inflammation and FOR, to emphasize the importance of antioxidant phenolic compounds and individualized exercise for the person in chronic inflammation.

KEYWORDS

inflammation, free oxygen radicals, antioxidants, phenolics, exercise

Poster Session 3

Submission ID: 414

ROLES OF THE ANTIOXIDANTS AND THE AEROBIC EXERCISE AGAINST OXIDATIVE STRESS

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ABSTRACT

Oxidative stress occurs when the antioxidant defense system of the body does not stabilize free radical formation. Free radicals are produced as normal cellular metabolism products as well as non-associated electron containing atoms or molecules which can also occur under the influence of many external sources. Free radicals are very short-lived but they are very dangerous because they react with non-radicals and make them radical, start a series of chain reactions and form many radicals. While normal levels of free radical formation are necessary for the body, over production plays an important role in the emergence of many diseases. The effects of free radicals have been demonstrated in many types of cancer. In addition neurodegenerative diseases, rheumatic diseases, immune system diseases, circulatory system diseases, metabolic diseases have been found to be linked to free radicals. In short, it has been shown that the formation of most diseases is linked to excessive free radical production. Many defensive mechanisms have been developed in the body to prevent excessive free radical formation and damage to them. These are known as "antioxidant defense systems" or simply "antioxidants". The antioxidant defense in the body is enzymatic and non-enzymatic. The first and basic antioxidant defense is enzymatically done. Superoxide dismutase, catalase, glutathione peroxidase, glutathione s-transferase and glutathione reductase are known enzymatic antioxidants. Glutathione, cysteine, melatonin, ceruloplasmin, transferrin, myoglobin, hemoglobin, ferritin, bilirubin, methionine, urate, lactoferrin, albumin which are endogenous non-enzymatic antioxidants. Alfa-tokoferol (vitamin E), beta-carotene retinol (vitamin A), ascorbic acid (vitamin C), folic acid (folate) and minerals such as selenium, copper, zinc, polyphenols and flavonoids are exogenous non-enzymatic antioxidants. Vitamins (A, C and E) are the most commonly found antioxidants. Example of foods rich in vitamin A are potato, carrot, pumpkin, black cherry, grapefruit, green bean, parsley, mint, spinach green leafy vegetables, egg, fish, poultry, yoghurt, cheese; vitamin C citrus fruits such as lemon and orange, onion, spinach, tomato, fresh bean, asparagus, pea, raspberry, cherry; vitamin E olive, oily seeds such as almond, nut, spinach, broccoli, apple, cucumber, tomato, flaxseed oil, wheat. One of the most important factors that improve the antioxidant defense system of body is exercise. It has been shown that regular aerobic exercise improves the antioxidant defense system of body while long time aerobic or anaerobic acute exercise by untrained people causes oxidative stress. Elderly, chronic illnesses and smokers are reported to be more susceptible to oxidative stress after exercise than healthy individuals. In order to make stronger antioxidant defense systems, suggested that antioxidant supplements and exercise programs tailored by physiotherapist accordance with physical performance of individuals.

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KEYWORDS

Oxidative stress, antioxidant, vitamin, exercise

Poster Session 3

Submission ID: 415

**BIOCONTROL POTENTIALS OF ANTAGONIST BACTERIAL
ISOLATES OBTAINED FROM DIFFERENT PLANT SPECIES
AGAINST CHARCOAL ROT DISEASE AGENT ON
MEDITERRANEAN SAGE (SALVIA FRUCTICOSA)**

İMAM ADEM BOZKURT¹, ESRA SÖNMEZ¹, MERVE KARA¹, ŞENER KURT¹, EMINE MINE SOYLU¹, SONER SOYLU¹

ABSTRACT

Mediterranean sage (*Salvia fruticosa* Miller) is one of the most commercially exploited medicinal plant naturally growing in eastern Mediterranean Turkey. *Macrophomina phaseolina* (Tassi) Goid remains the prevailing causal agent of charcoal rot disease that significantly suppresses the yield of a variety of crops including medicinal plants. On sage, pathogen causes stunting, blackening of stems, and rotting of the crown and roots. Pathogen's wide host range and ability to survive under arid conditions, coupled with the ineffective use of fungicides against it, have spurred scientific endeavours for alternative avenues to control this phytopathogen. Biological control is non-hazardous strategy to control plant pathogens and improve crop productivity. Rhizosphere inhabiting beneficial bacterial species have shown unique plant growth promoting as well as antagonistic activity against fungal phytopathogens. In the present study, antagonist bacterial species were isolated from rhizosphere of various host plants of the pathogen such as cotton, lettuce and strawberry. Bacterial isolates were identified by using morphological and MALDI-TOF analyses system. A total of 65 epiphytic bacteria belonging to *Acetobacter*, *Arthrobacter*, *Bacillus*, *Burkholderia*, *Enterobacter*, *Methylobacterium*, *Micrococcus*, *Pantoea*, *Pseudomonas*, *Rhizobium*, *Serratia*, *Stenotrophomonas* spp were selected as potential biocontrol agent and screened in vitro for their ability to suppress the mycelial growth of *M. phaseolina*. Among the tested bacterial isolates, eleven bacterial isolates were found to suppress mycelial growth of the disease agent in varying ratio (5.56-74.44%). Antagonist *Arthrobacter oxydans* was the most effective isolates by inhibiting mycelial growth (74.44% inhibition of mycelial growth over control). Antagonistic effect of the most efficient bacteria on hyphal morphology was studied by using Nomarski DCI-assisted light microscopy technique revealed that effective bacterial antagonist isolates was able to damage fungal mycelia may be due to cell wall degrading enzyme(s), establishing its role as a potential antagonist against *M. phaseolina*.

KEYWORDS

Sage, biological control, antagonist, Macrophomina phaseolina

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Poster Session 3

Submission ID: 419

AN ALTERNATIVE FOOD AND MEDICINAL CROP: QUINOA (CHENOPODIUM QUINOA L.)

LALE EFE¹

ABSTRACT

Özet Quinoa crop that belongs to Family of Chenopodiaceae and originates from South America-Andes Mountains has been consumed since thousands years for basic nutrition like cereals. Its leaves are also consumed besides of seeds. There are proteins, carbohydrates, various vitamins and minerals in its seeds considerably. Therefore it has been used as animal feed. Furthermore people in South America countries such as Chile, Bolivia, Peru, Argentina, and Ecuador have also used quinoa crop for medicinal treatment because of some components in its seeds and leaves. At the present day in countries of North America, Europe, Asia and Africa has also been cultured. In various geographies in alternative medicine quinoa seeds and leaves has been used in order to cure a number of diseases such as antihelmintic, laxative, diuretic, carminative, eye diseases, thorax complaining, cough, labored breathing, asthma. In a number of researches it was also noted that quinoa has antioxidant and anticarcinogenic effects. Researches related to food and medicinal properties of quinoa are increasing every day.

KEYWORDS

Quinoa, (Chenopodium quinoa L.), food, medicinal crop

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Poster Session 3

Submission ID: 420

DETERMINATION OF GENETIC DIFFERENCES IN THE GENUS SALVIA USING MOLECULAR TECHNIQUES AND ITS IMPORTANCE

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ABSTRACT

Turkey is one of the wealthiest countries in the world in terms of medicinal and aromatic plants. It is known that *Salvia* species have been widely used throughout the world as a traditional medicine since the ancient times. In Turkey, sage species are sold in internal market and also exported. Due to high medical values of *Salvia* species, it is of great economic importance for Turkey. *Salvia* species exhibit high level of intra- and interspecific genetic diversity. By studying the genetic differences of the species belonging to this genus, the information acquired can be used in order to obtain superior genotypes and utilize them in production. Furthermore, molecular results can be used in to establish genetic stocks, characterize germplasm and determine the relationships among the species via phylogenetic studies. In this review, the RAPD-PCR studies regarding genetic difference determinations for the genus *Salvia* in the literature is evaluated and discussed.

KEYWORDS

Salvia, sage, molecular techniques, genetic differences.

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Poster Session 3

Submission ID: 422

TRUFFLE AND USE OF DOGS IN TRUFFLE HUNTING

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ABSTRACT

Truffles are hypogeous fungi of the genus *Tuber* which grow in symbiosis with certain trees (especially chesnut and oak trees). It is known that these fungi are grown mostly in the mediterranean region, but it is grown in various regions of the world. More than 20 species of truffle are grown in mediterranean forests in Europe. The annual production of truffles collected has fallen from 1000 tonnes to 200 tonnes in the last century. Edible wild fungi are traditionally used worldwide in food or pharmaceutical industries. Some truffle species such as *Tuber magnatum*, *Tuber melanosporum* and *Tuber aestivum* are the most expensive edible mushrooms due to their particular flavor and unique flavor. It is estimated that *T. melanosporum* production in France is about 20 million euros per year, 7.5 million euros in Spain and 4 million euros in Australia. The influence of the truffle economy not only includes fresh truffles but also includes agricultural activities, local gastronomy, production of truffle products, truffle fairs and retail markets, dog training and technical evaluation services. Around 180 truffle species have been reported around the world, but only 13 have received commercial interest. Truffles produced in Italy, France and Spain are considered gourmet products and fresh truffle has the highest gastronomic value. *T. melanosporum* and *T. aestivum* are the most admired and known truffle species in Spain. Truffles may be about 5-20 cm deep from the soil. For hunting truffles that are difficult to collect, it may be beneficial to follow *Suillia* flies, use pigs and use trained dogs. Pigs have been used in truffle hunting thanks to their good olfactory ability. There are risks such as the possibility of nose injuries or truffles while pigs are trying to get rid of truffles. In addition to this, the pigs quickly tired and difficult to transport. In some areas pigs continue to be used, but in some areas this activity has been abandoned with the start of use of the dogs. With the spread of truffle hunting made with dogs, the search for Hypogeous mushrooms has gained momentum in recent years. With this effect, not only was there a few new species to be found, but basically the tuff frequency changed. Several species of hypogeous fungi preferred by dogs include rare species such as *Octaviania asterosperma* and *Stephensia bombycina*. It is important to use trained dogs in truffle hunting. For example, a Périgord Truffle can be found on the bare ground, but a trained dog is a must for the commercially important White Piedmont Truffle. The aroma of white truffle is extremely powerful and attractive. It is stated that white truffle smell can only be described as unique and exotic. The use of dogs in truffle hunting has led to the production of large amounts of data, while dogs have found that only species that are predominantly odorous are found. When commercial collecting became widespread, the collectors concentrated on certain areas. Dog owners often give up non-commercial species. As a result, the data obtained by using dogs in truffle hunting are evaluated for species of commercial value.

KEYWORDS

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Truffle, Truffle hunt, Dog

Poster Session 3

Submission ID: 423

EVALUATION OF CHICKPEAS AS SOURCE OF ANTIOXIDANT COMPOUNDS GROWN IN DIFFERENT LOCATIONS AND CROP YEARS

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ABSTRACT

In this study, the potential of water soluble chickpea extracts was evaluated to be used as functional food ingredients. 12 different registered chickpea cultivars were used in this study which were grown in Adana (in 2014 and 2015) and Erzurum (in 2015). The cultivars were grouped as Adana 2014 (A2014), Adana 2015 (A2015) and Erzurum 2015 (E2015). The water-soluble chickpea extracts mostly comprised of phenolic compounds, proteins and minorly carbohydrates. Total phenolic contents (TPC), free radical scavenging activities (FRSA) based on inhibition of ABTS and DPPH radicals, iron chelating capacities (ICC) and water soluble protein contents (WSPC) of extracts were determined. TPC of chickpea cultivars was determined by Folin-Ciocalteu method and varied from 1486 ± 37 to 2243 ± 66 μg gallic acid/g chickpea. The cultivars had good antioxidant potential based of FRSA changing from 13.92 ± 0.89 to 24.15 ± 1.01 μmol Trolox/gr chickpea by the inhibition of ABTS radical however they did not show any antioxidant activities based on inhibition of DPPH radical. The metal chelating capacity of cultivars were quite low from 2.51 ± 1.05 to 18.54 ± 0.20 μmol EDTA/g chickpea. The WSPC of cultivars were between 45.84 ± 2.63 and 78.05 ± 2.12 mg/g chickpea. Analysis of variances (ANOVA) and principal component analysis (PCA) were applied to obtained data to see the differences between the cultivars and the effects of crop year and different locations on these properties. However, the cultivars had different antioxidant activities and phenolic contents, PCA did not discriminate the cultivars based on crop year and location indicating that the mild or cold climate conditions did not have significant effect on these properties. On the other hand, the cultivars in the same group had significantly differences varying in wide range in TPC, FRSC, ICC and WSPC values. According to PCA, in A2015 Aksu cultivar (first component was 33.9% and second component was 28.8%) and in E2015 Hasanbey and İzmir cultivars (first component was 49.8% and second component was 26.7%) were discriminated from other cultivars whereas in A2014 any discrimination was determined on group basis. On cultivar basis, only Aksu and İzmir cultivars were effected significantly from varying location and year (first components were 81.4 and 77.8%; second components were 14.1 and 14.5%, respectively). This study revealed that the chickpea cultivars had potential to be used as antioxidant ingredient source in functional foods and their activities mostly were not significantly affected from different growth locations and crop years. Further chromatographic studies are needed to better evaluate the differences in phenolic compounds of different chickpea cultivars. By this way, the breeding plans could be organized not only productivity basis but also bioactivity basis to produce value added products from chickpeas. This study was supported by Adana Science and Technology University Scientific Research Coordination Unit. Project Number MÜHDBF.GIDA.2015-14.

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KEYWORDS

chickpea, antioxidant activity, phenolic content, principal component analysis

Poster Session 3

Submission ID: 424

SOME MEDICAL PLANTS SPREAD AROUND TOKAT AND ITS SURROUNDINGS AND THEIR ETHNOBOTANICAL PROPERTIES

SİBEL ULÇAY¹, GÜLCAN ŞENEL¹

ABSTRACT

Tokat has a rich vegetation cover due to its climate and geographical features. It is also among the 12 well-known ethnobotanical places in the Turkish Ethnobotanical Data Base. It also draws attention in terms of medical plant density. Experiences and treatment methods of the community are a good source of science. Information on how the various features of plants are used as medicinal and food have been passed down from generation to generation. However, with the advancement of technology, the use of new techniques in drug production, increased knowledge of pharmacy, the ready use of drugs from pharmacies, and the lack of information flow between the young and the elderly generations have led to the problem of the loss of ethnobotanical knowledge. For this reason, some medicinal plant species belonging to different family, forming the research position, were collected during flowering periods from Tokat and its surroundings and stored as a herbarium specimen. It is also aimed to identify and record some ethnobotanical features of the species and to investigate how these medical species are used among the population. The species we identify belong to families such as Caryophyllaceae, Papaveraceae, Apiaceae, Polygonaceae, Geraniaceae, Asteraceae Plantaginaceae.

KEYWORDS

Medical Plants, Ethnobotanic, Tokat,

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Poster Session 3

Submission ID: 426

ANTIOXIDANT IMPACTS OF AROMATIC PLANTS ON THE SEAFOOD AND SEAFOOD PRODUCTS

FATİH ÖZOGUL¹, FETHİYE TAKADAS¹, YESİM ÖZOGUL¹

ABSTRACT

In recent years, the consumers have been demanding fresh, natural and minimally processed food along with safety and quality concern. To prevent and delay the quality changes in seafood, numerous different synthetic antioxidants have been used for minimising the oxidation. Currently synthetic antioxidants used have been suspected to cause or promote negative health effects. The antioxidant properties of aromatic plants are related to their phenolic content since their antioxidant action is similar to that of syntetic phenolic antioxidation. Thus, medicinal and aromatic plants have been used as natural antioxidants for long years. It is considered that the antioxidant activity of phenolic compounds is due to their high redox potentials, which allow them to act as reducing agents, hydrogen donors and singlet oxygen quenchers. Crude extracts of plant materials is rich in phenolics componunts that are increasingly of interest in the food industry since they retard oxidative degradation of lipids and thereby improve the quality and nutritional value of seafood. Some of the plants as thyme, rosemary, laurel, sage tea, and lavender which contain bioactive constituents in essential oils and plant pomace. High antioxidant activity of several essential oils compared with commercial antioxidants, which are found in *Rosmarinus officinalis*, *Salvia fruticosa* and *Foeniculum dulce* that are showed the highest inhibitory activity of lipid oxidation. Also, thyme and oregano have two major constituents that are carvacrol and thymol have highest total phenol content and comprise the main antioxidant capacity. In addition to these, Cinnamon has a good antioxidant potential, which is rich in cinnamaldehyde as well as β -caryophyllene, linalool, and other phenolic compounds. Consequently, the effects of some natural compounds as antioxidants obtained from aromatic plant on the seafood and seafood products have been reviewed.

KEYWORDS

Antioxidant, Aromatic Plants, Seafood Products, Safety, Quality

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Poster Session 3

Submission ID: 428

PHYSICOCHEMICAL PROPERTIES OF LICORICE (GLYCYRRHIZA GLABRA L) ROOT EXTRACT (MEYAN ŞERBETİ)

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ABSTRACT

The liquorice (*Glycyrrhiza glabra* L) is a perennial plant of Leguminosae family is native to the Mediterranean and certain areas of Asia. This plant has a cylindrical, thick and multi-branched root structure that reaches 1-2 meter in length under the soil. Its roots possess some nutritive value and medicinal properties. In recent years, phytochemical investigations on licorice have demonstrated that *Glycyrrhiza glabra* root contains that saponin triterpenes (glycyrrhizin, glycyrrhetic acid and liquiritic acid), flavonoids (liquiritin, isoflavonoids and formononetin) and other constituents such as coumarins, sugars, amino acids, tannins, starch, choline, phytosterols and bitter principles. Biological studies have revealed that licorice chemical constituents have a variety of biological effects, such as anti-inflammatory, antihepatotoxic, anti-ulcer, anti-oxidant, anti-microbial, cytoprotective, and cytotoxic activities. Extracted licorice, containing glycyrrhizin (a mixture of metallic salts of the oleanane-type triterpenoid diglucuronide, glycyrrhizic acid), has been used as an additive for flavoring and sweetening tobacco, beverages, candies, chewing gum and toothpaste. Licorice extract also used in pharmaceutical industry, coating materials and edible films. In addition to these consumption areas, Licorice root extract is consumed as a traditional, non alcoholic beverage called as Şerbet in Turkey. This beverage is very common and popular in South-Eastern of Turkey. In this study; Licorice roots (obtained from Şanlıurfa Region) were extracted with water in room temperature and its physicochemical properties were determined. According to our analysis results total phenolic contents (with Folin-Ciocalteu method) and antioxidant capacities (with DPPH radical scavenging activity method) of were determined as 683.397 mg GAE/kg and 26.52% respectively. pH of liquorice extract was examined 9.2. Brix of licorice root extract was determined 9.1 and L*, a*, b* color values were evaluated 19.33, 2.78, 2,75 respectively. In addition no anthocyanin was determined in the Licorice extract samples.

KEYWORDS

Licorice, Licorice extract, glycyrrhizin, total phenolic content, antioxidant capacity

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Poster Session 3

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FRESH AND DRIED PHYSICO-CHEMICAL PROPERTIES OF KEME (TERFEZIA BOUDIERI) WHICH HAS THERAPEUTIC COMPOUNDS

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ABSTRACT

Mushrooms are valuable healthy foods, low in calories, fats and rich in vegetable proteins, vitamins and minerals. Wild mushrooms are more preferable than cultivated mushrooms due to their nutritional, pharmacological and organoleptic characteristics. Truffles as wild mushroom are edible hypogeous fruit bodies produced by various genera of fungi belonging to the class Ascomycetes. The truffles usually appear in the deserts following the rainy season between February and April. They are grown naturally in large quantities in virgin lands in the Middle East and North Africa (Egypt, Algeria, Tunisia and Morocco), Southern Europe (France, Spain, Greece and Italy) and other Mediterranean bordering countries (Libya, Syria, Tunisia) as well as in Iran, Iraq, Kuwait and Turkey during the autumn rain and thunderstorms. Truffles are rich sources of protein, amino acids, fatty acids, minerals and carbohydrates. In addition to their nutritional importance, aroma and flavor; truffles represented as therapeutic compounds with anti-inflammatory, antioxidant, antimicrobial, immune-suppressor, anti-mutagenic and anti-carcinogenic characteristics. Keme is a kind of truffle grow wild in the southeast part of Turkey with specific taste. It is a valuable and preferable food product in this region. Keme can be preserved as pickled, canned, frozen and dried as well as freshly consumed during the season but most preferable consumption is dried form. In this study Keme (obtained from Şanlıurfa region) was dried with two different drying methods (cabinet and frieze drying) after pre-treated 2% ascorbic acid solution. Moisture contents, protein %, ash contents, water and rehydration activities, color values of dried samples were determined thus effect drying methods on product quality were examined. According to our results L*, a*, b* values of fresh samples 60.81±1.8; 11.72±0.3; 22.56±0.6 cabinet dried samples 58.15±1.87; 6.01±0.1; 28.69±0.5 and frieze dried samples 53.44±1.6; 7.03±0.2; 26.53±0.7 were determined respectively. Maximum rehydration capacity was observed in frieze dried samples (4.06±0.04). There was a significant decrease (p<0.05) in protein% values after drying and significant different (p<0.05) between protein values of frieze dried (11.16±0.3) and cabinet dried samples (8.2±0.2). This study is reveal that drying methods effect the physico- chemical properties and quality of KEME and frieze dried samples were exhibit better sample quality than cabinet dried samples.

KEYWORDS

Keme, Terfezia boudieri, drying method

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Poster Session 3

Submission ID: 434

IN VITRO ANTILEISHMANIAL EFFECTS OF SESQUITERPENE LACTONES FROM CHRYSOPHTHALMUM MONTANUM (DC.) BOISS.

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ABSTRACT

Introduction The genus *Chrysophthalmum* Schultz Bip. (Asteraceae- Inulaeae) has three species growing in Turkey. Among them, *C. montanum* (DC.) Boiss., a perennial herb, is mainly distributed in eastern parts of Turkey and is locally named as " tutça" or "nezle otu". In Turkish folk medicine, the aerial parts of *C. montanum* have been used for the treatment of common cold and sinusitis as well as healing wounds on the body of human and animal. In our previous research, we found that the chloroform extract obtained from the aerial parts of *C. montanum* was the most active in the tested extracts of the plant on antileishmanial activity with an IC₅₀ value of 15.61±0.2 µg/ml. As the current stage of our extensive study on isolation of antileishmanial constituents from chloroform extract of *C. montanum*, we have now aimed to evaluate four guaiane type sesquiterpene lactones against promastigotes of *Leishmania donovani* by in vitro assay. **Material and Methods** Leishmanicidal activities of four guaianolides, isolated from aerial parts of *C. montanum*, 6α-acetoxy-isoinuviscolid (1), 6α-acetoxy-4α-hydroxy-9β.10β-epoxy-1βH-guaia-11(13)-en-12.8α-olide (2), 6α-hydroxy-isoinuviscolid (3), and 4α,10β-dihydroxy-5α(H)-1,11(13)-gaidien-8β,12-olide (4) were tested against promastigotes of *Leishmania donovani* in vitro. **Results** According to our results, all compounds were found to be active, except for compound 4. Compounds 1 and 2 exhibited potent antileishmanial activity with IC₅₀ values of 3.12±0.37 and 4.5±0.60 µg/ml, respectively, in comparison with standard drugs pentamidine (IC₅₀=0.37±0.60 µg/ml) and amphotericine B (IC₅₀=0.49±0.90 µg/ml). Moreover, compound 3 exhibited significant leishmanicidal activity with an IC₅₀ value of 21.6±0.53 µg/ml. **Conclusion** As a conclusion, this report represented the first study on the investigation of antileishmanial activities of guaianolides from *C. montanum*. Our data showed that *C. montanum* can be attributed for discovery of novel antileishmanial drug candidates. **Acknowledgement** This study was supported by TUBİTAK-2214/A, TUBİTAK-2211/A and ICCBS-HEJ.

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KEYWORDS

Antileishmanial activity, Chrysophthalmum montanum, Asteraceae, sesquiterpene lactones, guaianolides

Poster Session 3

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PHYTOTOXIC, CYTOTOXIC AND INSECTICIDAL ACTIVITIES OF CHRYSOPHTHALMUM MONTANUM (DC.) BOISS.

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ABSTRACT

Introduction *Chrysophthalmum* Schultz Bip., a member of the family Asteraceae, is represented by three species in Flora of Turkey and the East Aegean Islands. *Chrysophthalmum montanum* (DC.) Boiss. is a herbaceous perennial plant mainly distributed in eastern parts of Turkey. Asteraceae family is well-known as a good source of sesquiterpene lactones, which are associated with antitumor, cytotoxic, antimicrobial, antiinflammatory and phytotoxic activities. In our ongoing research on *C. montanum*, we revealed that *C. montanum* had cytotoxicity against some cancer cell lines by MTT assay. In this presentation, it was proposed to investigate in vitro phytotoxic, cytotoxic and insecticidal potential of the extracts of *C. montanum*. **Material and Methods** The crude extract (80% methanol) of the aerial parts of *C. montanum* were subsequently fractionated to obtain n-hexane, chloroform, n-butanol and remaining water fractions. The extract and fractions were evaluated for their biological activities using in vitro screening bioassays such as cytotoxicity on brine shrimp lethality, phytotoxicity against *Lemna minor* and insecticidal activity against *Rhizopertha dominica* and *Tribolium castaneum*. **Results** The extract and fractions, except for remaining water fraction, showed phytotoxic activity which was expressed as % growth regulation in a concentration dependent manner. Particularly, the n-hexane and chloroform fractions had 100 % of growth inhibition (GI) at 1000 µg/ml against *Lemna minor*, followed by the butanol fraction (62.6 % GI) and the crude extract (40 % GI) of the plant at the same concentration. The cytotoxicity assay revealed that crude extract, n-hexane and chloroform fractions of the plant have positive lethality with LD50 values of 71.51, 126.62 and 75.95 µg/ml against the brine shrimp, respectively. Otherwise, all samples had no insecticidal activity against *Rhizopertha dominica* and *Tribolium castaneum*. **Conclusion** In summary, our findings demonstrate that n-hexane and chloroform fractions of *C. montanum* possess significant phytotoxicity against *Lemna minor* and cytotoxicity on brine shrimps for the first time, which deserve further investigation in order to reveal the compound(s) responsible having these biological activities. **Acknowledgement** This study was supported by TUBİTAK-2214/A, TUBİTAK-2211/A and ICCBS-HEJ.

KEYWORDS

Chrysophthalmum montanum, Asteraceae, phytotoxic activity, cytotoxic activity, insecticidal activity

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Poster Session 3

Submission ID: 436

INVESTIGATION OF EFFECT ON WOUND HEALING OF VARIOUS PLANT EXTRACTS IN THE CELL CULTURE

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ABSTRACT

Objective: The wound is deterioration of tissue integrity the result of cuts, burns or illnesses. It can be surgical or traumatic. Wound healing is one of the most important subjects in surgery. The process of wound healing is affected by nutritional factors, circulation, oxygen supply, infection and hormones. Wounds are classified as to their appearance and type of healing and treatment is directed according to these properties. There are conditions for wound healing. First of all, there should be no problem in the blood circulation of that region. Otherwise, the oxygen, wound healing cells and building materials needed to heal the wound do not go to the wounded area and there is no healing. There are various medical treatment methods for wound healing. But alternative treatment methods are being investigated. In our study, the effect of improving the endothelial damage of vegetable oil and extracts was investigated. Materials and Methods: HUVEC (umbilical vein / vascular endothelium) cells were seeded in a 96 well plate. Cells were allowed to grow. In order to see the recovery process scratches were removed with a pipettor to damage the cells. The plant tissue to be used in this study was extracted and vegetable oil was obtained. Plant extracts (0.005 mg / ml, 0.01 mg / ml, 0.015 mg / ml and 0.02 mg / ml) were dissolved in the medium and at different doses as 2.5 µl, 5 µl and 6.5 µl of oil on cell cultures were applied. The MTT test was performed at 24, 48 and 72 hour intervals to observe how the affected the cytotoxic effect and cell viability of substances. Results: In this study, plant extracts and plant oil were applied to the damaged cells at appropriate doses according to the MTT result. As a control, some damage was not generated. Cells treated at different doses were incubated for a certain period of time. At the end of the incubation, the cells were examined under an inverted microscope. The diameter of the damage was measured in the damaged cells and the role of the substance applied in the treatment was evaluated. Conclusion: At the end of the study, studies under the microscope showed that increasing doses of plant extract and a certain dose of oil improved the damage generated in HUVEC cells relative to the control and significantly reduced the diameter of the damage caused. Keywords: Plant extract, cell culture, cytotoxicity, wound healing.

KEYWORDS

Plant extract, cell culture, cytotoxicity, wound healing.

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Poster Session 3

Submission ID: 437

INVESTIGATION OF EFFECT ON BCL2 GENES EXPRESSION AND CYTOTOXIC EFFECT OF BERBERIS VULGARIS PLANT ON CELL CULTURE

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ABSTRACT

Objective: Cancer is a term used to describe the uncontrolled growth and abnormal spread of cells. It is made for the treatment of cancer with chemotherapy and radiotherapy made by using cancer drugs that destroy cancer cells, to inhibit the growth and proliferation. But this treatment is particularly damaging to cells. Hence alternative treatment methods are currently under development today. In our study, it is aimed to investigate the cytotoxic effect of different doses of *Berberis vulgaris* plant and its effect on Bcl2 gene expression in cell culture. Materials and Methods: Extraction was performed from plant tissue to be used in this study. Plant extract (0.005 mg/ ml, 0.01 mg / ml, 0.015 mg / ml and 0.02 mg / ml) at different doses was dissolved in a medium and applied to the cell cultures. Article of the MTT assay was performed to observe the cytotoxic effect and how to impact of cell viability at intervals of 24,48,72 hours. Cells were plated on a 6 well plate in place a certain amount. RNA isolation was performed after administration of plant extract. Real Time PCR was performed to observe the changes in BCL2 gene expression by performing cDNA synthesis. Results: Plant extract under study were administered in different doses and times on cancer cells. Showed increased of toxic effects on the cells both hours and increasing doses of plant extract at the of the study. The highest dose used in the experiment, 72 h, that was found killed of plant extracts that nearly 50% of cancer cells. Observed of increasing doses of the plant extract to decrease the BCL-2 gene expression , according to Real- Time PCR results. Conclusion: It was determined that the plant extract used in the study resulted in significant apoptosis of the cancer cells. Keywords : Bcl-2, plant extract, cell culture, cytotoxicity, gene expression

KEYWORDS

Bcl-2, plant extract, cell culture, cytotoxicity, gene expression

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Poster Session 3

Submission ID: 439

PHENOLIC AMOUNTS AND ANTIOXIDANT ACTIVITY OF AVOCADO AND AVOCADO OIL

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ABSTRACT

Avocado (*Persea americana*) is a tree belonging to the bay family of Central Mexico and the name of the fruit of this tree. It is grown in the Mediterranean region of Turkey in the belt from Antalya to Iskenderun, as well as in the Eastern Black Sea Region where the frost like Rize is low. Avocado fruit is a very good source of antioxidant vitamins such as C and E vitamins. In addition it is a very good potassium source. Avocado also contains carotenoids and phytosterols such as lutein and zeaxanthin. Avocado is an oily fruit like olives. Most of the oil forms oleic acid, similar to olive oil. Antioxidative properties are present due to the dissolution of vitamin E and various carotenoids in the oil. Consumption of avocado in Turkey has not increased enough yet. New research on this nutritive fruit needs to be done to increase awareness. In this study, it was aimed to reveal the amount of phytochemicals and antioxidative capacity of avocado fruit and avocado oil. The results of the analyzes made on the avocado pulp are as follows: the amount of phenolic compound is 619,76 mg catechin equivalent / kg, the flavonoid amount is 240,45 mg catechin equivalent / kg, the dry matter content is 31.91 %, pH 6.85, color L is 51.20, a is -11.99, b is 31.63, acidity 0.2 g / 100 ml (in citric acid), DPPH 59,7 µg trolox equivalent / g and FRAP 5.375 mg / g. The results of analyzes made on avocado oil are as follows: the amount of phenolic compound is 202,65 mg catechin equivalent / kg, the flavonoid amount is 197,11 mg catechin equivalent / kg and DPPH 49,62 µg trolox equivalent / g.

KEYWORDS

Avocado, Avocado oil, Antioxidant, Phenolic substance, Flavonoid

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Poster Session 3

Submission ID: 442

POTENTIAL EFFECTS OF MYCELLIUM EXTRACT FROM PLEUROTUS OSTREATUS ON HUMAN PERIPHERAL BLOOD LYMPHOCYTES

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ABSTRACT

Mushrooms produce a considerable amount of antioxidants such as vitamin C, Vitamin E, and pigments as well as phenolic compounds. Oyster mushroom *Pleurotus ostreatus*, common edible mushroom, can growth rapidly on a wide variety of organic wastes. The mushroom biomass as a source of medicinal compounds and fungal protein can be produced from mycelium in submerged liquid culture. The aim of this study was to investigate cytotoxic and genotoxic effects of wide range of concentrations (0 - 1000 µg/mL) hot-water extract from mycelia of the *P. ostreatus* on human peripheral blood lymphocytes (hPBLs). With this aim, cytotoxicity was determined by neutral red (NR) and lactate dehydrogenase (LDH) leakage assay. Genotoxicity was also characterized by micronuclei (MN) and chromosome aberrations assay (CAs) for specify DNA damage. Low doses of *P. ostreatus* (0 - 100 µg/mL) didn't cause significant alterations to cytotoxicity on hPBLs. At the same time, 0-250 µg/mL doses of *P. ostreatus* didn't cause increase as genotoxic at CAs and MN rates. However, 500 and 1000 µg/mL doses of mushroom statistically increased NR and LDH release, CA/cell frequency and MN formation on hPBLs. In conclusion, the present study provides evidence on the lack of cyto-genotoxicity of hot water extract from mycelia *P. ostreatus* under our in vitro conditions. *P. ostreatus*, if used at higher concentrations (500 and 1000 µg/mL) have cytotoxic effects, genotoxic effects and cell damage as due to increased oxidative stress. Hence, the overconsumption of this traditional edible mushroom should be considered. Otherwise, it may cause serious toxic side effects in terms of human health.

KEYWORDS

Pleurotus ostreatus, lymphocyte, cytotoxic, genotoxic, neutral red, lactate dehydrogenase.

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Poster Session 3

Submission ID: 443

NATURAL GROWING SOME MEDICINAL AND AROMATIC PLANTS BENEFITS AMONG PEOPLE: MERSİN ÇAMLIYAYLA EXAMPLE

OKAN YELER¹

ABSTRACT

The use of medicinal plants as medicine is as old as human history. The first person to see a plant suicide, and see that this practice has a positive effect, has also started medical practice among the people. The first people knew that plants had healing power; For example, plants were trying to understand whether they were healing or poisonous from taste and smell by chewing different organs and parts such as flowers, fruits, seeds, stalks, leaves, roots and bark. The most important source of natural medicines used in traditional treatment methods is plants. In the 18th century, approximately 8,000 plant species were systematically classified by Carolus Linnaeus (1707-1778), which made the task of not only natural scientists, but also pharmaceutical chemists, much easier. The medical value has been recognized as a strong possibility that bioactive substances carried by a well-known plant strain are also found in other related plant species with this species, and the plant variety that can be used as a herbal medicine has increased rapidly. In this study, the usefulness of some medicinal aromatic plants in natural species in Mersin's Çamlıyayla district, which is one of the most popular places with its natural beauty and unique landscape, has been briefly explained. As a result of the interviews with the people of the region, it has been emphasized especially the benefits of a few outstanding orange health. It has been emphasized that awareness of these species should be created more effectively in marketing, production fields should be defined and contributed to the regional economy as well as to contribute to human health.

KEYWORDS

Natural Growing Medical Plants, Benefits of Medical Aromatic Plants, Natural Growing Medical Plants in Mersin Çamlıyayla

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Poster Session 3

Submission ID: 444

**ACTIVATOR EFFECT OF 2B-HIDROKSI-ENT-13-EPI-MANOIL
OKSİT, ISOLATED FROM SIDERITIS PERFOLIATA, ON CARBONIC
ANHYDRASE ISOENZYMES, CA-I AND CA-II**

HÜSEYİN AKŞİT¹, İBRAHİM DEMİRTAŞ², ŞEVKİ ADEM², ÇAĞLAR GÜLER²

ABSTRACT

2-β-hydroxy-ent-13-epi-manoyl oxide is a labdan-type diterpen and precursor of forskolin which is well documented variable biological activities including antiproliferative, antihypertensive, antihypercholesteromia, antidiabetic. The title compound was isolated from *Sideritis perfoliata* as colorless needless crystals using sephadex LH-20 and silica gel column chromatography from ethyl acetate extract of floral parts of the plant material. The structure of compound identified using X-Ray, NMR and MS spectra. The quantitative amount of compound were found 45-122 mg/kg in different part of plant material according GC-MS analysis. CAI and CAII enzyme activities of the compound were assayed by spectrophotometric method. Carbonic anhydrase holds an important place in the realization of biological and physiological activities such as ion transport, acid base balance, bone absorption, respiratory, gluconeogenesis and urogenesis. It has been reported that activators of carbonic anhydrases may be used a novel approach to treating disorders such as Alzheimer's disease and aging[1]. We investigated effects of 2-β-hydroxy-ent-13-epi-manoyl oxide on CA I and CA II enzymes activities. Human erythrocytes CA I and CA II were activated by this compound with AC50 values 9 and 19 μM. [1] C.T. Supuran, Carbonic anhydrases: Novel therapeutic applications for inhibitors and activators, *Nature Reviews Drug Discovery*, 7 (2008) 168-181. [2] V.P. Sukhatme, B. Chan, Glycolytic cancer cells lacking 6-phosphogluconate dehydrogenase metabolize glucose to induce senescence, *FEBS Letters*, 586 (2012) 2389-2395.

KEYWORDS

2-β-hydroxy-ent-13-epi-manoyl oxide, sideritis perfoliata, carbonic anhydrase activator

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Poster Session 3

Submission ID: 445

USING MEDICINAL AND AROMATIC PLANTSİ IN ANIMAL HEALTH

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ABSTRACT

Animal health, which is an important part of public health, is influenced by consumed food, water, applied drugs and environmental factors. In animal health conventional (traditional) treatment is widely used. Residual risk is increasing in animal products in long-term and incorrect treatments. This causes residue and contamination in our food. It is also known that consumption of residual foods is a threat to human health. For this reason, the use of homeopathic and phytotherapeutic products in cultivation is more suitable for human and animal health. These products are licensed by the Ministry of Food, Agriculture and Livestock. As of February 2017, 17 homeopathic products have been licensed by the ministry and can be used with prescription. Phytotherapeutic products are not subject to prescription, and as of February 2017, 11 were licensed by the ministry. The aim of this study is to introduce licensed homeopathic and phytotherapeutic drugs and contribute to the widespread use of them in animal health. In this way it will be possible to protect animal health with less risky products and to reduce possible risk factors in our food.

KEYWORDS

Animal Health, Alternative Medicine, Homeopathy, Phytotherapy

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Poster Session 3

Submission ID: 449

PLANTS AS FEED SUPPLEMENTS TO BE USED FOR IMPROVED REPRODUCTIVE PERFORMANCE OF CULTURED FISH SPECIES

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ABSTRACT

Different medical and agricultural plant species have been used as feed supplement in animal husbandry and aquaculture as well. When considering adding them to feed, two main reasons have come to the forefront; preventing disease outbreaks in population and improving reproduction ability including gamete quantity and quality of broodstock. This study aimed to review the plant species which have been used for enhancement of reproduction in fish. Feeding of diet containing Aloe vera, Phaseolus vulgaris, Arachis hypogaea, Helianthus annuus, Sesamum indicum, Croton zambesicus, Telfairia occidentalis, Withania somnifera, Moringa oleifera, Kigelia Africana, Lepidium meyenii, Vernonia amygdalina and Glycine max has been shown to positively affect reproduction systems of both male and female fish. Fish species commonly used in the experiments are especially cultured fish species such as Clarias gariepinus, Etroplus suratensis, Oreochromis niloticus, Oncorhynchus mykiss. Reproductive parameters in fish which positively affected by these plants are listed as embryo survival, weight of testes and ovaries, gonadosomatic index, histological examination of gonad development, fertilization, hatchability, fecundity, egg diameter, egg survival, sperm motility percentage, motility duration, sperm motility characteristics sperm density, milt volume, spermatocrit, seminal fluid pH. Moreover, some plants species like Butea superb and Mucuna pruriens have being used to obtain mono-sex culture of male fish, because of containing phytoandrogens producing substances with similar effects as testosterone. On the other hand, some plants species such as Hibiscus rosa-sinensis, Mormodica charantia, Teliostachya alopecuroidea, Azadirachta indica and Mangifera indica have potential inhibit on reproduction when given more than defined doses. These plants could be useful for prolific breeding species, like O. niloticus, resulting in large numbers of progeny to control limitation of space and food in culture conditions. Consequently, this review reveals and lists the plants and the reproductive parameters affected by them to encourage using other plants and to extend their applications in aquaculture practices.

KEYWORDS

Fish, reproductive parameters, motility, medical plants, agricultural plants.

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Poster Session 3

Submission ID: 450

UTILIZATION OF CARROT PRODUCTS TO IMPROVE FUNCTIONAL PROPERTIES OF FOOD PRODUCTS

HILAL ARSLAN BAYRAKCI¹

ABSTRACT

Carrot (*Daucus carota* L.) is one of the most common root vegetables in the world agriculture. *Daucus*, which includes sixty species of very few cultures, varies from white to yellow, orange, light purple, deep red or violet [1]. According to 2016 data, total carrot production in Turkey is 554 thousand 736 tons. Konya is in the first place in carrot production (336.463 tons of the total production of carrots) in Turkey [2]. Carrots are considered as a basic food ingredient because they are a rich β -carotene source, calcium, phosphorus, iron and magnesium as a source of mineral. Moisture content ranges from 86-89% [3,4]. The total carotenoid content in the edible parts of carrot varies between 6000 and 54800 $\mu\text{g}/100\text{g}$ [5]. Yellow and orange carrots contain more carotenoids [6,7]. Dominant carotenoids in orange carrots are β -carotene (45-80%), α -carotene (15-40%) and gamma carotene (2-10%) [8]. While the content of anthocyanin reaches up to 1750 mg / kg in black carrots [9]. The main anthocyanins have been identified as cyanidin 3-(2-xylosyl-galactoside), cyanidin 3-xylosylglucosylgalactoside and cyanidin 3-ferulylxyloglucosyl galactoside [10]. Thiamine, riboflavin, niacin, folic acid and vitamin C are also present in appreciable amounts in carrot roots [11]. Carrots are high in dietary fibers [12]. The composition of carrot dietary fiber compounds on dry weight basis have been reported as pectin (7.41%), hemi-cellulose (9.14%), cellulose (80.94%) and lignin (2.48%) by Nawirska and Kwasniewska [13]. Because of the rich chemical and functional components and acceptable flavors of carrots and their products (such as carrot powder/flour, carrot pomace powder, carrot leaf) there are many researches on their usage as food components in various products (pasta, cookie, noodle, spaghetti, cake, biscuit, fried dough, snack food etc.). In studies using carrot products, significant increases in the amount of functional compounds such as fiber, β -carotene, anthocyanin, and phenolic components were observed. At the same time, the sensory and physical properties of the products were also improved positively. This situation gives hope in terms of expanding the scope of carrot evaluation. Keywords: Carrot, carrot-products, β -carotene, functionality. REFERENCES [1] Rodriguez, G.R., Raina, B.L., Pantastico, E.B. and Bhatti, M.B. (1975). "Quality of raw material for processing-postharvest physiology: Harvest indices in Postharvest Physiology, Handling and Utilization of Tropical and Subtropical Fruits and Vegetables (E.B. Pantastico, Ed.), AVI, Westport, CT, p.56. [2] Anon. (2016). Plant production statistics, Turkish Statistical Institute. [3] The Wealth of India: Raw Materials, Council of Scientific and Industrial Research, New Delhi, India, 1952, p.21. [4] Gill, H.S. and Kataria, A.S. (1974). "Some biochemical studies in European and Asiatic varieties of carrots (*Daucus carota*), Current Sci. 43:184. [5] Simon, P.W. and Wolff, X.Y. (1987). "Carotene in typical and dark orange carrots", J. Agric. Food Chem., 35 (6):1017. [6] Gabelman, W.H. (1974). "The prospects for genetic engineering to improve nutritional values, in Nutritional Quality of Fresh Fruits and Vegetables (P. Whitd, ed.), Futura Pub. Co., New York, p.147. [7] Laferriere, L. and Gabelman, H. (1968). "Inheritance of color, total carotenoids, carotene and β -carotene in carrots

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KEYWORDS

Carrot, carrot-products, β -carotene, functionality.

Poster Session 3

Submission ID: 452

CHEMICAL COMPOSITION AND ANTIOXIDANT ACTIVITY OF ÇAKŞIR (FERULA ELAEOCHYTRIS): AN IMPORTANT MEDICINAL PLANT

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ABSTRACT

The genus *Ferula*, belonging to the family of Apiaceae, consists of 170 species which spreads from Central Asia to Mediterranean region. In Turkey, the *Ferula* genus is one of the most important genera and represented by 25 taxa. *Ferula* species are known as ‘Çakşır’, ‘Çakşır otu’ or ‘Çaşır’ in Turkey [1]. While the aerial parts of *Ferula* species are used as animal feed in winter months, the root parts are used as aphrodisiac in Eastern Turkey. *Ferula* genus was reported as a rich source of gum-resin. Therefore this genus is used in the treatment of many diseases such as digestive disorders, rheumatism, headache, arthritis, toothache and diabetes in folk medicine [2]. The aim of this study was to determine chemical composition and antioxidant activity of the essential oil and the hexane, acetone, methanol and water extracts of *Ferula elaeochytris*. The chemical composition of the essential oil of *F. elaeochytris* was analysed by GC and GC-MS. Antioxidant activities were tested by five different in vitro assay systems: β -carotene-linoleic acid, DPPH free radical scavenging, ABTS cation radical scavenging, cupric-reducing antioxidant capacity (CUPRAC) and metal chelating activity. Thirty-three compounds were identified in the essential oil of *F. elaeochytris*. The major compound was β -cubebene (21.29 %) followed by caryophyllene oxide (17.50 %) and β -caryophyllene (14.96%). The methanol extract indicated the highest antioxidant activity in all tests, except in CUPRAC assay. Moreover, the methanol extract showed higher activity than α -tocopherol and BHA used as standards in β -carotene-linoleic acid assay. References [1] A. Sahebkar, M. Iranshahi. 2010. Asian Biomed. 4: 835-847. [2] S. Mohammad, A. Aftab, S. Sarwat. 2001. Life Sci. 68: 1913-1921.

KEYWORDS

Ferula elaeochytris, Essential oil, Chemical composition, Antioxidant activity

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Poster Session 3

Submission ID: 454

SCREENING OF VOLATILE CONSTITUENTS AND ANTIOXIDANT ACTIVITY OF *SIDERITIS PISIDICA*

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ABSTRACT

Sideritis pisidica Boiss. & Heldr., a member of the Lamiaceae family, is an endemic species and grows in tropical and mild regions of the Northern Hemisphere. This genus represented by 46 species and 53 taxa in Turkey out of which 39 taxa being endemic [1]. *Sideritis* species are consumed as tea, flavouring agents and for medicinal purposes in various regions. Also, they have been used as antioxidant, antimicrobial, anti-inflammatory, anti-ulcer, anticonvulsant, antispasmodic, vulnerary, cytostatic, astringent, flu vaccine, stimulant circulatory, carminative and analgesic agents in folk medicine [2]. The objective of this study was to determine essential oil composition, anticholinesterase and anti-ulcer activities of the essential oil and the hexane, acetone, and methanol extracts of *S. pisidica* collected from Muđla. Essential oil was obtained using a Clevenger apparatus and analysed by GC and GC-MS. In addition to, antioxidant activity of extracts and essential oil were tested by five different assay systems namely; β -carotene-linoleic acid, DPPH free radical scavenging, ABTS radical scavenging, cupric-reducing antioxidant capacity (CUPRAC) and metal chelating activity. Thirty-four compounds, representing about 99.9 % of the essential oil of *S. pisidica* were identified. The major compound was δ -cadinene (19.5 %), followed by tau-cadinol (16.7 %) and β -cubebene (10.4 %). Among all extract and essential oil, the methanol extract indicated the highest antioxidant activity in all tests, except in metal chelating assay. The hexane extract (IC₅₀: 22.97 \pm 1.36 μ g/mL) was found to be significantly active in metal chelating assay and followed by the acetone extract (IC₅₀: 57.98 \pm 0.70 μ g/mL). References [1] Davis PH. (1988). Flora of Turkey and the East Aegean Islands, University Press, Edinburgh, vol. 1, 1965-1985. [2] Bojovic D, Jankovic S, Potpara Z, Tadic V. (2011). Serbian J. Exp. Clin. Res. 12, 109-122.

KEYWORDS

Sideritis pisidica, Essential oil, GC-MS, Antioxidant activity

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Poster Session 3

Submission ID: 455

DETERMINATION OF PROBIOTIC FOOD CONSUMPTION HABITS OF UNIVERSITY STUDENTS – THE EXAMPLE OF SELÇUK UNIVERSITY

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ABSTRACT

This research, a case detection, planned to determination of probiotic food consumption habits of university students. Research universe was composed of 400 students who attend department of Food Engineering Faculty of Agriculture Selçuk University. Random sampling was applied in determining the students and 208 volunteer students participated in the study (Participation rate 52.0%). Research date collected by the help of a questionnaire form written by researcher between May and October 2016. Questionnaire form is composed of various questions to determine general knowledge and probiotic food consumption habits of the students. While evaluating the date, SPSS package programme was used and necessary statistical analysis was made. According to the research results, 165 of students were women (79.3%), 43 of the students were men (20.7%), the mean age was 21.38 ± 1.91 years. 50.5% of students weren't being knowledgeable about the probiotic foods. It was determined that more than half of the students (56.3%) consumed probiotic products. The students's which consuming probiotic food consumption frequency was once a day with a rate of 35.9%. 65.0% of the students have stated that they consume probiotic foods with no meals. The students wasn't know the use of microorganisms in probiotic food products with a rate of 79.8%, they wasn't reading the packaging information when purchasing these products with a rate of 7.7%, and they were proposing probiotic food consumption to other people with a rate of 80.3%. It was determined that 75.2% of those consuming probiotic products consumed these products willingly, 65.0% found to be normal the prices of these products, 58.2% benefited from these products and 83.8% kept refrigerated to these products. Besides its therapeutic effects, and because of its productive effects, the significance of probiotic products should be emphasized and made efforts to increase of these product consumptions.

KEYWORDS

Probiotic product, university students, consumption habits, probiotic food, probiotic

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Poster Session 3

Submission ID: 456

TOTAL PHENOLIC AND TOTAL FLAVONOID CONTENTS OF VARIOUS EXTRACTS OF FOUR SIDERITIS SPECIES FROM ANATOLIA

MEHMET EMİN DURU¹, EBRU DEVECİ¹, GÜLSEN TEL ÇAYAN², FATİH ÇAYAN²

ABSTRACT

Sideritis (Lamiaceae) species are represented by 46 species and 53 taxa in Turkey. 39 taxa is endemic and this genus is one of the most endemic species with 78.2 % endemism rate [1]. These species are known as "mountain tea" in the Mediterranean areas [2]. Sideritis species are described as "dađ çayı", "yayla çayı" and "ada çayı" in Anatolia and widely used in folk medicines in Mediterranean countries such as Turkey, Greece and Spain for the treatment of some diseases such as common cold, cough, gastrointestinal disorders due to their anti-rheumatic, antimicrobial, digestive and anti-inflammatory activities [3]. Phenolic compounds have antioxidant activity due to they act as reducing agent, hydrogen donors, singlet oxygen quenchers and metal chelators [4]. Flavonoids are natural phenolic compounds and well known antioxidants. In this study, total phenolic and flavonoid content of hexane, acetone and methanol extracts of Sideritis albiflora, S. leptoclada, S. pisidica and S. stricta were determined. Results were expressed as pyrocatechol and quercetin equivalents, respectively. The total phenolic contents of the extracts ranged from 1.77±0.18 to 141.05±0.11 µg PEs/mg. Acetone extracts of all studied Sideritis have the highest level of the phenolic compounds among the other extracts. The total flavonoid contents of the extracts ranged from 0.62±32 to 93.85±0.04 µg QEs/mg. The acetone extracts of Sideritis extracts except for S. pisidica exhibited highest flavonoid contents as compared to other extracts. Generally, acetone extracts were found to be richest in phenolic and flavonoid compounds for all studied Sideritis species References [1] A. Güner, N. Ozhatay, T. Ekim, K.H.C. 2001. Flora of Turkey and the East Aegean Islands, University Press. Edinburgh. [2] E. González-Burgos, M.E. Carretero. 2011. J. Ethnopharmacol. 135, 209-225. [3] H.J.D. Dorman, M. Kosar, K.H.C. Baser, R. Hiltunen. 2011. Pharm. Biol. 49(8), 800-804. [4] G. Rice-Evans, N.J. Miller, G. Paganga, G. 1996. Free Radical Bio. Med. 20, 933-956.

KEYWORDS

Sideritis species, total phenolic, total flavonoid

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Poster Session 3

Submission ID: 458

GC AND GC/MS ANALYSIS OF FATTY ACIDS OF SOME ENDEMIC SIDERITIS AND FERULA SPECIES

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ABSTRACT

Palmitic, stearic, oleic, linolenic and linoleic acids are the most abundant fatty acids in plants. Linoleic acid and linolenic acid belong to $\omega 6$ and $\omega 3$ family, respectively; are essential for normal growth, health promotion, and disease resistance in human metabolism. These fatty acids have an important role in the prevention of cardiovascular diseases, being antithrombotic, anti-inflammatory, antiarrhythmic and favoring plaque stabilization [1,2]. Oleic acid reduces LDL-cholesterol levels and shows the protective effect against chronic diseases such as cardiovascular disease, cancer or age-related cognitive decline. Therefore, investigation of the fatty acid composition in natural origin has become a topic of great interest among researchers due to the fact that fatty acids have great important in nutrition. The fatty acid composition of *Sideritis albiflora*, *Sideritis leptoclada*, *Sideritis pisidica*, *Sideritis stricta* and *Ferula elaeochytris* were analyzed by using GC and GC-MS analytical techniques. The lipid fractions of the plants were obtained by extracting plants with hexane: chloroform (8:2, v/v) solvent system and derivate to their methyl ester forms by using BF₃-methanol reagent. For the identification of the fatty acids, library search was carried out by using NIST and Wiley 2005. Supelco™ 37 components of fatty acid methyl ester were used for the comparison of the GC chromatograms. Major fatty acids were identified as palmitic acid (19.83-33.3 %), linoleic acid (13.41-23.80 %), linolenic acid (16.41-42.70 %) and oleic acid (13.44-24.18 %) in all studied species. References [1] I.S. Carvalho, M.C. Teixeiraa, M. Brodelius. 2011. LWT-Food Sci. Technol. 44: 293-298. [2] G. Boden, P. She, X. Mozzoli, M. Cheung, P. Gumireddy, K. Reddy. 2005. Diabetes 54(12): 3458-3465.

KEYWORDS

Fatty acid, Sideritis species, Ferula species, GC-MS.

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Poster Session 3

Submission ID: 460

INVESTIGATION OF RELATIONSHIP BETWEEN CHEMICAL STRESS FACTORS AND CERTAIN METABOLITES INCLUDING CARDENOLIDES IN CALLUS CULTURES OF ENDEMIC TURKISH DIGITALIS L. SPECIES

GÜNCE ŞAHİN¹, SANDEEP KUMAR VERMA², EKREM GÜREL³

ABSTRACT

The aim of the present research is to obtain relationship between different stress treatments [Cu (copper) and Hg (mercury)] and content of cardiac glycosides (digoxigenin, gitoxigenin, lanatoside C, digoxin and digitoxin) as secondary metabolites of commercial value for the pharmaceutical industry and to determine the antioxidant metabolites against stress conditions in callus cultures of endemic Turkish Digitalis species. The effects of different stress treatments on cardiotoxic glycoside accumulation in *D. lamarckii* Ivanina, *D. trojana* Ivanina, *D. davisiana* Heywood and *D. cariensis* Boiss. ex Jaub. et Spach were investigated using HPLC. HPLC analysis revealed that all stress conditions were significantly effective at 5% significance level according to their control groups. The predominant cardiac glycoside was lanatoside C (Lan C) followed by digitoxin, digoxigenin, gitoxigenin and digoxin. No digoxin was detected in all treatments as well as in control groups. For the calibration curves, concentrations of 5, 10, 20, 30 and 40 mg/l digoxigenin, gitoxigenin, lanatoside C, digoxin and digitoxin were used ($R^2= 0.99$). Cardenolides were eluted with acetonitrile (A) and water (B) gradients as follows: 0 to 20 min 20% (A), 80% (B); 20 to 23.40 min 30% (A), 70% (B); 23.40 to 30 min 25% (A), 75% (B) and 30 to 40 min 40% (A), 60%(B). Average peak area of the glycoside in samples was automatically calculated and monitored by ChemStation LC/MS software against that of standards. Enhanced production of cardenolides was achieved from callus cultures elicited with 50µm CuSO₄ and HgCl₂. Higher amounts of cardenolides were obtained when callus of four Digitalis species were elicited with CuSO₄. Results demonstrated that catalase (CAT, EC 1.11.1.6), superoxide dismutase (SOD, EC 1.15.1.1) activities, the total contents of phenolics and proline were markedly stimulated under stress conditions. All these results indicated that treatments have induced changes in the redox state of callus cells and suggest that this alteration change cardenolides accumulation and antioxidative status in Digitalis L. callus cultures.

KEYWORDS

Antioxidant; cardiac glycosides; Digitalis L.; heavy metal stress

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Poster Session 3

Submission ID: 462

ANTIMICROBIAL PROPERTIES OF SOME MEDICAL AND AROMATIC PLANTS

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ABSTRACT

The use of components derived from plant extracts today is rapidly increasing, especially in the pharmaceutical industry. The aim of the this study is to investigate antimicrobial and antifungal effects of extracts obtained from ethyl alcohol from medicinal and aromatic plants such as lavender (*Lavandula stoechas*), island tea (*Salvia officinalis*), thyme (*Thymus vulgaris*), chamomile (*Matricaria chamomilla*). These plants were grown in the settlement for the education of students of Dumlupınar University Altıntaş Vocational School Medical and Aromatic Plants Department. Extracts from these plants will be screened for their antibacterial and antifungal activities against *Staphylococcus aureus* (ATCC 29213) (Gram positive), *Escherichia coli* (ATCC 25922), (Gram negative) and *Candida krusei* (ATCC 6258), *Candida parapsilosis*(ATCC 22019) (yeast). The results were compared with the control compounds, Vancomycin, Cefepime, Levofloxacin as antibacterial, and Flucanazole as antifungal agents.

KEYWORDS

Medicinal and Aromatic Plants, Antimicrobial Activity

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Poster Session 3

Submission ID: 463

CYTOTOXIC AND GENOTOXIC EFFECTS OF MYCOTOXIN ENNIATIN-A USING MTT CELL VIABILITY ASSAY AND SISTER CHROMATID EXCHANGE ASSAY

SEVCAN MAMUR¹, ESRA ERİKEL¹, SERKAN YILMAZ², FATMA ÜNAL¹, DENİZ YÜZBAŞIOĞLU¹

ABSTRACT

Cytotoxic and Genotoxic Effects of Mycotoxin Enniatin-A Using MTT Cell Viability Assay and Sister Chromatid Exchange Assay Sevcan Mamur*1, Esra Erikel2, Serkan Yılmaz3, Fatma Ünal2, Deniz Yüzbaşıoğlu2 (1) Life Sciences Application and Research Center, Gazi University, 06830, Ankara, Turkey (2) Department of Biology, Science Faculty, Gazi University, 06500, Ankara, Turkey (3) Faculty of Health Sciences, Ankara University, 06340, Ankara, Turkey Abstract Enniatin-A (EN-A) is a mycotoxin produced by the *Fusarium* species. It may be accumulated in stored cereals products and pose a threat to human health. This study investigated the cytotoxic effects of EN-A in HeLA (human cervix carcinoma) cell line using 3-(4,5-dimethylthiazolyl-2)-2,5 diphenyl tetrazolium bromide (MTT) assay. The potential genotoxic effect of EN-A was also evaluated in human lymphocytes by using sister chromatid exchange (SCE) assay. Cells were treated with 0.048, 0.098, 0.195, 0.39, 0.78, 1.56, 3.125, 6.25 µg/mL concentrations of EN-A. A solvent [DMSO, 0.5% (v/v) of the culture medium] and a negative control was maintained. Mitomycin-C (MMC, 0.20 µg/mL) was used as the positive control in human lymphocytes. EN-A significantly decreased cell viability (%) at 0.78, 1.56, 3.125, and 6.25 µg/mL concentrations compared to control and solvent control (except at 0.78 µg/mL) at 24 h exposure. EN-A, at 48 h treatment, also significantly reduced cell viability (%) at all concentrations (except at 0.48, 0.78, 1.56 µg/mL). The half of inhibitory concentration (IC₅₀) in exposed HeLA cells was found to be 0.78 µg/mL for 24 h and, 0.39 µg/mL for 48 h. In addition, EN-A significantly decreased mitotic index in all treatments in human lymphocytes indicating its cytotoxic effect at 1.56 µg/mL concentration and over. However, there was no significant difference between treatment and control groups in the replication index (RI) at all treatments. None of the concentrations of the EN-A did not elevated the frequency of SCEs at 24 h, however the frequency of SCEs significantly increased at only 0.39 µg/mL concentration for 48 h treatment. As a result, EN-A showed cytotoxic effect especially at higher concentrations in HeLA cell line. However, it did not affect the frequency of SCEs in human lymphocytes in vitro except for certain concentrations and long-term treatment. To be able to evaluate the potential genotoxic effect of EN-A, other genotoxicity tests as chromosomal aberration, micronuclei and comet assay should be conducted. Acknowledgment: This study was financially supported by TUBITAK under the project number 114Z713.

KEYWORDS

Enniatin-A, mycotoxin, MTT assay, sister chromatid exchange (SCE) assay

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Poster Session 3

Submission ID: 465

PLANT TISSUE CULTURE STUDIES IN GENUS SALVIA AND ITS IMPORTANCE

YONCA SURGUN ACAR¹, BETÜL BÜRÜN²

ABSTRACT

The genus *Salvia* (Lamiaceae) includes more than 900 species and many of them have medicinal and aromatical features. *Salvia* species are used in folk medicine, in the production of various secondary metabolites, as ornamental plants and also as culinary herbs. There are some certain limitations (climate, season, diseases and pests etc.) in plants that are cultivated by conventional methods. In addition, there is also a danger of scarcity and/or extinction of naturally growing medicinal plants. In vitro culture techniques eliminate these limitations. There are some studies in which in vitro techniques are used for different purposes (rapid propagation, secondary metabolites production, conservation of rare, threatened or endangered plants, somaclonal variations creation and utilization in breeding from these variations etc.) in the genus *Salvia*. After evaluation of these literatures that have been reported in the genus *Salvia* so far, the use of in vitro culture techniques and advantages of them have been offered in this study.

KEYWORDS

Salvia, tissue culture, micropropagation, secondary metabolite production

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Poster Session 3

Submission ID: 466

POTENTIAL USE OF SAFFRON (*CROCUS SATIVUS L.*) IN MODERN MEDICINE

YONCA SURGUN ACAR¹, BETÜL BÜRÜN²

ABSTRACT

In last twenty years, studies about herbal medicines which have anti-carcinogenic activity have been gradually increasing. Correlation of long time consumption of some herbal medicines with decrease of cancer incidence generates an epidemiologic base for further studies. It is known that, from time immemorial saffron has been used in traditional medicine in different cultures of world because of its medicinal features, which is obtained from dry stigmas of saffron plant (*Crocus sativus L.*) flowers and an invaluable spice. In modern medicine, it is revealed that saffron extracts and major active compounds have anti-cancer activities on animal models and cultured human malignant cell lines. Saffron contains many bioactive compounds like crocin, crocetin, picrocrocin, safranal, anthocyanin, carotene and lycopene and besides exhibiting anti-carcinogenic and anti-tumor properties in vivo and in vitro environments, it is indicated that these compounds have various pharmacologic effects in different diseases. The various hypotheses have been suggested about the effects of saffron and its compounds on different cancer types. Some of these mechanisms have been proposed as (a) inhibition of DNA and RNA synthesis, (b) induction of apoptosis, (c) induction of cytotoxicity and inhibition of cell proliferation, and (d) inhibition lipid peroxidation and increase of the activity of antioxidant enzyme. Consequently, it is stated that studies aimed at explore of new plant candidates having potential anti-cancer effects like saffron are quite important and allows for the development of safe and effective anti-cancer therapies.

KEYWORDS

Saffron (Crocus sativus L.), bioactive compounds, anti-cancer

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Poster Session 3

Submission ID: 467

SESAME OIL: COMPOSITION, CHARACTERISTICS AND EFFECT ON HEALTH

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ABSTRACT

Sesame (*Sesamum indicum* L.) is an oilseed that grows in hot regions, which has been used for thousands of years due to its preventive effect on several diseases and its many functional properties (pharmacy, medicine, food industry etc.). In addition to its usage as a spice in food industry, sesame also compose raw materials in the production of sesame oil and sesame oil. However, despite high oil yield (~ 50%) sesame seeds are not used as an important oil source material in Turkey. Sesame oil have healthy compounds, and also it is more stable than many vegetable oils, and it is known that this property is enhanced by antioxidant compounds (sesamol, sesaminol, sesamolin). The most potent antioxidant compound of these compounds is sesamoid. Also important minor compounds in sesame oil such as lignans (sesamin, sesamolin), polyphenols (sesamol), tocopherols (α , γ , δ) and phytosterols (sitosterol, campesterol) enrich the oil content. Recent studies also discuss the emulsifying properties of sesame oil. Considering all these features and the literature, it is thought that the importance applied to sesame oil is inadequate. Therefore, sesame oil production, sesame oil content, usage areas and functional properties of sesame oil and the effect of sesame oil on health have been emphasized in this study.

KEYWORDS

Sesame oil, Antioxidant, Sesamol, Sesamolin, Sesamin

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Poster Session 3

Submission ID: 469

FUNCTIONAL PROPERTIES OF POLYPHENOL COMPOUNDS IN SOME HERBAL TEAS AND IMPORTANCE IN TERMS OF TYPE-2 DIABETES

ÖZLEM ÇAĞINDI¹, CEREN İNCE¹

ABSTRACT

Diabetes, which is of great importance in our country and in the world, is a serious disease that cannot prevent deaths, despite the studies done and the new treatment methods developed. Type 2 diabetes is the most common form of diabetes patients accounting for 90%. In order to prevent diabetes or to balance the level of blood sugar, the amount of sugar in the blood should be controlled. An important risk for diabetes is the reduced plasma antioxidant level. Since antidiabetic medication leads to toxicity in liver and kidney, alternative studies for the use of herbal products in treatment gradually has been increased. Because of positive effecting on health, medical and aromatic plants are extensively used. At the present time, herbal teas are consumed one of the most herbal origin natural products. The basic indicators of the compounds that make up the health effects of these herbal teas are total phenolic content and antioxidant activity levels. Polyphenols are secondary metabolites found in many plants and shell of fruits. It has been reported that glycosidase enzymes are inhibited by polyphenol-rich compounds and positive effects are provided on blood glucose control. Herbal tea leaves contain high amounts of polyphenols and major rate of flavonoids in polyphenols. The primary phytochemical responsible for herbal tea's antidiabetic effects is epigallocatechin gallate. Also quercetin, kaempferol are significant level other polyphenolic compounds. Primary of herbal teas rich polyphenol compounds are contained green tea catechin polyphenol. In addition, peppermint, thyme, black tea, sage, roselle (hibiscus) polyphenols are rich in herbal teas. Antidiabetic properties have been found in green, black and oolong tea. It supplies that edible plants such as grape leaf, quince leaf, nettle, bean leaf and cherry leaf have the ability of alpha-glucosidase enzyme inhibition activity. It is about to positive effect on diabetes when these edible plants are consumed as herbal teas. Results showed that antioxidant activity is increased by adding lemon, bergamot, clove or cinnamon is greater than their individual actions. There has been existed studies that medicinal and aromatic plants, especially phenolic compounds and antioxidant activities, will prevent the development of Type 2 diabetes. In this study, the definition and structure of polyphenols, which are bioactive components, functional properties, in terms of polyphenol compound rich some herbal teas and effect mechanisms of diabetes have been compiled.

KEYWORDS

Polyphenols, Herbal Teas, Type-2 Diabetes

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Poster Session 3

Submission ID: 470

EFFECT OF ACTIVATED CHARCOAL ON ROOT FORMATION OF VACCINIUM MYRTILLUS

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ABSTRACT

Vaccinium myrtillus L. (Bilberry), a member of the family Ericaceae, is economically the most important wild berry growing in the Turkish flora. This study was determined to the effect of activated charcoal on rooting *V. myrtillus* microshoots growing in the culture conditions. WPM containing 2% sucrose and 0.8% agar was used as a basal medium for rooting and was each individually supplemented with different concentrations of IBA, IAA and NAA (0.25–1.0 mg/L) with or without activated charcoal (AC). Cultures were incubated in a growth chamber maintained at 24 ± 2 °C, under a 16/8 h photoperiod with a photosynthetic photon flux density of 50 µmol m⁻² s⁻¹. The rooting percentage was also evaluated via a number of rooted microshoots, root length, and the number of root tips per explant. In terms of root formation, 0.5 mg/L IBA was found to be superior to the other tested growth regulators when combined with 1.0 g/L AC with 30% rooting success. Although the highest root length was also obtained again the same IBA/AC combined with 20.94 mm, the highest root number was obtained only 0.25 mg/L IBA applications with 3.11 per microshoot. For NAA application, only 0.5 mg/L NAA combined with 1.0 g/L AC were given a statistically significant result. At the end of the study, it was determined that auxin types and AC applications affected the rooting percentage of *V. myrtillus* microshoots. Acknowledgement: We thank Science, Industry and Technology Ministry, Turkey. Project no. 0360.TGSD.2011

KEYWORDS

Activated charcoal, micropropagation, Vaccinium myrtillus, indole-3-butyric acid

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Poster Session 3

Submission ID: 473

SOME NON-WOOD PRODUCTS AND THEIR GENERAL FEATURES IN EGE REGION

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ABSTRACT

Türkiye has a rich diversity due to almost 12000 plant taxon. This richness has led to dense use since long years. Therefore, there are many plant species that is used for different purposes. Having Mediterranean climate type, Ege Region has general Mediterranean vegetation properties. As it is known Mediterranean ecosystems are very rich in terms of fragrant and oily plants and especially annual species and of course medicinal and aromatic plants. Since Ege Region is also rich with medicinal and aromatic species. In this study, it will be tried to explain some medicinal-aromatic plants those will be identified at the end of our observations, records and previous studies for a long time, their biological properties and usage in Ege Region.

KEYWORDS

Ege Region, Non-wood Forest Products, Medicinal, Aromatic

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Poster Session 3

Submission ID: 474

THE POTENTIAL EFFECTS OF A HOT-WATER EXTRACT FROM MYCELIUM OF THE EDIBLE MUSHROOM ON HUMAN BLOOD MONONUCLEAR CELLS

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ABSTRACT

Mushrooms are consumed for their nutritional and medicinal values, and have an expanding global industry. The submerged and solid state fermentation of mushrooms have great potential for the production or extraction of bioactive phenolics. *Pleurotus sajor-caju*, known as oyster, is edible mushroom. For the first time, the present study was designed to investigate genotoxic effects, cell viability and oxidative damage of increasing concentrations (5, 10, 15, 25, 40, 75, 100, 250 and 500 µg/mL) hot-water extract from mycelium of the *P. sajor-caju* on human blood mononuclear cells (hBMCs). Cytotoxic effect was detected by lactate dehydrogenase (LDH) assay, besides total antioxidant capacity (TAC) and total oxidant status (TOS) levels were determined to evaluate the oxidative injury. The DNA damage was also analyzed by cytokinesis-block micronuclei (CBMN) assay as indicators of genotoxicity. *P. sajor-caju* at the applied concentrations didn't cause significant decreases to cytotoxicity as compared to untreated culture. However, the results 24 and 48 h treatment periods of LDH showed that the high concentration of *P. sajor-caju* (500µg/mL) increased cytotoxicity. On the other hand, the increasing doses of (10, 15, 25 and 40µg/mL) significantly increased TAC levels and decreased TOS levels as compared to untreated culture. Whereas, 250 and 500 µg/mL doses of *P. sajor-caju* slightly increased of TOS levels and decreased TAC levels in cultured hBMCs. As compared to untreated culture, *P. sajor-caju* didn't cause increases at CBMN rates. In conclusion, the obtained in vitro results showed that *P. sajor-caju* can be consumed safely, but it has also in a time and dose-dependent effects on inducing oxidative damage and cyto-genotoxicity in hBMCs.

KEYWORDS

Pleurotus sajor-caju, human blood mononuclear cells, cytotoxicity, genotoxicity, oxidant, antioxidant, lactate dehydrogenase.

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Poster Session 3

Submission ID: 475

**ANTIMICROBIAL AND ANTIOXIDANT PROPERTIES OF THYME
(THYMUS VULGARIS L.), ROSEMARY (ROSMARINUS OFFICINALIS
L.) AND LAUREL (LAURIS NOBILIS L.) ESSENTIAL OILS AND
THEIR MIXTURES**

SERPİL TURAL¹, SADETTİN TURHAN²

ABSTRACT

In this study, the antimicrobial and antioxidant properties of thyme (TEO), rosemary (REO) and laurel essential oils (LEO) and their mixtures (TEO/REO, TEO/LEO, REO/LEO, 1/1, v/v and TEO/REO/LEO, v/v/v, 1/1/1) were investigated. The antimicrobial activity was measured by agar well diffusion method, while antioxidant capacity was measured FRAP and DPPH scavenging activity methods. All essential oils and their mixtures showed antimicrobial activity and antioxidant capacity. The highest antimicrobial activity against *S. aureus*, *E. coli* O157:H7 and *L. monocytogenes* was determined in TEO with zone diameters of 39.33, 28.00 and 30.67 mm, respectively. In general, essential oil mixtures negatively affected the antimicrobial activity compared to essential oils alone, and *E. coli* O157:H7 was less sensitive to the inhibitory activity of essential oils and their mixtures than *S. aureus* and *L. monocytogenes*. The FRAP values of all essential oils and mixtures ranged from 3.67 (REO) to 40.30 mg/mL (LEO), while the DPPH scavenging activity values ranged from 21.31 (REO) to 89.48% (TEO/LEO). These results suggested that essential oils obtained from thyme, rosemary, laurel and their mixtures have potential to be used as natural antimicrobial and antioxidant agents in food industry.

KEYWORDS

Antimicrobial activity, antioxidant capacity, thyme essential oil, rosemary essential oil, laurel essential oil

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Poster Session 3

Submission ID: 476

COMPARISON OF ANTIOXIDANT CAPACITIES AND PHENOLIC CONTENTS OF TWO TRAGOPOGON SPECIES

KAAN KALTALIOGLU¹, HUSEYİN SAHİN¹, ERSAN BEKTAS¹, SULE COSKUN CEVHER²

ABSTRACT

Traditionally, *Tragopogon* genus are used for the treatment of stomach complaints, ulcers and wounds in various countries, and are known locally as “yemlik”. In the present study we compared the antioxidant capacity and phenolic content of *T. graminifolius* and *T. pterocarpus* which are the potential medicinal plants. 5 g samples (aerial parts) were taken from each of plants and were extracted with methanol by using soxhlet apparatus. After extraction, the methanol solvent was evaporated by using rotary evaporator. The crude extracts were divided into two parts. RP-HPLC-DAD (reverse phase high performance liquid chromatography with a diode array detector) was applied on the first parts of extracts to determinate phenolic compounds. The DPPH radical scavenging activity of the rest of the extracts were analyzed by spectrophotometrically. Protocatechuic acid, p-hydroxybenzoic acid, chlorogenic acid, caffeic acid, syringic acid, p-coumaric acid, rutin, rosmarinic acid, benzoic acid and quercetin were detected in both plants with different amounts. Vanilic acid was detected only in the *T. pterocarpus* whereas gallic acid was detected only in the *T. graminifolius*. The dominant phenolic compounds identified from *T. pterocarpus* extract were the quercetin (26.01 mg phenolic/g extract) and benzoic acid (5.88 mg phenolic/g extract). The dominant phenolic compounds identified from *T. graminifolius* extract were the quercetin (9.91 mg phenolic/g extract) and chlorogenic acid (6.75 mg phenolic/g extract). Antioxidant activity of *T. pterocarpus* was found to be higher than *T. graminifolius* (SC50 values 115.80 µg/mL and 142.78 µg/mL, respectively).

KEYWORDS

Tragopogon graminifolius, *Tragopogon pterocarpus*, RP-HPLC-DAD, phenolic, antioxidant

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Poster Session 3

Submission ID: 477

PHENOLIC COMPOUNDS AND DPPH ANALYSIS OF ROOTS AND AERIAL PARTS OF ISATIS SIVASICA

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ABSTRACT

Isatis genus are used in the traditional treatment of constipation, cuts and wounds, hemorrhage in various countries. In the present study we compared the phenolic compounds and antioxidant activities of methanolic extracts of *Isatis sivasica* (MEIS) parts which is the potential source of antioxidant. *I. sivasica* samples were separated to the parts of root and aerial. 5 g samples were taken from each of parts and were extracted with methanol by using soxhlet apparatus. After extraction, the methanol solvent was evaporated by using rotary evaporator. The crude extracts were divided into two parts. RP-HPLC-DAD (reverse phase high performance liquid chromatography with a diode array detector) was applied on the first parts of extracts to determinate phenolic compounds. The antioxidant activity of the rests of the extracts were investigated in terms of DPPH radical scavenging assays by spectrophotometrically. Protocatechuic acid, p-hydroxybenzoic acid, vanilic acid, caffeic acid, p-coumaric acid, and rosmarinic acid were found by RP-HPLC-DAD analysis of the root of MEIS. In addition to these phenolics, rutin and benzoic acid were detected in aerial parts of MEIS. For antioxidant activity, aerial parts of MEIS possessed the higher DPPH radical scavenging activities as compared to root of MEIS (SC50 values 134.05 $\mu\text{g/mL}$ and 474.45 $\mu\text{g/mL}$, respectively).

KEYWORDS

Isatis sivasica, RP-HPLC-DAD, DPPH, phenolic, antioxidant

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Poster Session 3

Submission ID: 479

MICROPROPAGATION OF ERUCA SATIVA MILL. (SALAD ROCKET)

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ABSTRACT

The purpose of this study was determined micropropagation of *Eruca sativa* Mill. is an edible annual plant, commonly known as "salad rocket". In order to specify the most effective basal medium, two basal media, Murashige and Skoog (MS) and Gamborg B5 medium (B5) each supplemented with 1.0 mg/L 6-benzylaminopurine (6-BA) and without plant growth regulators (PGRs), were tested to determine the best basal medium for seed germination. MS, supplemented with 6-BA, was found to be the most favored basal medium tested with 90% seed germination and 29.80 ± 2.30 shoot length success. Since shoot proliferation ability highly depends on the medium and cytokinin concentration, lateral buds were selected as explants, which were then individually cultured in MS, each supplemented with 1.0 mg/L kinetin, thidiazuron (TDZ), 6-BA, and 6-(y,y-dimethylallylamino)-purine (2iP) in combination with 0.1 mg/L indole-3-butyric acid (IBA). MS containing 1.0/0.1 mg/L 6-BA/IBA was chosen to be the most effective basal media among tested. Therefore, MS medium each individually supplemented with 0, 0.25, 0.5, 1.0 and 2.0 mg/L 6-BA in combination with 0.1 mg/L IBA was again tested for most suitable 6-BA concentration. The highest shoot multiplication successes were obtained in the lowest 6-BA treatments with 37.88 mm shoot length. Acknowledgements: The authors deeply appreciate the financial support of KTU-BAP (The Scientific Research Committee of Karadeniz Technical University) for the project KTÜ-BAP.1064

KEYWORDS

Eruca sativa, Micropropagation, 6-benzylaminopurine

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Poster Session 3

Submission ID: 480

INFLUENCES ON ALPHA-AMYLASE AND ALPHA- GLYCOSIDASE OF PHENOLIC COMPOUNDS IN MEDICINAL AND AROMATIC PLANTS

HÜLYA ŞEN ARSLAN¹, MUSTAFA ÇAM²

ABSTRACT

Medicinal and aromatic plants are widely used for protection and improvement of human health as well as preservation and sweetening of foods. Many illnesses that emerging from ancient times to has been tried to be treated via plants. Carotenoids, antioxidants, vitamins, phenolic compounds, terpenoids, steroids, indoles and fiber in plants have been found to have significant effects on the reduction of chronic diseases. Alpha amylase and alpha glucosidase enzymes have the key roles in the breakdown of starch and the absorption of the resulting glucose by the intestines. The increase in blood glucose level after a it is expected to limit the postprandial elevation of glucose in the blood with the help of inhibition of these enzymes after a diet containing mixed carbohydrates. This situation may be an important strategy in managing hyperglycemia resulting from Type 2 diabetes. Acarbose, miglitol and voglibose are the most commonly used antidiabetic drugs to inhibit alpha-amylase and alpha-glucosidase activity. Although these drugs are effective in preventing the increase of glucose blood levels in many patients, as a result of the continuous use of these medicines, they cause undesirable side effects such as liver toxicity and gastrointestinal symptoms. For this reason, the use of compounds of natural origin instead of synthetically produced medicines for the prevention of Type 2 diabetes has been become widespread today. Phenolic compounds known as herbal pigments over a century are widespread almost in all plants. Interest in phenolic compounds has increased due to their antioxidant and free radical scavenging properties resulting from in vitro studies. Phenolic compounds attract attention of researchers because they have free radical scavenging properties, regulate enzyme activities, inhibit cell proliferation, antibiotics, antiallergic, antidiarrheal, antiulcer and antiinflammatory properties. Phenolic compounds have been indicated sometimes inhibit and sometimes stimulate enzyme systems in mammals in vitro studies. In this study has included information about effects on alpha-amylase and alpha-glucosidase enzymes of phenolic compounds naturally found in medical and aromatic plants.

KEYWORDS

Alpha-amylase, alpha-glucosidase, diabetes, phenolic compounds, medical and aromatic plants.

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Poster Session 3

Submission ID: 481

ANTIFUNGAL ACTIVITY OF CORNUS MAS L. AND NERIUM OLEANDER L. PLANT EXTRACTS AGAINST SOME PLANT PATHOGENIC FUNGI

BURAK CAN DUMAN¹, ABDURRAHMAN ONARAN¹

ABSTRACT

Studies are underway to find new compounds due to the negative effects of pesticides used against plant pathogens in agricultural areas. In these studies, the use of plants as bio-pesticide is the foreground. In this study, antifungal effects of the methanol extracts of *Cornus mas* L. (leaf and fruit) *Nerium oleander* L. (flower and leaf) were determined against *Fusarium oxysporum* f.sp. *radicis-lycopercisi* (FORL), *Verticillium dahliae* and *Rhizoctonia solani* pathogens. Agar plate method was used for activity studies. Doses of 500, 1000 and 2000 mg/ml of each plant extract were used. Negative (50% acetone) and positive control (80% thiram) were applied. A noticeable antifungal activity was observed in all extracts used against test fungi. Mycelium growth inhibition (MGI) and lethal dose (LD₁₀₋₅₀₋₉₀) values were calculated for the test fungi of the extracts. The highest effect against test fungi was determined to be *C. mas* fruit. This is followed by *N. oleander* flower, *C. mas* leaf and *N. oleander* leaf extract, respectively. These MGI effects were found to be 30% to 78% for FORL, 36% to 84% for *V. dahliae* and 0% to 69% for *R. solani*. For the test fungi, doses of LD₅₀ were found to be in the range of 314.64 to 934.38 mg/ml for *C. mas* fruit, 999.49 to 4690.50 for *C. mas* leaf, 801.58 to 1245.95 mg/ml for *N. oleander* flower and 1352.19 to 2706.67 mg/ml for *N. oleander* leaf. According to these results, it was determined that all plant extracts used had bio-fungicidal activity against test fungi.

KEYWORDS

Antifungal activity, Plant extractsı, Cornus mas, Nerium oleander, Plant Pathogenic Fungi

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Poster Session 3

Submission ID: 482

ENDOCRINE DISRUPTOR CHEMICALS: PHYTOESTROGENS

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ABSTRACT

Endocrine disrupting chemicals (EDCs) are synthetically or naturally occurring components with the ability to modulate endocrine system pathways. EDCs can activate or inhibit estrogen, androgen, and thyroid hormone receptors. These compounds can be taken on a daily basis with trace amounts of food and can be taken at higher rates with the continuous consumption of some vegetables and fruits. Human and animal populations are continuously exposed to endocrine disruptors. Pesticides, fungicides, drugs, dioxins, plasticizers and paint additives are some of the sources of exposure to these components. Phytoestrogens, known to have EDC-features, are herbal origin components that can be found in many foods. Phytoestrogens have a very important role in biological activity by acting as steroid hormones (eg, 17 β -oestradiol) in humans and other mammals. There are many phytoestrogenic foods that are discovered and proven to be clinically effective up to day. Structure and Classification of Phytoestrogens Phytoestrogens are classified as polyphenolic, steroidal and mycoestrogens according to their cyclic structure. Polyphenolic phytoestrogens are divided into subgroups as chromenes, stilbenes, lignans, isoflavonoids, flavonoids, chalcones and deoxybenzoins. In steroidal phytoestrogens, terpene glycosides constitute the significant subgroup. Isoflavones and human steroid estrogen from polyphenolic phytoestrogens are quite similar in terms of chemical structure and molecular weight. The distance between the hydroxyl groups and the similarity of the molecular structure is important in terms of the activities at the binding points. The Existence of Phytoestrogens in Plant-derived Foods and Its Effect on Health Although the presence of phytoestrogens in a large number of plant sources is known, soy is the most common source. Isoflavonoids are the phenolic metabolites mostly found in leguminous plants. In today's food industry it is accepted as a fact that many of dietary supplements containing phytoestrogens and soy protein added to a large part of processed foods. Given this situation, phytoestrogens, which are weak estrogen agonists / antagonists with similar molecular and cellular properties to synthetic endocrine disruptors such as Bisphenol A (BPA), provide a useful model for more clearly revealing the biological effects of endocrine disruptors. There are many different opinions that phytoestrogens may be useful or harmful for health. Studies of the beneficial effects of phytoestrogens have been associated with diseases such as osteoporosis, carcinogenesis and atherosclerosis. Harmful effects are caused by endocrine disruptive side effects of these components. There are a number of studies on the linkage of synthetic endocrine disruptors to diseases such as fertility, negative effects on the reproductive system and endocrine system, cancer and obesity. Because of these different approaches, it is unclear whether phytoestrogens may have a positive or negative effect on human health. This can vary depending on a large number of determinants, such as the dose being exposed, the age of the person, the health status and the intestinal microflora.

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KEYWORDS

EDC, herbal foods, phytoestrogens

Poster Session 3

Submission ID: 483

THE VOLATILE COMPONENTS OF PHLOMIS LYCIA D. DON AND PHLOMIS LEUCOPHRACTA SPECIES NATURAL DISTRIBUTED IN GÖYNÜK DISTRICT OF ANTALYA PROVINCE

AYŞE GÜL SARIKAYA¹, HÜSEYİN FAKİR¹

ABSTRACT

Natural distributed in our country Phlomis genus, has an important place among medicinal plants. One of the species with the highest number of species of Lamiaceae family, is known as "Ballık Otu", "Calba", "Çalba" and "Şalba" in Turkey and is used as medicinal and aromatic plant among the people. The leaves and flowers of Phlomis lycia D. Don and Phlomis leucophracta P. H. Davis & Hub.-Mor. were collected from Göynük area of Antalya province in the study carried out during the 2016 vegetation period and volatile components of the flowering period of the species were determined by SPME (solid-based microextraction method) analysis. For Phlomis leucophracta, 50 different volatile components were identified and the main constituents were (E) -2-hexenal (15,81%), limonene (17,55%), β -cayophyllene (18,09%). Also 57 different volatile components were identified for Phlomis lycia, and the main constituents were (E) -2-hexenal (8,35%), (E) - β - Farnesene (10,05%) and germacrene-D (45,73%).

KEYWORDS

Phlomis, volatile component, (E)-2- Hexenal, the flowering period, Antalya

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Poster Session 3

Submission ID: 484

INHIBITORY EFFECT OF 5-HYDROXY-6,7-DIMETHOXY-2-PHENYL-4H-1-BENZOPYRAN-4-ONE ON HUMAN CERVIX CARCINOMA IN VITRO

RAMAZAN ERENLER¹, İBRAHİM DEMİRTAŞ², TÜNAY KARAN³, MUHAMMED ALTUN²

ABSTRACT

Kickxia spuria was collected from Bingöl, Turkey. Aerial parts of the plant were boiled in water for 2 h then extracted with ethyl acetate. After evaporation of the solvent by rotary evaporator, the extract was subjected to column chromatography to yield the compound identified as 5-Hydroxy-6,7-dimethoxy-2-phenyl-4H-1-benzopyran-4-one by spectroscopic method including 1D-, 2D-NMR, LC-TOF/MS. Antiproliferative activity of isolated compound was tested against HeLa (human cervix carcinoma) cell lines by xCELLigence assay, and found out that the compound exhibited excellent activity.

KEYWORDS

Kickxia spuria, flavonoid, HeLa

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Poster Session 3

Submission ID: 485

**CHEMICAL COMPOUNDS AND IN-VITRO ANTIMICROBIAL
PROPERTIES OF ESSENTIAL OIL OF BERGAMOT (CITRUS
BERGAMIA RISSO ET POITEAU) PEEL**

DİLEK KESKİN¹, NUR CEYHAN GÜVENSEN², TUĞÇE ERDOĐDU²

ABSTRACT

The antimicrobial properties of essential oil extracted from bergamot peel (BEO) was studied by disc diffusion method. The determination of the minimum inhibitory concentration (MIC) values via the microdilution method revealed a different antimicrobial pattern for the one microorganism investigated. The bergamot essential oil was tested against six bacteria and one fungus, which revealed various levels of antimicrobial activity. Among the bacteria, *B.subtilis* showed best antimicrobial activity with 37mm. Erythromycin and ampicillin were tested positive control. BEO showed antimicrobial activity with 10mm zones to *C.albicans*. Only, *E.coli* was showed antimicrobial activity 8 µg/mL. The GC/MS analyses allowed 18 compounds to be determined; the main constituents of the essential oil of bergamot (*Citrus bergamia*) were linalool 46.58%, limonene 22.32%, linalyl acetate 15.46%. In conclusion, on the basis of our results, BEO activities registered are mostly related to individual susceptibility of bacteria. It is recommended to estimate their efficacy on a significant number of pathogenic strains in order to prospect a concrete employ in food industries as a valid natural alternative for the bio-control of the pathogen. Bergamot peel is a potential source of natural antimicrobials that are active against Gram-negative bacteria, Gram-positive bacteria and *C. albicans*. Antimicrobial activity based on high content of linalool, limonene and linalyl acetate.

KEYWORDS

Citrus bergamia, Essential oil, Antimicrobial Activity, GC/MS Analysis

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Poster Session 3

Submission ID: 486

MEDICINAL AND AROMATIC PLANTS OF ESENLİ (GİRESUN) FOREST PLANNING UNIT

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ABSTRACT

Turkey is an extraordinary country in terms of plant species diversity. Besides this diversity, Anatolian lands were hosted by many civilizations. The combination of these two factors has also contributed to a wealth of human-plant use. The plants have been used for different purposes in different civilizations such as food, medical, instrument construction, fuel, paint, feed, incense. The use of plants today, especially medical and aromatic plants, continues to increase. According to the Flora of Turkey, which plant is known to grow in which region. However, there is insufficient information on the status of plant populations. Plant sociology studies can give us satisfactory information about plant populations. In this study, Medicinal and aromatic plants of Esenli [Giresun] Forest Planning Unit, located between Alucra and Yađlıdere districts, were investigated based on plant sociology. During the this study; 20 sample plots were taken. The vegetation study was carried out according to Braun-Blanquet's method. Totally, 226 naturally growing plant taxa were identified. Of these plants, 10 taxa [%4,4] belong to Pteridophyta division and 216 taxa belong to Spermatophyta division. 3 taxa [%1,3] belong to Gymnospermae subdivision, while the others 213 [%94,3] are Angiospermae subdivision. As a result of this study, 110 plant taxa which have medicinal and aromatic traits were determined in the area. These plants are 3 taxa Pteridophyta, 3 taxa from Gymnospermae and the rest from Angiospermae [104 taxa]. Families, scientific names, Turkish names, usable parts and traditional uses were given in the presentation.

KEYWORDS

Medicinal and Aromatic Plants, Inventory, Plant Sociology, Giresun, Flora

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Poster Session 3

Submission ID: 488

DANDELİON

MERVE NUR UYAR¹

ABSTRACT

A study on dandelion, which is defined as "blowing flower" among the people, has been conducted due to the feather structure that was transformed in the autumn. In this compilation, it is reported that the feathering is actually a stage of the insemination process. In addition to this information, carbohydrates, protein, fat percentages, total calories and nutrient content of dandelions are discussed in detail. In addition, the traditional and medicinal use of dandelion, in particular its effect on the liver diseases involved in its medicinal use, its function on lipid metabolism, its antidepressant, anti-cancer, antimicrobial properties, its effect on reproductive activities, its contribution to oral mucosa hygiene and its accompanying mirosinase and inulin have been reached. The information obtained from these records has been compiled. Dandelion's separately flowers, stems, root parts, liquid extracts and plant flowers; Its use, its preparation, its application, its role in treatment, its effects on subjects have been subject to many researches, and relevant literature has been searched.

KEYWORDS

dandelion, taraxacum officinale, radika, inulin

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Poster Session 3

Submission ID: 490

USE OF MEDICAL AND AROMATIC PLANTS IN PHYTOREMEDIATION STUDIES

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ABSTRACT

Medical and aromatic plants produce various chemicals such as primary and secondary metabolites. Some of these chemicals composed of heavy metal components. In today's, many indigenous people use these plants for therapeutic and food, but toxic compounds which compose of heavy metals enter the food chain. Recently, ecological based phytoremediation techniques have gained importance because of the high cost of conventional techniques used to clean areas with heavy metal pollution. Some studies have shown that some medical and aromatic plants contain some heavy metals. This case has increased the number of preferred medicinal and aromatic plants in phytoremediation studies. However, it is known that these plants consumed for therapeutic or food purposes are dangerous to be consumed by human and animals due to the heavy metals contents. In many studies, heavy metals contents of medical and aromatic plants are controlled by the World Health Organization. For example, a study performed in Pakistan, it was found that heavy metal contents were higher than the values suggested by the World Health Organization for 43 medical and aromatic plants. Especially from Asteraceae family, in *Silybum marianum* (L.) Gaertn. and *Artemisia herba-alba* Asso were detected 54 ppm Pb 5.25 ppm Cd, respectively. Also, it has been found that *Brassica jucea* L. and *Helianthus annus* L. used in edible oil production accumulate high levels of heavy metals in their phytoremediation studies. As a result, medical and aromatic plants have been widely used in phytoremediation studies and have found that they accumulate significant amounts of heavy metals in their bodies. But This can cause heavy metals in their bodies enter into food chain either consumption by human or animals. And cause potential human health risk and ecological disturbances. For this reason, some researchers propose here a safe, economically feasible and eco-friendly approach for phytoremediation using nonedible aromatic plants. Thus, the phytoremediation works will be safe, environment friendly and low cost.

KEYWORDS

Eco-friendly, Edible, Heavy metal, Nonedible, Phytoremediation

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Poster Session 3

Submission ID: 491

CENTAUREA BABYLONICA (L.) L. EXTRACTS: ANTIMICROBIAL ACTIVITY AND CYTOTOXIC EFFECTS ON HUMAN LUNG CARCINOMA CELLS

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HASAN YILDIRIM⁴**

ABSTRACT

The antimicrobial activities of above ground-parts (branches and leaves) of *Centaurea babylonica* (L.) L. extracts of acetone, chloroform, hegzan, ethylacetat, metanol and etanol were studied by disc diffusion method. These extracts were tested against six bacteria and one fungus, which revealed various levels of antimicrobial activity. In this work, inhibition zone diameters and MIC values detected for each extract and microorganism. The acetone extracts of *C. babylonica* showed the best antibacterial activity against *Bacillus cereus* (15mm). While the hegzan and acetone extracts displayed the best antimicrobial activity against *B. subtilis* (14mm). The ethylacetate extracts of *C. babylonica* showed the best antibacterial activity against *Pseudomonas aeruginosa* (1,6 µg/mL). The chloroform extracts of *C. babylonica* displayed the best antibacterial activity against *Salmonella typhimurium* (0,4 µg/mL). The ethanol extracts of *C. babylonica* laeves and branches showed the best antibacterial activity against *B. subtilis* (1,6 µg/mL). The acetone extracts of *C. babylonica* showed the best antibacterial activity against *Pseudomonas aeruginosa* and *B. cereus* (1,6 µg/mL). Thus, acetone extracts were tested for GC/MS analysis for chemical composition. The GC/MS analyses allowed 6 compounds to be determined; the main constituents of the *Centaurea babylonica* leaves and brunches acetone extract were diacetonealcohol (53.47%), 1-dexadecene (10.19%) and 1-tetradecene (8.67%). In addition, cytotoxic activities of extracts from seven different solvents were investigated on A-549 (Human lung carcinoma) cell line. Extracts (500 µg/mL) from six different solvents caused cytotoxicity between 84% and 88% compared to the control. However, water extracts was the less effective among the other extracts and resulted in cytotoxicity less than 45%. Dose dependent effects of the extracts indicated that aseton extract was the most effective one and it caused 78% cytotoxicity even at 30 µg/mL. In conclusion, the results obtained in the present study clearly demonstrate that *C. babylonica* (L.) L. exhibited a strong antimicrobial activity and cytotoxicity in vitro. In addition, the results showed a significant correlation between the phenolic components and antimicrobial or cytotoxic properties. These findings suggest that *C. babylonica* have a good potential to be used as an ingredient for the source of natural antimicrobial and poly unsaturated fatty acids in the formulation of functional foods. However, further studies are needed to isolate and characterise the active compounds that are responsible for the antimicrobial and cytotoxic activities. Finally, mechanism of cytotoxicity is under investigation.

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KEYWORDS

Cytotoxic Activity, A-549 Human Lung Carcinoma Cell Line, Antimicrobial Activity, GC/MS Analysis, Centaurea babylonica

Poster Session 3

Submission ID: 492

MODE OF ACTIONS OF ESSENTIAL OILS OBTAINED FROM MEDICINAL AND AROMATIC PLANTS IN PLANT PROTECTION

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ABSTRACT

Today, the problems due to overuse of pesticides are both damaging the environment and human health. Reducing the use of synthetic chemicals or developing alternative methods for sustainable agriculture has become a global mission. Essential oils offer alternatives due to bioactive compounds they contain to synthetic chemicals in agricultural pest management. The use of essential oils as natural pesticides is of great importance in terms of the environmental and toxicological effects caused by the random use of synthetic chemicals and it offers the progression or reduction of the disease or pest resistance problem. Essential oils obtained from medicinal and aromatic plants have a wide range of effects on various plant pathogens and insects. The antifungal properties of essential oils include suppression of spore germination, germ tube elongation and reduction of hyphal growth. In insects, they have some properties include repellent, growth regulation, antifeedant, lethal and inhibition of egg laying. Essential oils with their contact and fumigant biocidal actions are also used in the preservation of stored products. It is also known that they have antibacterial and antiviral effects. In this study, effects of essential oils obtained from medicinal and aromatic plants against plant protection problems and their applicability in practice have been compiled and discussed.

KEYWORDS

Essential oils, plant protection, agricultural management, biocidal effect

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Poster Session 3

Submission ID: 493

USE OF MEDICINAL AND AROMATIC PLANTS AGAINST PLANT PATHOGENS

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ABSTRACT

Meeting the agricultural needs of the growing world population is becoming increasingly inadequate due to the decrease of the arable lands, therefore it is necessary to increased the yield per unit area. One way to increase the yield per unit area is through the management of biotic and abiotic stress factors. Today, the use of synthetic chemicals to reduce the damage caused by plant pathogens, harmful insects and weeds irreversibly damages to the nature. In recent years, the use of plant extracts to manage plant diseases has become increasingly widespread as an alternative way to synthetic chemicals. Various secondary metabolites produced by medicinal and aromatic plants show biocidal and inhibitory properties against plant pathogens. Extracts from medicinal and aromatic plants are becoming encouraging. Because, non-target organisms are heavily affected due to the use of synthetic pesticides, however, the extracts from medicinal and aromatic plants have lower toxicity. As a result, agricultural pest management employing biocidal and inhibitory properties of natural compounds is both environmentally friendly and economical. By this way, the use of medicinal and aromatic plants in the agricultural management minimize the risk of residue in the nature. This review discussed the rational use of medicinal and aromatic plants in the management of plant pathogens and their availability agricultural production.

KEYWORDS

Plant Pathogens, biological control, secondary metabolites, biocidal effects

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Poster Session 3

Submission ID: 494

PLANT GROWTH RESPONSE OF SALVIA OFFICINALIS L. AND SALVIA TOMENTOSAMILL. TO SALINITY STRESS

HARUN GÖÇER¹

ABSTRACT

Plant growth response of *Salvia officinalis* L. and *Salvia tomentosa* Mill. to salinity stress Harun Göcer¹, Halit Yetisir¹, Mehmet Yamacı¹, Firdes Ulas¹, and Abdullah Ulas² ¹ Department of Horticulture, Faculty of Agriculture, Erciyes University, Kayseri- TURKEY ² Department of Soil Science and Plant Nutrition, Faculty of Agriculture, Erciyes University, Kayseri-TURKEY E-mail: cevher-1313@hotmail.com Abstract The study was conducted in order to determine some agronomical, physiological and root morphological tolerance characteristics of two different salvia species under different salinity levels. The experiment was carried by using hydroponic system in fully automated climate chambers. Two different salvia species (*Salvia tomentosa* Mill. and *Salvia officinalis* L.) were grown in 8 L pots filled continuously aerated nutrient solution under different EC levels (1, 2, 3, 4 and 5 dS m⁻¹). EC levels were arranged by adding NaCl into nutrient solution. The experiment was designed in completely randomized block design with three replications. To determine the plant growth, physiological and root morphological response of salvia species shoot and root fresh and dry weight (g/plant), stem length (cm/plant), leaf area (cm²/ plant), leaf chlorophyll content (SPAD), photosynthesis, root length (m/plant), root diameter (mm), and volume (cm³/plant) was investigated under five salinity levels. The results indicated that shoot (stem and leaf fresh and dry matter, leaf area, stem length) and root (root fresh and dry matter, root length, root volume) growth significantly ($P < 0.001$) affected by different levels of EC and salvia species. Increasing EC level decreased the shoot and root parameters of both salvia species. However, in terms of most measured shoot and root parameters highly significant differences ($P < 0.001$) were found between two salvia species. The interactions between species and EC were also significant in most measured parameters. Generally, *Salvia tomentosa* Mill. showed a better performance in plant growth and salt tolerance compared to *Salvia officinalis* L. This could be the results of leaf physiological (higher leaf area) and root morphological (higher root length and volume) contributory traits which might play an important role in salt tolerance of *Salvia tomentosa* Mill. Key words: *Salvia* species, salt tolerance, hydroponic culture, root morphology. Acknowledgement: The authors would like to thank to Scientific Research Unit (BAP) of University of Erciyes for the financial support to the project of FYL-2016-6738.

KEYWORDS

Salvia species, salt tolerance, hydroponic culture, root morphology.

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Poster Session 3

Submission ID: 495

DETERMINATION OF PARAMETERS REQUIRED FOR RUPTURE OF FLOWERS OF SOME SAFFLOWER CULTIVARS

DENİZ YILMAZ¹, MEHMET EMİN GÖKDUMAN¹, SABRİ ERBAŞ¹

ABSTRACT

Aspir plant (*Carthamus tinctorius* L.) is used in many fields such as red dye production, oil production and herbal medicine production. The florets of safflower are traditionally used in dyeing. In Turkey, harvesting and handling of the safflower are performed manually. The threshing is usually carried out with a homemade threshing machine. In order to optimize the threshing performance, pneumatic conveying, storage and other aspects of safflower processing, their rupture parameters properties must be known. In this study some rupture parameters of three Turkish safflower florets (Yenice, Dinçer, Remzibey-05 which are major commercial safflower varieties) were determined and compared in terms of rupture force, deformation in rupture force, energy in rupture force, maximum force, deformation in maximum force, energy in maximum force, bioyield force of in different flower regions (primer, seconder, and tertiary head). Average values for maximum force were determined to be between 8.61 and 24.40 N. The highest rupture force was found to be 14.64 N in primer head for Dincer safflower varieties. Average values for bioyield force were determined to be between 6.23 and 21.55 N in primer head. Average values for work to maximum load were determined to be between 0.0121 and 0.0437 J. The highest deformation at maximum load was found to be 4.47 mm in primer head section

KEYWORDS

*Safflower (*Carthamus tinctorius* L.), rupture, mechanical properties*

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Poster Session 3

Submission ID: 497

ANTIMICROBIAL AKTIVITY OF ALGAEA SPECIES

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ABSTRACT

Today, the use of natural products, with antimicrobial activity have become important. Especially in 1988 with the observation of new pathogenic microorganisms affecting the immune system , the world of science has started to pursue new quests and treatments. Sea algae , contains high amonth of proteins , amino acids, vitamins and various minerals. It is also known that contain algae polysaccharides, lipids, and sterins. Because of this reason , marine algae has a wide usage. Countries such as Sri-Lanka , India , China , Argentina , USA have conducted extensive research on these topics. Accordry to these studies, many algae have been found to have antimicrobial activity in the direction of these studies, and the protein fractions have proven their anticoagulant, antilipolytic, antitumoral and antiulcerative activities. In a study , antimicrobial activity of Dictyopteris membraneceae, Cytoseria barbato , Jania ruban and Enteromorpha linza algae were investigated and it was found that Dictyopteris membraneceae has antimicrobial properties on Gram(+) bacteria and not , has a severe effect on Gram(-) . However , none of these algae species showed antimicrobial properties on fungus (C.albicans). In another study, the antibacterial and antifungal activity of seven families of seafoods belonging to Clorophyceae, Phaeophyceae and Rhodophyceae families were examined. Clodophora glomerat showed the highest antibacterial effect. Enteromopho linza and E. pavonica have the highest antifungal effect. In this study, the information about antimicrobial substances obtained from sea algae is presented. In our country, pharmaceutical active substances are still imported from outside because there is not enough study about this subject. According to the results of this study, many kinds of algae can produce antimicrobial substances.

KEYWORDS

Sea algaeas, antifungal activity, antibacterial activity

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Poster Session 3

Submission ID: 498

DETERMINATION OF ANTIMICROBIAL ACTIVITY OF FENUGREEK SEED GUM BASED ACTIVE NANOCOMPOSITE FILMS REINFORCED WITH NANOCCLAYS

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ABSTRACT

The aim of this work was to determine the antimicrobial activities of nanoclay reinforced nanocomposite films obtained from fenugreek seed gum. For this purpose, fenugreek seed gum based films doped with 3 different nanoclays (Na⁺ montmorillonite [MMT], halloysite [HNT] and Nanomer® I.44 P [NM]) at different ratios (0%, 2.5%, 5% and 7.5%) were prepared using solution casting method. Antimicrobial activities of the nanocomposite films against 4 different foodborne bacterial strains (Escherichia coli O157:H7, Staphylococcus aureus, Listeria monocytogenes and Bacillus cereus) were tested by agar diffusion method. In the results of the analyses, the film samples showed high antimicrobial activity against the bacteria tested and inhibition zones varying from 26.25 mm to 57.25 mm were observed. Antimicrobial activity of the nanocomposite films were not influenced from nanoclay type and concentration significantly (P>0.05). Antimicrobial activity occurred in the following order: L. monocytogenes > B. cereus > E. coli O157:H7 > S. aureus. In conclusion, fenugreek seed gum based nanocomposite films possessed an important potential for production of active packaging materials since they exhibited high antibacterial activity against the foodborne pathogenic bacteria.

KEYWORDS

Fenugreek seed, antibacterial, nanotechnology, biodegradable film

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Poster Session 3

Submission ID: 500

IMPROVEMENT OF NUTRITIONAL AND FUNCTIONAL PROPERTIES OF TARHANA

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ABSTRACT

Tarhana, traditional fermented product, is often produced by lactic acid and yeast fermentation of wheat products, yoghurt, tomato paste, onion and spices mixtures, followed by drying and grinding [1]. There are similar products to tarhana such as kishk and kushuk in the Middle East, trahana in Greece and atole in Scotland [2]. Tarhana is a good source of protein, B vitamins, minerals, organic acids and free amino acids [3]. There are several researches in the literature for improvement of nutritional and functional properties of tarhana. Tarhana were enriched/supplemented by legumes (soybean, lentil, chickpea and lupin) [4-6], cereals and cereal products (whole wheat meal, germ, bran, resistant starch, corn and barley) [7-11], buckwheat, albedos of lemon, orange and grapefruit, carob, pumpkin, carrot, bilberry [12-14], dairy products, vegetables and spices. These studies are generally focused on increasing the protein, dietary fiber, mineral matter and phytochemical content of the tarhana. Effect of different raw materials or additives used to enhance the functional and nutritional properties of the tarhana were compiled in this study. [1] Ibanoglu Ş, Ainsworth, P., Wilson, G., and Hayes, G. D. (1995). The effect of fermentation conditions on the nutrients and acceptability of tarhana. *Food Chem*, 53, 143–147. [2] Tamime, A. Y., Muir, D. D., Khaskheli, M., and Barclay, M. N. I. (2000). Effect of processing conditions and raw materials on the properties of kishk. *LWT*, 33, 444–451. [3] Dağlıoğlu, O. (2000). Tarhana as a traditional Turkish fermented cereal food: Its recipe, production and composition. *Nahrung*, 44(2):8588. [4] Koca, A. F., Yazici, F., and Anil, M. (2002). Utilization of soy yoghurt in tarhana production. *Europ Food Res Tech*, 215, 293–297. [5] Türker, S., and Elgün, A. (1995). Nutritional value of naturally or yeast fermented (*Sacharomyces cerevisiae*) tarhana supplemented with sound, cooked and germination dry legumes. *J Agric Fac Selcuk University*, 8, 32–45. [6] Ertaş, N., Bilgiçli, N., Özcan, S. and Sarı, Ş. (2014). Influence of lupin (*Lupinus albus* L.) yoghurt on mineral content and functional properties of tarhana, *Quality Assurance and Safety of Crops and Foods*, 6 (4), 395-401. [7] Toufeili, I., Melki, C., Shadarevian, S., and Robinson, R. K. (1999). Some nutritional and sensory properties of bulgur and whole wheatmeal kishk (a fermented milk– wheat mixture). *Food Quality and Reference*, 10, 9–15. [8] Bilgiçli, N., Elgün, A., Herken, E. N., Türker, S., Ertaş, N., and Ibanoglu, S. (2007). Effect of wheat germ/bran addition on the chemical, nutritional and sensory quality of tarhana, a fermented wheat flour–yoghurt product. *J Food Eng*, 77, 680–686. [9] Bayrakçı, H., and Bilgiçli, N. (2015). Influence of resistant starches on chemical and functional properties of tarhana. *J Food Sci Technol*, 52(8): 5335–5340. [10] Tarakci, Z., Doğan, I. S., and Koca, A. F. (2004). A traditional fermented Turkish soup, tarhana, formulated with corn flour and whey. *International J Food Sci Techn*, 39, 455–458. [11] Erkan, H., Celik, S., Bilgi, B., and Koxsel, H. (2006). A new approach for the utilization of barley in food products: barley tarhana. *Food Chem*, 97(1), 12–18. [12] Bilgiçli, N., (2009). Effect of buckwheat flour on chemical and functional properties of tarhana, *LWT*, 42, 514-518. [13] Bilgiçli, N., Aktaş, K., and Levent, H.

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KEYWORDS

tarhana, nutrition, functional, legume, cereal products, mineral, fiber

Poster Session 3

Submission ID: 501

EFFECT OF LUPIN (*LUPINUS ALBUS L.*) BRAN ON UNLEAVENED FLAT BREAD PROPERTIES

NERMIN BILGIÇLİ¹, TEKMİLE CANKURTARAN¹

ABSTRACT

Lupin is valuable ancient legume which contains high amount of protein, oil, dietary fiber, minerals and different functional components. The hull of lupin is constitutes approximately 20% part of the lupin seed. Lupin bran is obtained with grinding of lupin hull, and it is a good source of dietary fiber. In this study, high fiber unleavened flat bread production was studied by using lupin bran. For this purpose, lupin bran incorporated into unleavened flat bread formulation at different ratios (0, 3, 6, 9 and 12%). Some physical, chemical and sensory properties of unleavened bread were determined. As the lupin bran ratio increased in bread formulation, spread ratio of the unleavened flat bread increased, significantly ($p<0.05$). Yellowness of the unleavened bread surface increased with lupin bran usage compared to control unleavened bread. Moisture, ash and protein content of the unleavened flat breads ranged between 8.9 % and 9.5 % ; 1.38 % and 1.58 %; 11.25 % and 11.5%, respectively. As a result of sensory evaluation, overall acceptability of the unleavened flat breads containing lupin bran above 6% level was evaluated low score.

KEYWORDS

Unleavened flat bread, lupin, hull, bran

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¹NECMETTİN ERBAKAN ÜNİVERSİTESİ

Poster Session 3

Submission ID: 503

SOME PHENOLOGIC PROPERTIES OF NATURAL ORCHID SPECIES USING FOR OBTAINING SAHLEP IN BUCAK (BURDUR) PROVINCE

EBRU HATİCE TIĐLI¹, HÜSEYİN FAKİR¹

ABSTRACT

In this study, phenologic properties of some natural orchid species that are used for obtaining sahlep in Bucak province, were determined. Data were collected from 26 stands where orchid species commonly distributed in Bucak. As result of field studies that were conducted between March and July in 2015, total 11 taxa were determined. Also, phenologic properties as first flowering period, petal leaf color, tuber maturation time and flowering periods were observed these 11 taxa. The first flowering species is *Ophrys mammosa* (beginning of March) and also the last flowering species are *Orchis purpurea* (mid of April) and *Orchis simia* (mid of April). *Ophrys mammosa* is the first full flowering species (mid of April) and the last one is *Ophrys rein subsp. leucotaenia* (mid of June). The first maturing bump belongs to *Ophrys mammosa* (end of April) and the last one to *Himantoglossum comperianum* (end of July). The stands where orchid species were densityare lower closure, in opening forests, on steep rocky slopes and near agri culturalareas. Productivity of flower and tuber are the highest on South and South-western aspects. Slopes of these stands varied between 5-40%. Orchid pecies were distributed between 300 and 1451 m.

KEYWORDS

Orchidaceae, Sahlep, phenological characteristics, Burdur

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Poster Session 3

Submission ID: 504

MEMORY-ENHANCING, ANXIOLYTIC AND ANTIDEPRESSANT EFFECTS OF INHALED *ACHILLEA BIEBERSTEINII* ESSENTIAL OIL ON SCOPOLAMINE-INDUCED AMNESIC RATS

EMEL AKBABA¹, EYUP BAGCI¹, SALAM A.HASSAN¹

ABSTRACT

In this study, we investigated the possible neuroprotective effects of *Achillea biebersteinii* (Asteraceae) volatile oil. The plant is a shrub, distributed in South-west Asia, South-eastern Europe, and Northern Africa. It is an aromatic and medicinal plant and has been used traditionally to treat several conditions in Turkey and in the World. The present research investigates the memory enhancing, anxiolytic and antidepressant effects of *Achillea biebersteinii* essential oil on scopolamine-induced amnesic rats. Y-maze and radial arm maze tasks were used for evaluating memory formation. Likewise, anxiety and depressive-like behavior were conducted by elevated plus-maze and forced swimming tasks, respectively. Scopolamine-treated rats reduced memory formation as evidenced by decreased spontaneous alternation percentage in Y-maze test, and increased working memory errors and reference memory errors in radial-arm maze test. *Achillea biebersteinii* volatile oil significantly increased spontaneous alternation percentage, and decreased the working memory errors and reference memory errors. Furthermore, scopolamine-alone treated rats exhibited anxiety and depressive-like behavior as evidenced by reduced percentage of open arm time, number of open arm entries and number of crossings in the elevated plus maze and the swimming time and immobility time in the forced-swimming test. *Achillea biebersteinii* volatile oil increased the percentage of open arm time, number of open arm entries and number of crossings in the elevated plus maze, and increased the swimming time and decreased the immobility time in the forced-swimming test in scopolamine administered rats as compared to scopolamine-alone treated rats. Hence, this study suggests that the multiple exposures of *Achillea biebersteinii* volatile oil ameliorate scopolamine-induced spatial memory formation, anxiety and depressive-like behavior. In conclusion, *Achillea biebersteinii* essential oil may be useful alternative or complementary choice in either the protection or the treatment of neurodegenerative diseases such as Alzheimer's disease.

KEYWORDS

Achillea biebersteinii Essential Oil, Alzheimer's disease, Scopolamine, Memory, Anxiety, Depression

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Poster Session 3

Submission ID: 506

HEAVY METALS UPTAKE IN SOME WILD-GROWN EDIBLE MUSHROOMS FROM TOKAT REGION OF TURKEY

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ABSTRACT

In this study examined to metal ion uptake in mushroom species and metal content of soil substrate for the mushroom. In addition, in this study was investigated different metal uptake and relation of heavy metal concentration in mushroom to available heavy metals in soil. Four different species of mushroom (*Verpa bohemica*, *Agaricus bitorquis*, *Amanita vaginata*, *Lactarius piperatus*) collected from Tokat region of Turkey and underlying soil (0–10 cm layer) substrate were analyzed spectrophotometrically for their heavy metals (Zn, Cd, Pb, Cu, Mn and Ni) contents. The analysis was performed using Agilent 240 FS Atomic Absorption Spectrometer. The results indicate that heavy metal content in all mushroom species are obtained lower than underlying soil substrates while uptake of some heavy metals are high in some species. Levels of heavy metals are considerably lower in the, *Lactarius piperatus* than other mushrooms. The highest metal levels have been observed in the *Verpa bohemica* and *Amanita vaginata*.

KEYWORDS

edible mushroom, metal uptake, spectrophotometer

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Poster Session 4

Submission ID: 508

INVESTIGATION OF INORGANIC ION EXCHANGE IN DRY AND FRESH MUSHROOMS

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ABSTRACT

In this study, content of common inorganic anions (flor, klor, brom, nitrit, nitrat, sülfat, klorat, fosfat, kromat ve oksalat) in fresh and dried samples of wild grown edible *Lactarius deliciosus* and *Lepista nuda* mushrooms species in Central Black Sea region were analyzed and the change in nutritional value was examined. Analyzes were performed by ion chromatographic method using conductivity detector. The highest anion concentration was obtained fresh sample of *Lactarius deliciosus* with 34,50 mg/g value for SO₄²⁻. Other ions 0,27 mg/g for F⁻; 8,41 mg/g for Cl⁻; 2,24 mg/g for NO₂⁻ and 0,31 mg/g for PO₄³⁻ for *Lactarius deliciosus* and 8,24 for CrO₄²⁻ and 23,46 for SO₄²⁻ for *Lepista nuda* were found. The contents of Br⁻, ClO₃⁻, C₂O₄²⁻ and NO₃⁻ have not been determined in any mushrooms species. Ion Chromatographic separation of inorganic anions ⁻were performed by AS 9-HC analytical column. Injection volume 25 µL and flow rate was determined as 1 mL / min. 20 mM sodium carbonate was used as the mobile phase. All measurements were performed at room temperature (°C 25). The separations were made in about 20 minutes. Under these conditions, inorganic ions were separated using standard mixture solutions. In all cases the retention order F⁻ < CrO₄²⁻ < Cl⁻ < NO₂⁻ < Br⁻ < ClO₃⁻ < NO₃⁻ < PO₄³⁻ < SO₄²⁻ < C₂O₄²⁻ typical was observed. Calibration curves were obtained in the 1x10⁻¹ – 1x10⁻⁵ mg/mL concentration range for. Calibration curves were obtained in the 1x10⁻¹ – 1x10⁻⁵ mg/mL concentration range for.

KEYWORDS

Dry and Fresh Mushrooms, anions, determination

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Poster Session 4

Submission ID: 509

ANTIOXIDANT ACTIVITY AND PHENOLIC PROFILE OF ZIZIPHORA CLINOPODIOIDES LAM.

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ABSTRACT

Phenolic compounds are secondary metabolites found in plants in excess. Because of their structural differences, there are thousands of different phenolic compounds in plants and in the products obtained therefrom. They can contribute to the taste and aroma of many foods as well as protection plants against insects and animal pests. In addition, phenolic compounds also exhibit natural antioxidant properties. Antioxidants are molecules that neutralize the effects of free radicals and thereby prevent chain reactions that can lead to cancer, heart diseases and premature aging. The genus *Ziziphora* L. belongs to the family Labiatae consists of four species (*Z. clinopodioides* L., *Z. capitata* L., *Z. persica* Bunge and *Z. tenuior* L.). *Z. clinopodioides* L. is a traditional medicinal plant commonly found in China, Iran and Turkey. It is mainly used for the treatment of asthma, edema, cough, bronchitis, lung abscess and wound healing and other diseases. Leaves, flowers and stalks are often used as wild vegetables or as a food additive to provide aroma and flavor. Many scientific studies show that these species have high antibacterial, antifungal and antioxidant capacities. In this study, phenolic profiles of different extracts from the leaves of *Z. clinopodioides* L. (Ergan Mountain, Erzincan, Turkey) were determined by high performance liquid chromatography (HPLC) technique. Total phenolic and flavonoid contents of the extracts were determined by Folin-ciocalteu and Aluminum colorimetric methods, respectively. Antioxidant activities were evaluated according to DPPH and ABTS free radical scavenging and metal ion chelating capacities. HPLC analysis displayed that *Z. clinopodioides* L. is especially rich in rosmarinic acid (9,566 µg/mg ext), chlorogenic acid (3,744 µg/mg ext), catechin (3,58 µg/mg ext) and t-ferrulic acid (2,861 µg/mg ext), respectively, while 9 different phenolics were detected in trace quantity. Total phenolic, total flavonoid and antioxidant activity tests showed that methanol extract had higher phenolic and flavonoid content and also higher antioxidant activity than water and ethylacetate extracts. As a result, phenolic contents of the plant was higher in the methanol extract and, accordingly, the methanol extract had higher antioxidant activity. *Z. clinopodioides* L. extracts can be considered as pharmaceutical and natural therapy in the fight against oxidative stress.

KEYWORDS

Ziziphora clinopodioides Lam., antioxidant activity, phenolics

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Poster Session 4

Submission ID: 510

IMPROVEMENT OF NUTRITIONAL PROPERTIES OF PUFFED RICE-CORN CAKE USING WHEAT GERM

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ABSTRACT

Wheat germ constitutes approximately 3% of whole grain and obtained as by-product of flour milling industry. It is a good source of protein, minerals, vitamins, phytochemicals and dietary fiber. Wheat germ is an excellent product to enhance the nutritional and functional properties of foodstuffs. In this study, wheat germ was used in puffed rice-corn cake (PRCC) production at 0, 10, 20 and 30 % levels. Some physical, chemical and sensory properties of the PRCC were determined. Thickness and diameter values of the PRCC samples changed between 2.65-3.63 mm and 72.3-89.8 mm, respectively. Increasing amount of wheat germ in PRCC preparation decreased the diameter and thickness of the PRCC samples. L*, a* and b* values of PRCC varied between 61.60-80.05, -2.09-1.79 and 15.42-19.16, respectively. As the wheat germ level increased, L* values of PRCC decreased, a* and b* values increased significantly. The highest total phenolic contents and antioxidant activity values obtained 30% wheat germ usage in PRCC. Appearance, crispiness, color and overall acceptability scores of PRCC samples decreased over 10% wheat germ addition level.

KEYWORDS

Wheat germ, corn, rice, puffed cake, nutritional

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Poster Session 4

Submission ID: 511

EFFICACY OF AROMATHERAPY IN REDUCING ARTHRITIS PAIN: A SYSTEMATIC REVIEW

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ABSTRACT

Objective: This study aims to investigate aromatherapy interventions in reducing arthritis pain and to evaluate the efficacy of such interventions. **Method:** In this review, a total of 12 randomized-controlled and experimental and semi-experimental studies which met the inclusion criteria were included. All studies were systematically reviewed. **Results:** Aromatherapy interventions were applied for a period ranging from two days to 3 months in all studies. Both pre- and post-intervention measurements were performed. In only one study, weekly measurements were conducted. In 11 of 12 studies, aromatherapy interventions yielded significant results in favor of the intervention group. **Conclusion:** Our study results suggest that aromatherapy is effective in pain reduction.

KEYWORDS

Aromatherapy, arthritis, randomized-controlled study, systematic review.

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Poster Session 4

Submission ID: 512

UTILIZATION OF DIFFERENT ANTIOXIDANT-RICH SOURCES IN PUFFED RICE-CORN CAKE PRODUCTION

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ABSTRACT

Corn and rice are the most widely used cereals in the production of expanded/puffed snack foods. Recently, cake form of puffed cereal have become very popular snack foods. In this study, it was aimed to improve the functional properties of puffed rice-corn cake (PRCC) by addition of different antioxidant rich-sources. Control PRCC samples was prepared from rice:corn blend (70:30 w/w) using a cereal cake machine. Antioxidant rich-sources (grape seed, black cumin seed, pomegranate seed and flaxseed) as powder form were used at 5% ratio replacing with rice:corn blend. Thickness, diameter, color values, total phenolic content, antioxidant activity and sensory properties of PRCC samples were determined. L*, a* and b* values of the PRCC samples varied between 66.67-79.70, -2.13-0.89 and 13.75-18.15, respectively. As expected, all of the antioxidant rich sources decreased the L* values of the PRCC samples significantly (p<0.05). While black cumin usage gave the darkest surface color, grape and pomegranate seeds most increased a* values of the PRCC samples. All antioxidant sources increased total phenolic content and antioxidant activity of the samples significantly (p<0.05), and the highest increments were observed in PRCC samples containing grape seed (0.68 mgGAE/g and 45.65%) and pomegranate seed (0.67 mgGAE/g and 47.27%). As a result of sensory analysis, PRCC containing black cumin seed was the most appreciated samples by the panellist.

KEYWORDS

Corn, rice, puffed cake, antioxidant sources

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Poster Session 4

Submission ID: 513

EFFECTS OF WHEAT BRAN AND GERM ON PHYTIC ACID AND MINERAL CONTENT OF FRESH PASTA

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ABSTRACT

Wheat bran and wheat germ are by-products of wheat milling process. The functional and nutritional properties of those by-products are quite remarkable for human nutrition. In this study, wheat bran and wheat germ were used in filled (with cheese) and unfilled fresh pasta production at different ratios (0, 5, 10, 15 and 20%). Fresh pasta samples were produced according to (2x2x5) x2 factorial design. Phytic acid and mineral matter contents of fresh pasta samples were determined. Phytic acid content of filled and unfilled fresh pasta without wheat bran was found as 121.12 mg/100 g and 131.04 mg/100 g and, respectively. Usage of 20% wheat bran in filled and unfilled fresh pasta increased phytic acid content up to 655.32 mg/100g and 665.78 mg/100 g, respectively. Fresh pasta samples produced with addition of wheat germ were found to have higher Mg, P, Zn and lower Ca, Fe, K and phytic acid contents than those supplemented with wheat bran. The use of filling in fresh pasta production caused increase in Ca, K, Mg and P while it reduced the phytic acid content. Increasing ratios of wheat bran and wheat germ usages caused increases in phytic acid and all of the measured mineral matter.

KEYWORDS

Wheat bran, germ, pasta, phytic acid, mineral

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Poster Session 4

Submission ID: 516

ASSAYS OF ANTIOXIDANT ACTIVITY BASED ON METAL NANOPARTICLES

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ABSTRACT

Determination of antioxidants and/or antioxidant activity of food and herbal products have importance especially for medicinal plant and functional foods. Oxygen radical absorbance capacity (ORAC), trolox equivalent antioxidant capacity (TEAC) and ferric reducing ability of plasma (FRAP) are some of in vitro assays generally used to evaluate antioxidant activity. . However, these different tests give different results. Moreover, in vitro antioxidant methods use synthetic free radicals which are not found in biological systems. By virtue of mentioned reasons, development of new methods is required. Recently, antioxidant activity assay based on metal nanoparticles have been developed. Noble metal nanoparticles have different and attractive optical, electrical and chemical properties depending upon their size. One of these interesting properties is that metal nanoparticles have localized surface plasmon resonance (LSPR). In traditional methods, metal nanoparticles are synthesized by reduction of metal salts with reducing agent. Antioxidants can be used as reducing agent in synthesis of such metal nanoparticles. Recently, antioxidant activity methods based on this strategy were developed. Generation/enlargement of metal nanoparticles were determined from plasmon-absorbance band using UV –VIS spectrophotometer. Up to now, mostly gold and silver nanoparticles have been studied for the antioxidant activity assessments. Antioxidant power of green tea, black tea, orange juice, virgin argan oil, endemic medicinal plant was determined via these newly developed assays. Also utility of rhodium, vanadium, ceria, palladium nanoparticles were investigated for the antioxidant activity assays

KEYWORDS

Antioxidant activity, nanoparticle, silver nanoparticle, gold nanoparticle, LSPR.

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Poster Session 4

Submission ID: 517

JUJUBE FRUIT AND EFFECT ON HEALTH

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ABSTRACT

Jujube (*Zizyphus jujuba* Mill.) is the fruit which belonging to the Rhamnaceae family and is indigenous around China. Also, jujube is a native fruit of widely distributed in Asia and Europe. Jujube is called as Hünnap, Ünnap, günnap and Çiğde in Turkey. It is a tasty and highly nutritious fruit. Fruits are eaten fresh, dried or processed. The fruit is very nutritious on account potassium, phosphorus, calcium and manganese and also is a rich source of vitamin A, C and vitamin B complex of fresh fruits is higher than most of fruits. It is rich in nutrition including protein, fat, carbohydrate and other biological active substances. Besides, jujube has significant levels of antioxidant activity and it contains many medicinal properties. The fruit contains rich medicinal properties, especially used for diabetes in Turkey. It helps gain weight, improves muscular strength and increases the resistance immune system. Additionally, these fruits have been commonly used in medicine for liver troubles, asthma, fever, nausea, vomiting, abdominal pains, wounds, gout and rheumatism. Also, the fruits and their products have protective effects against cancer, stroke and coronary heart diseases. In this review, jujube fruit, which is substantial for diabetics, has been dealt with its nutritional, functional and medical properties.

KEYWORDS

jujube, health, diabetes, medical food

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Poster Session 4

Submission ID: 518

**THE NATURAL DISTRIBUTION OF THE HORSE APPLE
(ERIOLOBUSTRILOBATUS (LABILL. EX POIR.) M. ROEM.) WITHIN
THE BORDERS OF THE KAHRAMANMARAŞ REGIONAL
DIRECTORATE OF FORESTRY, THE WORKS CARRIED OUT
FOR THE PROTECTION OF ITS GENETIC RESOURCE, AND
THE ETHNOBOTANICAL PROP**

MIMAR SINAN ÖZKAYA¹, SABRİ YALÇIN¹

ABSTRACT

In this study; The natural distribution areas of the horse apple (*Eriolobustrilobatus* / *Rosaceae*), which is one of the native rare tree species for Turkey, within the borders of the Kahramanmaraş Regional Directorate of Forestry, the efforts for sapling production, afforestation, and inventory works, besides the studies conducted for the protection of the gene sources of this species such as increasing local awareness and making the silvicultural interventions in favor of the species by the Regional Directorate of Forestry, as well as the local ethnobotanical knowledge of this tree species were mentioned.

KEYWORDS

horse apple, Eriolobustrilobatus, afforestation, inventory, ethnobotany

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Poster Session 4

Submission ID: 519

VIBURNUM OPULUS L. (CRANBERRY BUSH)

ADNAN DİLTEMİZ¹

ABSTRACT

KAYSERİ REGIONAL DIRECTORATE OF FORESTRY REGIONAL MEDICAL-AROMATIC PLANT: VIBURNUM OPULUS L. (CRANBERRY BUSH) ABSTRACT Viburnum opulus L. (Cranberry bush) is a perennial plant that grows up to 2-4 meters, bushy, with white-flower, deciduous in winter. This plant grows mainly in the temperate climate of the northern hemisphere in the world. During the Seljuks and Ottomans, this plant was influenced by the beauty of the flowering period and was given the local name "Gül Ebru" and this name was changed to the "gileburu, gileburu, gilaboru, giraoglu" in Kayseri and its surroundings; in Sivas and Yozgat provinces, its name turned into "gilaboru, girabolu, geleboru". According to some botanists, the origin of the plant is Turkey, and according to the others it is Central China. V. opulus, which likes rich soil in terms of organic materials, needs plenty of water to grow well, sun to give good color and good quality fruit. It is naturally grown in Central Anatolia and Black Sea regions in Turkey, especially in Kayseri, Bursa, Sakarya, Ankara, Tokat, Sivas, Trabzon, Çorum, Yozgat, Kahramanmaraş, Kırşehir, Istanbul, Kocaeli, Erzurum and Samsun. V. opulus fruit juice is consumed as a traditional drink especially in Kayseri at the center of Central Anatolia. Fruits, bark and leaves of V. opulus has a variety of uses among the general public for the purposes of rheumatism, diabetes, mumps, hemorrhoids, hypertension, menstrual irregularities, laxatives and sedatives in the reduction of kidney stones and sand, urinary incontinence, liver, stomach and prostate disorders. When flowers and fruits are boiled in water, they are effective against sore throat, mouth and dental inflammation. It is known that the powder obtained from the stem cortex of the plant is mixed with the butter and applied dermatological injuries. In the chemical analysis of gilaboru fruit grown in Kayseri; Sucrose and maltose were not detected while total sugar 5.34 g / 100 g, invert sugar 5.34 g / 100 g, fructose 2.38 g / 100 g were detected. Calcium was found to be 230.3 mg / kg, potassium (K) 1867 mg / kg, phosphorus (P) 57.72 mg / kg and iron 2.48 mg / kg. It has also been proven that the fruits contain phenolic acids and such as caffeic acid, p-coumaric acid, gallic acid, protocatechic acid, citric acid, chlorogenic acid, salicin, elagic acid polysaccharides. Cortex of V. opulus contained viopudial (Nicholson ve ark., 1972), skopoletin, also α - ve β - amyryne and catechin tannins. According to the literature, fruits, leaves and cortex of the plant have various pharmacological properties. Fruits have effect antibacterial (Sađdıç et al., 2006), protective effect after lung transplantation (Eken et al., 2017), immunostimulant (Ovodova et al., 2000), gastroduodenoprotective effect (Zayachkivska et al., 2006); the cortex of plant has inhibitory effect to enzyme converting angiotensin (Barbosa-Filho et al., 2006) and hypotensive effect (Nicholson et al., 1972); leaf extract has antinociceptive effects (Altun et al., 2008c). As a result; V. opulus is being cultivated firstly to Kayseri, Yozgat and Sivas provinces that area was under the responsible of Kayseri Regional Directorate of forestry. In order to find out the potential of Gilaboru, which is a medicinal and aromatic plant, will increase the production and consumption, as a result of the interdisciplinary studies of the units such as medicine, pharmacology engineering and joint works

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of public institutions, universities, local administrations and civil society organizations and thus it will contribute to the country's economy. Key words: *Viburnum opulus*, cranberry bush, cultivated plant, traditional use, Kayseri.

KEYWORDS

Viburnum opulus, cranberry bush, cultivated plant, traditional use, Kayseri.

Poster Session 4

Submission ID: 521

THE EFFECT OF URTICA DIOICA L. EXTRACT ADDED ON GREEN TEA (CAMELLIA SINENSIS) ON TOTAL ANTIOXIDANT CAPACITY

FATMA HEPSAĐ¹

ABSTRACT

Scientific research conducted in recent years shows that green tea (*Camellia sinensis*) and antioxidant active ingredients borne by *Urtica dioica* L. can help reduce the risk of developing many acute and chronic diseases. However, the addition of the stinging *Urtica dioica* L. extract to the green teas has not brought about the change in antioxidant capacity. The aim of this study is to determine the total antioxidant capacity of five different green tea samples, as well as the changes in total antioxidant capacity values after addition of *Urtica dioica* L. extract at different concentrations (0, 5%, 7.5% and 10%). The highest antioxidant effect was observed in teas with 10% > 7.5% > 5% > 0% of supplementary extracts, respectively, while the addition of *Urtica dioica* L. extract in study increased the antioxidant activity compared to the plain green tea. In conclusion, our study showed that the addition of *Urtica dioica* L. extract to green tea significantly increased antioxidant activity, and at least once a day, the immunomodulatory properties (substance that alters the immune system response by increasing or decreasing the power of the immune system) and antiinflammatory polysaccharides It is thought to be effective.

KEYWORDS

Green tea (Camellia sinensis), Urtica dioica L., antioxidant.

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Poster Session 4

Submission ID: 522

MEDICAL AND AROMATIC PLANTS FOUND IN ADANA FLORA AND THEIR USAGES

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ABSTRACT

The Mediterranean region has a large genetic plant diversity with its climate, geographical and topographical characteristics. As in our country, medicinal and aromatic plants, which play an important role for the local people in Adana flora, have been used in different fields such as medicine, food, natural tea, perfume, paint, spices, ornamental plants and cosmetics for the purpose of obtaining nutrition and health problems. It is important to pay attention to some important points in the cultivation, collection, sale and consumption of these plants which affect human health and which have been used for many years as folk medicines. Because these plants are usually collected in a sloppy manner, sold to people who do not have sufficient sales and usage knowledge, and consumed unconsciously. In this case, even medical plants that are beneficial to health can be harmful to humans. This traditional knowledge, which directly concerns public health, needs to be compared with existing literature. In this study, it is determined how medical and aromatic plants found in Adana natural flora and which have high economic values are provided, where they are provided, how they are named among the people, used parts, usage areas, literature searches and transcripts. As a result, it is aimed to evaluate these rich natural floras, which are obtained by transferring all acquired data to a database for scientific research, transferring this information to new generations, increasing local people's interest in medical and aromatic plants, and helping the cultivation of these plants.

KEYWORDS

Adana, medicinal and aromatic plant

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Poster Session 4

Submission ID: 523

BIOACTIVE POTENTIAL AND HEALTH EFFECTS OF ILEX PARAGUARIENSIS AND PERSEA AMERICANA LEAVES

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ABSTRACT

Ilex paraguariensis and *Persea americana* are two of the most important plants. They have played an important role on human diet around the world. They have been used commonly for medical. Additionally, *Ilex paraguariensis* and *Persea americana* leaves are important ingredient of food and different industries. The aim of this study was to determine antioxidant activity and total phenolic content of *Ilex paraguariensis* and *Persea Americana* leaves. Additionally, pH, color, brixs and extraction yield of aqueous extract of samples were evaluated. pH, color, brixs (g 100g-1) and extraction yield (g 100g-1) of *Ilex paraguariensis* leaves were 5.77, 22.09, 2.74, 5.76, 0.35, 2.40, these results were 6.05, 27.15, 0.46, 6.64, 0.1, 0.45 for *Persea Americana* respectively. Antioxidant activity (2.20±0.32 g g-1 DPPH) of *Ilex paraguariensis* leaves were higher than *Persea americana* (20.14±0.018 g g-1 DPPH). Total phenolic content of *Ilex paraguariensis* ve *Persea americana* leaves were 48.55±2.72, 5.03±0.06 mg GAE g-1 respectively. Correlations between these results and total phenolic content were observed.

KEYWORDS

Mate, avocado, Ilex paraguariensis, Persea americana, antioxidant, total phenolic

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Poster Session 4

Submission ID: 525

DETERMINATION OF ANTIOXIDANT ACTIVITY AND TOTAL PHENOLIC CONTENT OF ARBUSCULA FOLIIS, FOLLICULI SENNAEAND, URTICA LEAVE

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ABSTRACT

Plants have played an important role on human diet. They are a valuable source of different bioactive compounds. Plants have been used for different purpose in the different industry as cosmetic, food and medicinal. However, they are consumed commonly as herbal teas, food additives and spices. In this study, it was aimed to obtain antioxidant activity and total phenolic content of plants (*Arbuscula foliis*, *Folliculi Sennaeand*, *Urtica*) leaves. Physical, chemical and spectrophotometric analyses were used in the analyses of leaves. Antioxidant capacity was expressed as EC50. The highest antioxidant capacity was shown by *Urtica* (6.046 ± 1.8 g g⁻¹ DPPH). *Arbusculafoliis*, *Folliculi Sennaeve* leaves of antioxidant activity as EC50 were 17.95 ± 1.2 , 80.81 ± 0.05 g g⁻¹ DPPH respectively. Total phenolic content of samples was 1.29 ± 0.35 , (*Arbusculafoliis*), 15.84 ± 0.525 (*Folliculi Sennae*), 10.06 ± 1.87 (*Urtica*) mg GAE g⁻¹. Additionally, pH (g 100g⁻¹), brixs, L*, a*, b* and extraction yield (g 100g⁻¹) of aqueous extract of samples were 6.45, 0.5, 25.67, 2.67, 6.57, 0.117 (*Arbuscula foliis*); 5.63, 0.3, 20.19, 2.67, 1.36, 1.44 (*Folliculi Sennaeand*); 7.52, 0.15, 19.48, 0.55, 0.59, 1.84 (*Urtica*).

KEYWORDS

Arbusculafoliis, Folliculi Sennae, Urtica, leaves, antioxidant, total phenolic

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Poster Session 4

Submission ID: 526

INVESTIGATION OF THE EFFECT OF DIFFERENT SOLVENTS EXTRACTIONS ON ANTIOXIDANT AND PHENOLIC LEVELS OF CRUDE AND RIPE FIG (FICUS CARICA)

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ABSTRACT

Figs have been consumed as a part of Mediterranean diet for centuries either as fresh or dried fruit. It has been defined that figs have more than 50 compounds. Antioxidant compounds such as phenols, organic acids, vitamin E and carotenoids prevent oxidative damages in the cell causing many diseases occurring in human body. The aim of this study is comparison of effects of different solvents including water, methanol, ethanol, acetone and ethyl acetate on total phenolic and antioxidant levels of crude and ripe figs collected from Akseki/Antalya. Crude and ripe figs have been lyophilized and the extraction process with water, methanol, ethanol, acetone and ethyl acetate solvents has been performed. The total phenolic content of the extracts has been determined with Folin-Ciocalteu method by using gallic acid as standard. The total antioxidant capacity has been determined with Phosphomolybdate Assay by using ascorbic acid as standard. The antioxidant capacity has been analyzed with DPPH assay and calculated with trolox standard curve. Yields obtained from crude fig extractions made in water, methanol, ethanol, acetone and ethyl acetate are 49.3%, 35.8%, 26.5%, 20.8%, 16.8%, respectively while yields for ripe fig are 85.5%, 79.7%, 80.3%, 17.3%, 7.1%, respectively. It has been determined that total phenolic contents containing in the water, methanol, ethanol, acetone and ethyl acetate extractions of crude fig are 388.3, 3336.5, 1333.2, 3680.3, 595.7 mg Gallic acid Equivalent (GAE)/kg dry weight, antioxidant capacities are 16.2, 33.0, 22.9, 27.3, 15.2 mg Ascorbic Acid Equivalent (AE)/g dry weight and antioxidant activities are 11.6, 23.2, 20.0, 54.0, 45.6 mmol Trolox Equivalent (TE)/kg dry weight respectively. It has been found that total phenolic contents containing in the water, methanol, ethanol, acetone and ethyl acetate extractions of ripe fig are 482.2, 25.3, 108.7, 3976.2, 1220.4 mg Gallic acid Equivalent (GAE)/kg dry weight, antioxidant capacities are 4.5, 9.8, 8.6, 41.9, 48.8 mg Ascorbic Acid Equivalent (AE)/g dry weight and antioxidant activities are 7.2, 5.6, 6.0, 54.5, 57.6 mmol Trolox Equivalent (TE)/kg dry weight respectively. Finally, in this study, the phenolic and antioxidant level differences in crude and ripe fig extractions making with different solvents have been evaluated. While total phenolic content is maximum in acetone extraction, it is minimum in water extraction in crude fig. The highest total phenolic content is found in acetone extraction while it is found minimum in methanol extraction in ripe fig. Besides, total antioxidant capacity is maximum in methanol extraction, it is minimum in ethyl acetate extraction in crude fig. Total antioxidant capacity is maximum in ethyl acetate extraction while it is minimum in water extraction in ripe fig. While antioxidant activity is maximum in acetone extraction, it is

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minimum in water extraction in crude fig antioxidant activity is maximum in ethyl acetate extraction, it is minimum in methanol extraction in ripe fig.

KEYWORDS

Fig, Total phenolic and antioxidant capacity, Antioxidant activity, Folin-Ciocalteu, Phosphomolybdate, DPPH

Poster Session 4

Submission ID: 527

DETERMINING THE FACTORS AFFECTING THE MEDICINAL- AROMATIC PLANT CONSUMPTION OF INDIVIDUALS (THE CASE OF ERZURUM CENTRAL COUNTIES)

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ABSTRACT

Medicinal and aromatic plants are used as medicines to prevent diseases, maintain health, or improve diseases. Demand for these plants in world markets is increasing every other day. Especially, the emergence of side effects of synthetic and chemical medicines has increased the use of medicinal plants. This study aimed to determine the medicinal and aromatic plant level of consciousness at purchase of individuals living in the urban areas in the central counties of Erzurum city (Aziziye, Palandöken, and Yakutiye). In the study, proportional sampling method, 90 % confidence interval, and 5 % error margin were employed. According to 2016 TURKSTAT data, the total population of Erzurum central counties was 417.385 people. The sampling of the study consisted of 272 individuals, which was found by calculating the proportion of the central counties within the total and homogeneously distributing it to the districts. The data of the study were collected through a questionnaire. The mean age of the interviewed individuals was found to be 35.04, 54.04 % were male, 76.10% were married, and 2,572.72 TL/month had income. The first ten medicinal aromatic plants bought by the individuals are; mint, garlic, cumin, thyme, red pepper, sumac, linden, rosehip, sage and relish. As the most important reasons why individuals do not buy medical aromatic products; They were not believed to be quality products (73.53%), not delicious (64.34%) and not believing that they were fresh (39.71%). 5-point Likert scale was used to determine the characteristics that individuals have been careful about when purchasing medical aromatics. In order to determine the criteria to be considered for purchasing, factor analysis was carried out to determine whether grouping within 10 properties can be done. As a result of analysis 10 properties; It is understood that the product may be collected under two factors: the status prior to the purchase of the product and the status of the purchase. These 2 factor loads were subjected to Binary logit analysis as explanatory variable. In the study, the factors affecting the purchasing of medicinal aromatic plants were determined using binary logit analysis. Conscious individuals (Constantly and often purchasing) and individuals with low consciousness level (Very rare and not), which is the dependent variable of the model, were identified. That is, 61.20 % of the individuals were determined to be conscious. The age, gender, marital status, and educational level of the individuals, educational, gender, and employment of the spouse level of the individuals' wife, monthly income, Purchase from herbalist, purchase from pharmacy, purchase from wholesaler, self-sum, season effect, preference status, pre-purchase status and purchasing status were all used as explanatory variable. As a result of the analysis, at the 1% significance level, it has been determined that individuals transfer medicinal aromatic products from their purchase location, pharmacies and positively affect them. In other words, it has been determined that individuals

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consciously purchase medical aromatics plants have a positive effect on buying places and seasonal consumption statistics.

KEYWORDS

Awareness Level, Binary Logit Analysis, Factor Analysis, Medical Aromatic Products, Purchasing

Poster Session 4

Submission ID: 528

ALTERNATIVE TREATMENTS IN MENOPAUSAL PERIOD

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ABSTRACT

Abstract Alternative Treatments in Menopausal Period Objective: The purpose of this review is to investigate the effects of plant species used in alternative treatments on symptoms of menopause. **Methods:** Articles between 1990-2017 were investigated by using Pubmed, Google Scholar, Science Direct databases, using the keywords "Climacteric Complaints and Herbal Treatment", "Herbal remedies for Menopause", "Menopause and Phytoestrogens", have been compiled. **Results:** Woman in general suffer from various symptoms caused by hormonal changes in the menopausal phase. Long-term hormone replacement therapy (HRT), which is used to reduce climacteric symptoms, was shown to increase cognitive capacity, prevent cardiovascular disease and osteoporosis, but pose a risk for breast and uterine cancer. Therefore, plants which are sources of phytoestrogen and have estrogenic properties started to be used as alternative therapy instead of HRT. Particularly hops (*Humulus lupulus*), chaste-tree/berry (*Vitex agnus-castus*), yams root (*Dioscorea villosa*), flaxseed (*Linum usitatissimum*), maritime pine (*Pinus pinaster*), black cohosh (*Cimicifuga racemosa*), dong quai (*Angelica sinensis*), St. John's wort (*Hypericum perforatum*), red clover (*Trifolium pratense*), primrose (*Oenothera biennis*) were the plants studied. In the literature, depending on the amount of topical or oral use of these plants and plant extracts which have active different compounds; positive/negative effects on quality of life and vasomotor symptoms especially hot flushes, were mentioned. **Conclusion:** Although studies conducted in Turkey have been limited, in International studies is shown that the plants which are used in alternative medicine is not commonly used outside of the countries where they are grown, safety usage dosages of some extracts and deverse effects on menopausal symptoms are not specified. More studies on these plant species, that are frequently used in alternative treatment methods, are needed.

KEYWORDS

Menopause, Alternative Treatments, Vasomotor Symptoms, Climacteric Complaints

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Poster Session 4

Submission ID: 529

MEDICINAL AND AROMATIC PLANTS USED BY MOTHERS TO INCREASE BREAST MILK

HAMİDE AYGÖR¹, KAMİLE ALTUNTUĞ¹, EMEL EGE¹

ABSTRACT

Breastfeeding is so important for keeping and maintaining mothers and infants' health status. The World Health Organization (WHO) is aiming at increasing the rate of breastfeeding to 50% by 2025 (WHO 2014). In Turkey, starting to feed neonates with additional food or formulae is a common practice. While the age of feeding infants only with breast milk was 42% in 2008, the rate is seen to have decreased to 30% in 2013, according to the data from Turkey Demographic and Health Surveys (TDHS 2008 and TDHS 2013). As the most important reason why mothers feed their infants with no breast milk during the first six months and start additional food at an early period, mothers declare insufficient breast milk or not having enough breast milk to feed their infants. So, those considering having insufficient breast milk or not having enough breast milk to feed their infants consume various medicinal and aromatic plants to increase their breast milk. In studies performed, mothers are seen to use medicinal and aromatic plants, such as garlic, fennel, urtica urens, parsley, cummin, linden, sage and aniseed, etc. in order to increase their breast milk (Gokduman and Balkaya 2013, Dinc et al. 2015). Although the effect mechanisms of medicinal and aromatic plants used to increase breast milk still remain unclear, traditional experiences and conventional beliefs demonstrate that these plants are safe and reliable. However, mothers lack the essential information, such as the use, dose, composition and effectiveness of these plants (Tanrıverdi et al. 2014, Erkaya et al. 2015). It should be kept in mind that especially the effects of such medicinal and aromatic plants will be transmitted via maternal nourishment to the infants, and mothers considering having insufficient breast milk should be questioned as to whether mothers are using any medicinal and aromatic plant. For this reason, it is a must that primarily healthcare professional in the field should find out on what medicinal and aromatic plants proved in literature can enhance breast milk, what the appropriate amount is, and how to use. Knowing the effects of medicinal and aromatic plants used to enhance breast milk in postpartum period by healthcare professionals, and planning the training and counseling programs to be given to mothers and families are important for the evaluation of the negative effects of medicinal and aromatic plants on mothers and infants' health status.

KEYWORDS

Breast Milk, Medicinal ve Aromatic plants

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Poster Session 4

Submission ID: 530

DECONTAMINATION OF FRESH-CUT SALADS INOCULATED WITH ESCHERICHIA COLI O157:H7 AND SALMONELLA SPP. UTILIZING DIFFERENT PLANT HYDROSOLS AS A NATURAL FOOD SANITIZER

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ABSTRACT

Minimally processed fresh fruits and vegetables are important components of the human diet and also they are highly susceptible to attack by different microorganisms because of their high nutritional content. When fresh-cut fruit and vegetables are exposed to microbial contamination with pathogenic microorganisms, they may threaten public health. In this study, it was aimed to determine the efficiency of different plant hydrosols on decontamination of two foodborne pathogens, *E. coli* O157:H7 and *Salmonella* spp., from fresh-cut salads including iceberg lettuce, parsley, cucumber, carrot pepper, carrot and red cabbage. Two experiments were carried out using two inoculation levels (approximately 10⁴ or 10⁶ CFU/mL for *E. coli* O157:H7, approximately 10³ or 10⁵ CFU/mL for *Salmonella* spp.) Hydrosols of oregano (*Origanum vulgare* L.), thyme (*Thymus vulgaris* L.) and rosemary (*Rosmarinus officinalis* L.) produced via hydro distillation method were applied to on contaminated fresh-cut salads for 0, 20, 40 and 60 min. In the low inoculum level, oregano and thyme hydrosols resulted in ~ 4 log CFU/g reduction in *E. coli* O157:H7 population at the 40 min and 60 min time period, respectively ($P < 0.05$). In the high inoculation, Oregano hydrosols reduced the population of *E. coli* O157:H7 by ~ 6 log CFU/g at the end of 60 min, while thyme hydrosol resulted in ~ 4 log CFU/g reduction in *E. coli* O157:H7 at the same time. Oregano and thyme hydrosols significantly reduced the bacterial population compared to the control samples at the 20, 40, 60 min time period ($P < 0.05$). In the low and high inoculum level, hydrosol of rosemary was inefficient for ($P > 0.05$) *E. coli* O157:H7 inactivation. In the low inoculation level, rosemary hydrosol treatment for 20 min resulted in ~1 log CFU/g *Salmonella* spp. population reduction in salads ($P < 0.05$). However, extension of hydrosol treatment period did not provide an additional reduction ($P > 0.05$). Oregano hydrosols reduced *Salmonella* spp. population significantly, resulted in ~ 4 log CFU/g reduction at the end of 60 min, while thyme hydrosol resulted in ~ 2 log CFU/g reduction in *Salmonella* spp. at the end of 20 min ($P < 0.05$) treatment. Additional reduction in microbial population was not observed with increasing treatment time for thyme hydrosol ($P > 0.05$). In the high inoculum level, rosemary hydrosol did not cause any reduction in *Salmonella* spp., population during the periods applied ($P > 0.05$). Inhibitory effect of thyme hydrosol showed the highest antimicrobial effect on *Salmonella* spp. count in the high inoculation followed by oregano. Thyme hydrosol achieved ~1 log reduction at the end of every 20 min implementation. Results demonstrate that plant hydrosols especially oregano and thyme could be successfully used as natural food sanitizers for fresh-cut salads to enhance microbiological safety depending on the sensory characteristics of the product.

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KEYWORDS

E. coli O157:H7, Salmonella spp., Fresh-cut salads, Plant hydrosols, Decontamination

Poster Session 4

Submission ID: 532

ANTIMICROBIAL EFFECTS OF SOME ESSENTIAL OILS

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ABSTRACT

Phototherapy means that herbal therapy. Therapeutic extracts obtained from certain parts of plants are used in the treatment. The plants have many functional features but the most effective parts of them are the essential oils. The most important parts of essential oils are terpenic compounds and their homologues. The basic forms of large and complex structured hormones are similar to those of simple molecules, so they are bridge molecules between essential oils and hormones. Monoterpenes and sesquiterpenes are found in volatile oils as the main active substance classes. They can be applied on skin and also be consumed for a treatment. Essential oils that contain too much phenol cause itching and irritation even on healthy skin when applied directly. For this reason they should be used as the main treatment substance and mixed with fixed oils at low concentrations. Some of the essential oils have antimicrobial activity. The majority of these compounds are phenolic structures containing a hydroxyl group. These components may disorder enzymatic reactions by causing degradation of the enzyme systems of microorganisms; may inhibit enzyme synthesis at the nucleus and ribosomal level or may change the structure of the membrane to cause sensitization and permeability of the phospholipid layer on the cell membrane. The structural and functional properties of the microorganism membrane get damaged by effecting on two components of the proton mobile power: pH gradient and electrical potential. It cause ions, ATP, nucleic acid and amino acids to leak out of the cell. The outflow of K⁺ ions is often the early sign of damage to the cell, often followed by the outflow of the cytoplasmic structures. The disappearance of the proton mobility balance and the release of the ATP pool is the main cause of cell death. In this review ginger, bergamot, argan and black cumin essential oils were researched. These oils have been used for many years for pharmacological purposes and consumption. The terpenes they contain have functional properties. There are several studies that emphasize the antimicrobial and antifungal activities on especially food borne pathogens and additionally, their contributive effects on health and their functional properties. More in-situ studies that research the opportunities to use in foods and, presentation the effect mechanism of complex ingredients in food matrix are needed.

KEYWORDS

Ginger oil, bergamot oil, argan oil, nigella oil, functional food

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Poster Session 4

Submission ID: 533

EFFECT ON NORHARMANE PRODUCTION OF ANABAENA ORYZAE UNDER PH STRESS CONDITION

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ABSTRACT

Cyanobacteria (blue-green algae) represent a group Gram negative procaryotes, which include highly bioactive secondary metabolites. The purpose of this study is to determinate the quantity of a pharmaceutically important norharmane under various pH stress. Cyanobacterium obtained from the water sample taken out of the Tokat Yeşilirmak River was mechanically isolated under an inverted microscope. It was grown in 250 ml of BG110 media containing different pH concentrations; 5.0, 7.0, 9.0 under controlled laboratory conditions at 25 ± 2 °C under 12:12 h (light/dark cycle) with white fluorescent lamp of 155 photons m⁻²s⁻¹ light intensity. Quantitative analysis of norharmane metabolite conducted by HPLC. Amounts of norharmane ($\mu\text{g/g}$) were calculated according to the Gauss method by drawing a calibration curve over the absorbance value in the 247 nm wavelength of the standard. Based on the results, the amount of norharmane at pH 5.0, 7.0 and 9.0 were found to be 0.269, 0.692, 1.192 $\mu\text{g/g}$, respectively. Most norharmane production was detected in alkaline medium.

KEYWORDS

Norharmane, HPLC, pH stress

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Poster Session 4

Submission ID: 536

QUALITY CHARACTERISTICS OF NOODLE INCLUDING GROUND YELLOW POPPY SEED

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ABSTRACT

The objective of this study is the production of noodle including ground yellow poppy seed which has phenolic compounds. Phenolic compounds have antioxidant activity. According to the researches, these compounds reduce risk of many diseases like cancer. In this study, ground yellow poppy seed (purchased from Afyon) was added to the noodle formulation at the ratios of 5% and 10%. Flour used in the production was obtained by milling of two wheat variety (Kundurur and Altıntas). The control sample was noodle sample including no ground yellow poppy seed. After production, quality characteristics, total phenolic content and color values of noodle samples were analyzed. Quality characteristics of noodle samples made from Kundurur wheat flour were higher than that of noodle samples made from Altıntas wheat flour. Ground yellow poppy seed addition caused dark color at the noodle samples. Control samples had higher quality characteristics compared to noodle samples including ground yellow poppy seed. Higher phenolic content was observed for noodle samples including ground yellow poppy seed.

KEYWORDS

poppy seed, noodle, phenolic

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Poster Session 4

Submission ID: 537

DETERMINATION OF QUALITY CHARACTERISTIC OF BISCUITS INCLUDING GROUND YELLOW POPPY SEED AS FAT REPLACER

SEDA YALÇIN¹

ABSTRACT

In this study, fat was replaced by ground yellow poppy seed in biscuit formulation for producing low fat biscuit and the changes in physical characteristics, color values and total phenolic content of biscuits with fat replacement were investigated. Fat replacement caused an increase in weight and spread ratio of biscuits, indicating improved quality. Lower L* values, higher a* and b* values were obtained for biscuits including ground yellow poppy seed. Total phenolic content of biscuits increased gradually as ground yellow poppy seed level in biscuits increased.

KEYWORDS

poppy seed, fat replacer, biscuit

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Poster Session 4

Submission ID: 538

DETERMINATION OF THE SOCIO-ECONOMIC STRUCTURES OF THE HERBALISTS THAT SELL MEDICAL AND AROMATIC PLANTS: THE CASE STUDY IN CENTRAL BLACK SEA REGION

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ABSTRACT

From accessible sources of history, it is known that people use plants to treat nutritional needs and diseases in particular. Until the early part of the twentieth century, about half of medicinal medicines were derived from plants, while in the century late the proportion fell to less than five percent, depending on scientific developments. The organic plant consumption that starts with the return to nature in the last years is the alternative of modern medicine. Turkey has a great economic potential in terms of medicinal and aromatic plants collected from the nature due to its position in the intersection of Iran-Turan (Central Asia), Mediterranean and Avrosibiria (Euro-Siberia) phytocrofiotic regions and its flora containing a large number of plant species diversity and folk medicine applications also very common. Due to its economic value and its use in folk medicine applications, care should be taken to cultivate, collect and sell these plants. Preparing, selling and unconscious consumption of medicinal plants for people who do not have technical knowledge can affect human health negatively. Herbalists (aktarlar) are at the forefront of establishments that provide medical and aromatic plants. It is a requirement that herbalists, who have a role in the presentation of medicinal and aromatic plants to the public, should have technical knowledge in obtaining and selling products. For this purpose, it is important to analyze the socio - economic and professional knowledge of herbalists. In this study, demographic and occupational information of some herbalists in Ordu, Samsun, Amasya, Tokat and Çorum in the Middle Black Sea Region were examined. We also tried to determine where they procured the products and for what purpose they sold them. Within the scope of the study, face-to-face surveys will be conducted with the herbalists in the Middle Black Sea Region who voluntarily participate in the study and the necessary data set will be created with the help of the questions on the questionnaire. The obtained data will be evaluated with the help of SPSS package program.

KEYWORDS

Medical and Aromatic Plants, Herbalists, Central Black Sea Region, Socio-Economic Analysis

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Poster Session 4

Submission ID: 539

HUMIC SUBSTANCES POTENTIAL OF RHODODENDRON (RHODODENDRON PONTICUM L.) AREAS IN SAKARYA REGIONAL FOREST ADMINISTRATION

OKAN KURŞUN¹, HALİL KARADEMİR¹, SELDA KARAKAYA¹, MUSTAFA İŞÇİOĞLU²

ABSTRACT

Humic substances (humic acid, fulvic acid and humin) are a valuable organic substance used in many fields of industry especially agriculture and animal husbandry, health, cosmetics and so on. Therefore; There are serious studies on humic substances in different disciplines such as chemistry, biology, food, environment and health. In forestry at the production of seedlings humic substances can be used to grow larger and higher quality seedlings for afforestation and artificial rejuvenation. Rhododendrons (Rhododendron L.) are one of the rich sources of Humic substances. In this study, it was attempted to estimate the potential humic substances of Rhododendrons which are the predominant species in the lower layer of beech forests within the study boundaries of the Sakarya Regional Forest Administration. For this purpose, Rhododendron spread area was calculated by District Management size which includes Adapazarı, Akyazı, Geyve, Gölcük Forest Administrations. In Rhododendron spread areas humic depth measured millimetrically at O₂ horizon and average values calculated for every forest management. This depth values associated by Rhododendron spread areas for guessing the Humic substances potential.

KEYWORDS

Rhododendron, Humus, Humic substance, Sakarya, Ethobotany

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Poster Session 4

Submission ID: 540

RESIN PRODUCTION AT MARITIME PINE IN SAKARYA REGIONAL FOREST ADMINISTRATION (PINUS PINASTER AITON)

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ABSTRACT

Resin is secreted by resin channels which made by differentiate of parenchyma cells. Pine resin is an important non-wood forest product and forms the raw material of rosin and turpentine. Resin is widely used in the chemical industry. Mainly used in industries are paper, cosmetics, rubber, chewing gum, ink, paint, varnish, medicine and so on. There are forests suitable for resin production in Turkey but fewer resins are produced for commercial use. Our country is importing resin and resin products and it crates serious Money loss. With the growth of the sectors that use resins, demand for resins and derivative products is increasing day by day and our country needs to be relieved from foreign dependence and money loss. It is important to appreciate the potential resin resources and make resin production efficient, sustainable and economically widespread throughout the country. Our country has 68.000 hectares maritime pine forest and Sakarya Regional Forest Administration has 7.500 hectares maritime pine industrial plantation. One of the first examples of resin production in Turkey started at Sakarya Regional Forest Administration Taşköprü and Kefken District Forest Managament's maritime pine industrial plantations using acid paste method in year 2015. With this study, Sakarya Regional Forest Administration examined the potential of resin production in maritime pine forest industrial plantations.

KEYWORDS

Resin production, Acid-paste method, Maritime Pine, Sakarya

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Poster Session 4

Submission ID: 541

THE EFFECTS OF OMEGA-3 POLYUNSATURATED FATTY ACIDS ON COGNITIVE FUNCTIONS

ALİ EMRAH BIYIKLI¹, EZGİ TOPTAŞ BIYIKLI¹, ELMAS ERSÖZ¹

ABSTRACT

Cognitive functions to maintain in a healthy way are based on adequate and balanced nutrition at every stage of life. Adequate and balanced diet also requires intake an adequate level of omega-3 polyunsaturated fatty acids which play an important role in cognitive functions. Alpha-linolenic acid (ALA) is a source of omega-3 fatty acids and be an essential throughout life, is converted to metabolites such as eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) that have different functions in the metabolism, by desaturase and elongase in the body. **PURPOSES:** In this study, current studies about the relationship between omega-3 fatty acids and cognitive development in infancy, childhood and old age are compiled. **METHODS:** The effects of omega-3 fatty acids on cognitive function have been investigated in this compilation study that was prepared by the literatures. The effects on cognitive functions of consumption of omega-3 fatty acids with foods or as dietary supplements in infancy, childhood and old age were evaluated. **RESULTS:** Omega-3 fatty acids are provide brain development and the realization of central nervous membran functions in the period of last trimester of gestation and until two years old brain development is very fast. In addition, they are accumulate in the brain continuously during the period of growth. In adults, they are effected on regeneration of dendrits and axons in neuronal wounds and branching of neuronal dendrites in memory formation. While there is no adequate data to determine the requirements of omega-3 fatty acids which are essential for brain function, adequate intake level envisaged as daily intake of 1.1-1.6 grams. **CONCLUSIONS:** The maintainig to cognitive development and cognitive functions in a healthy way is required to intake in adequate levels of omega-3 fatty acids. But there is inadequate data that increase of cognitive development in the high level of intakes. In order to determine the net effects of omega-3 polyunsaturated fatty acids intake levels on cognitive functions are thought to be needed more than studies.

KEYWORDS

Omega-3 polyunsaturated fatty acids, cognitive functions, nutrition

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Poster Session 4

Submission ID: 542

DEMENTIA AND ANTIOXIDANTS

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ABSTRACT

Dementia is a clinical syndrome characterized by acquired losses of cognitive and emotional abilities, being severe enough to interfere with daily functioning and independence. Incidence of dementia is rapidly increase depend on the population growth and prolongation of life in the World. Oxidative stress has an important role in neuronal and central vascular disorders which are occurs according as aging to the formation of disease. Under normal circumstances, the cells are protected by antioxidant defense systems for oxidative damage that is may caused free radical products such as peroxides. The oxidative stress, resulting from the imbalance between free radicals and antioxidants which is the strongest advocates against, is lead to impaired neuronal metabolism and apoptosis and this condition associated with dementia. **PURPOSE:** In this research aimed to evaluate of the studies investigated to the relationship between antioxidant intake and dementia. **METHODS:** In this study was prepared with surveying the literatures, researched on efficiency of antioxidants in prevention and treatment of dementia and separately evaluated of effects of antioxidants which using as food or dietary supplements on dementia. **RESULTS:** Major antioxidants such as vitamin C, vitamin E, carotenoids and flavonoids-rich diet has been shown to have positive effects to the prevention of dementia in the studies conducted on intakes antioxidants with foods. While we were meet the prophylactic effects of ginko biloba, curcumin and idebenone other than vitamin C and vitamin E in the studies were concerned antioxidants intakes with foods, it was concluded that dietary intakes of major antioxidants provides better results in the prevention of dementia. **CONCLUSIONS:** Today, increasing the dementia incidence is inevitable to parallel in raised population growth, life expectancy and elderly population. Correct dietary preferences are important to the treatment and prevention of dementia. A diet rich in antioxidants that help protect from dementia is very important, as well as the reduction of symptoms in individuals with dementia and / or are important for slowing the progression.

KEYWORDS

Antioxidants, nutrition, dementia

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Poster Session 4

Submission ID: 543

SUŞEHİRİ AND THE EVALUATION OF THE MEDICAL PLANTS VARIETY

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ABSTRACT

In this research, survey has been made in order to characterize the medical plants which take part in public life and people take advantage of. For these reasons, surveys have been organized going to the center of Suşehri and it's villages. 68 plant samples which have medical feature, have been picked and these samples defoliated using herbarium technique. The different kinds of these plants information related to them have been gathered. According to the survey results, 12 plants have been qualified as digestive system disease, 9 plants have been used urinary tract diseases and urologic diseases, 6 plants for cardiovascular diseases, 6 plants for diabetics, 8 plants for the treatment of physical injury, are defined.

KEYWORDS

Medical, Suşehri, Sivas

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Poster Session 4

Submission ID: 544

EFFECTS OF DIFFERENT DRYING AND INFUSION PROCESSES ON ANTIOXIDANT PROPERTIES OF TRIFOLIUM PRATENSE (RED CLOVER)

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ABSTRACT

Trifolium pratense, an important forage plant in many parts of the world. Otherwise, studies on phytoestrogenic and antioxidant properties are being carried out in terms of human health. Trifolium flowers are used as herbal tea. Only the flowers of the trifolium pratense plant were used in this study. Flowers were subjected to two different drying processes, microwave oven and conventional oven. Dried flowers were infused in two different ways with hot and cold water. Total phenolic content (TPC), ferric reducing antioxidant potential (FRAP), DPPH* (2,2-diphenyl-1-picrylhydrazyl) radical scavenging activity and ABTS* (2,2'-azino-bis(3-ethylbenzthiazoline-6-sulfonic acid)) radical scavenging activity were determined in water extracts of fresh and dry samples. The findings were compared with ascorbic acid, gallic acid, BHA, BHT and trolox standards. Total phenolic content and FRAP capacity of fresh sample were determined as 26,023 µgGAE/mg and 10,194 µgGAE/mg dry weight of extract respectively. DPPH (IC50) and ABTS (IC50) radical scavenging activity of fresh sample were determined as 2,850mg/ml, 1,897 mg/ml dry weight of extract respectively. Total phenolic content and FRAP capacity of microwave dried sample were determined as 21,128 µgGAE/mg and 7,992 µgGAE/mg respectively. DPPH (IC50) and ABTS (IC50) radical scavenging activity of microwave dried sample were determined as 1,214 mg/ml and 2,113 mg/ml respectively. Total phenolic content and FRAP capacity of conventional dried sample were determined as 16,307 µgGAE/mg and 5,591 µgGAE/mg respectively. DPPH (IC50) and ABTS (IC50) radical scavenging activity of conventional dried sample were determined as 2,090 mg/ml and 3,759 mg/ml respectively. Total phenolic content and FRAP capacity of infused samples were varied from 4,194-19,178 µgGAE/mg. FRAP capacity of infused samples were varied from 1,906-7,246 µgGAE/mg. DPPH (IC50) radical scavenging activity of infused samples were varied from 1,613-12,420 mg/ml. ABTS (IC50) radical scavenging activity of infused samples were varied from 2,618-15,874 mg/ml. Microwave dried and hot water infused herbal teas showed higher antioxidant activity than other processes.

KEYWORDS

Antioxidant, DPPH, ABTS, FRAP, Microwave drying

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Poster Session 4

Submission ID: 545

THE EFFECTS OF OZONATION ON THE CHEMICAL COMPOSITION OF PECAN NUT OIL

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ABSTRACT

In recent years, ozonated vegetable and fruit oils are used effectively in industries such as food, cosmetics, cleaning, pharmaceuticals and medical. It is suggested that ozone increases the shelf life of the oils and makes their chemical content more effective in treatments. Pecans [*Carya illinoensis* (Wangenh.) K. Koch], native from North America, belong to the Juglandaceae family which also includes walnuts (*Juglans* sp.). Pecan nut [*Carya illinoensis* (Wangenh.) K. Koch] contain not only phenolic acids and flavonoids, such as the flavan-3-ol monomer (+)-catechin, they also contain oligomeric and polymeric proanthocyanidin (PAC) compounds. The main compounds responsible for the antioxidant capacity of the pecan are phenolic compounds and tocopherols. Phenolic contents found in the plants attract attention because of their antimicrobial activities and antioxidant properties. The Pecan nut presents bioactive molecules, such as sterols, tocopherols and phenolic compounds in its composition. These compounds present antioxidant activity through the stabilization of free radicals. For this purpose, chemical analyses were carried out through GC-MS by obtaining oils from *Carya illinoensis*'s nuts using claevenger method. From the spectrums obtained consequently to the analysis, sterols, tocopherols and phenolic compounds contents and percentages of *Carya illinoensis* were determined. After ozonation process of these oils obtained from *Carya illinoensis*, GC-MS analyses were performed and the percentages of their chemical contents were compared with the data before ozonation. It was observed that ozonation increased the percentages of phenolic compounds. In line with these results, it is thought that *Carya illinoensis* which demonstrate strong antimicrobial activity augment their activities by being ozonated.

KEYWORDS

Carya illinoensis, Pecan nut, GC-MS, Antimicrobial activity, ozonation

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Poster Session 4

Submission ID: 547

STUDIES ON ROSEMARY (ROSMARINUS OFFICINALIS L.) PRODUCTION AND GENE RESOURCES PROTECTION

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ABSTRACT

Rosemary (*Rosmarinus officinalis* L.) is one of the most important medicinal and aromatic plant in the Eastern Mediterranean Region of Turkey. It is used as a spice and herbal tea in the food industry, which is an important source of antioxidants. Rosemary also consumed in aromatherapy, cosmetics, perfumery and pharmaceutical industries. Already it grows naturally the west and south coasts of Turkey the most intense spread is located between Yumurtalık-Adana and Çiftlikköy-Mersin provinces. Rosemary is not cultivated in Turkey yet so production is carried out in the areas of the forest. According to General Directorate of Forestry official records, in the last three years the average annual production was 208 tons/year. The 76% of this production is carried in Tarsus. Local people usually collect rosemary products, as General Directorate of Forestry the forest district tariff cost is so low they prefer to pay the fee, and products are sold to buyers by auction. Due to its limited area of distribution, and in order to ensure the sustainability of the natural areas the controlled production is done biannually. Selection study done on native rosemary provenances of Eastern Mediterranean Region by Eastern Mediterranean Forestry Research Institute. The aim of this study was to present improved clonal saplings to farmers who want to cultivate and to determine rosemary origins that have high dry leaf and essential oil yields making individual selection from the populations of *Rosmarinus officinalis* L. that are native to in the Eastern Mediterranean Region of Turkey which will contribute conservation of rosemary genetic resources. As a result of this project Rosemary clone garden was established with suitable clones in Mersin-Tarsus and Adana Köprüköy Nursery. Thus, the protections of gene resources of Rosemary were provided in natural distribution area (in-situ) and except for the natural distribution area in nursery (ex-situ).

KEYWORDS

Rosemary, production, gene resources, protection

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Poster Session 4

Submission ID: 548

BAY LAUREL (LAURUS NOBILIS L.) PRODUCTION IN THE EASTERN MEDITERRANEAN REGION AND REHABILITATION STUDIES

SEVDA POLAT¹

ABSTRACT

Bay laurel (*Laurus nobilis* L.) is one of the most important exporting medicinal and aromatic plants of Turkey. It spreads naturally along the all coastlines of Turkey. The leaves and fruits are used for production. Dried leaves are generally used as a spice. While the essential oil from the leaves are used in the food industry, the oil from fruits are used to in soap making. Bay laurel production is carried out by the local people in forest areas. The fee paid to General Directorate of Forestry (OGM) is very low (0,08 TL/kg). Local people collect leaves from forest areas and sell them as fresh or dry. According to OGM records the annual production increased three fold, which was, 7025 tons in 2008 was reached to 21788 tons in 2016. The laurel production in Adana, Mersin and Kahramanmaraş Regional Forest Directorates (RFD), which are located in Eastern Mediterranean Region, is almost met 30% of country production. Annually 2400 ton is produced in Adana RFD, the production in Kahramanmaraş and Mersin was 308t/year and 208 t/year respectively. The productions were increased eight fold in last four years. Turkey holds 90% bazaar capacity on the world bay laurel leaves trade. Thus, it has got the important state in quality, price and quantity on the bay laurel leaves. Also the export amount of the bay laurel has increased in recent years from 6932 tons in 2008 to 12741 tons 2015. The increase in production for bay Laurel was affected by the international demand along with inventory and planning in the laurel forest by OGM. The rehabilitation studies are important for the increase of leaf yield. In this study; information on production of Bay laurel in the eastern Mediterranean region, increase of production and rehabilitation studies are provided.

KEYWORDS

Bay laurel, Eastern mediteranean, production, rehabilitation

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Poster Session 4

Submission ID: 550

**RESEARCHES ON MEDICINAL AND AROMATIC PLANTS IN
EASTERN MEDITERRANEAN FORESTRY RESEARCH INSTITUTE
DIRECTORATE**

OSMAN POLAT¹

ABSTRACT

Eucalyptus (*Eucalyptus* spp.), Bay Laurel (*Laurus nobilis* L.), oregano (*Origanum* sp.) and rosemary (*Rosmarinus officinalis* L.) are important medicinal and aromatic species of eastern Mediterranean region in Turkey. Various researches were done on these species by Eastern Mediterranean Forestry Research Institute Directorate. In this paper, reaching interest groups with by sharing the results of the research is aimed. First study was carried out jointly by Medicinal and Aromatic Plant and Drug Research Center and Eastern Mediterranean Forestry Research Institute. The aim was to determine the essential oil yields and chemical compositions of some Eucalyptus species grown in Tarsus-Karabucak in Turkey. *E. globulus* ssp. *globulus* gave the highest oil yield (2.7-4.1 %) in leaf oils (Başer et al, 1998). The name the research is Cultivation and Genetic Improvement of Wild Oregano Species Growing in the Eastern Mediterranean Region of Turkey. The aim of this study was to select more productive *Origanum* species and provenances, and making individual selection for establishing clonal seed orchards to present improved seeds to farmers (Gülbaba and Özkurt, 2006). Bay laurel has very economic important specie in this region. Bay Laurel research was to determine the most suitable leaf harvesting method and cutting period, which would yield good quality, and quantity leaves of Bay Laurel and its economy. According to these results; the combined leaf harvesting method (clear cutting and pollarding) and two years interval shoot cutting were suggested for laurel production (Polat et al, 2010). The aim of first study was to identify rosemary populations and their distribution areas around Mersin and Adana province, at the same time, the determination of percentage of dry leaf yields, dry matter, essential oil yields and their seasonal variation and compositions, the most suitable harvesting time. The distribution of natural rosemary populations begins from Çiftlikköy/Mersin, stretching as half-moon, Adana at the center, to Çamtepe/Yumurtalık. Within this boundary rosemary covers about 8850 hectares and 1,8-cineole was found as major component of rosemary essential oil (Gülbaba et al, 2002). Aim of second research was to determine more productive rosemary clones making individual selection, and to present improved clonal rosemary saplings to farmers who want to cultivate establishing clonal cutting orchards and thus to contribute conservation of rosemary genetic resources of Eastern Mediterranean Region of Turkey. (Türker et al, 2011). Then the other research was undertaken on rosemary and oregano. The aim of this research was to determine the regeneration protocol for micropropagation of the ecotypes with the high yield of species of *Rosmarinus officinalis* L. and *Origanum syriacum* L. var. *bevanii* using tissue culture (in vitro) method, and also to compare the essential oil compounds of maternal and regeneration plants and callus.

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KEYWORDS

Forestry research, Eucalyptus, Rosemary, Bay Laurel, Oregano

Poster Session 4

Submission ID: 551

PROPAGATION OF MASTIC(PISTACIA LENTISCUS VAR. CHIA) UNDER CONTROLLED GREENHOUSE ENVIRONMENT BY GRAFTING

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ABSTRACT

Mastic is a species contained in the rich biological diversity of Turkey and has an economic potential. Mastic tree is a dioecious tree while the quantity and quality of the resin secreted by female trees are very low; therefore, male trees that are clonally propagated are used to establish commercial plantations and obtain mastic. Traditionally, Long branch cuttings are conventionally used for clonal seedling production. However, this production method requires too many materials and has a very low rooting rate. Rooting with tissue culture and green cuttings has also failed under external environmental conditions. Due to the challenges faced in the mass production of seedlings by clonal method, it is used for afforestation and plantation to a limited extend. The purpose of this study was to propagate the mastic tree clonally by grafting, which has some advantages such as adaptation to different ecological conditions and the possibility to obtain the desired crown and tree form. *P. atlantica* and *P. lentiscus* rootstocks were grafted under greenhouse conditions from 15 February to 15 October every 15 days using three different grafting methods. As for the graft union formation, it was aimed to determine the most appropriate rootstock, grafting time and grafting method. This study was planned according to combined over years two-factor randomized blocks trial design, and SPSS software package was used for statistical analysis. This study that was conducted under greenhouse conditions demonstrated that the mastic could be propagated clonally by grafting. In grafting methods used in the study, the bud-take ratios and bud sprout rates were better in *P. atlantica* compared to *P. lentiscus*. The highest graft success was obtained in *P. atlantica* with 56,6%, and *P. lentiscus* with 50%. As regards the grafting times and bud-take ratio, chip budding can be performed on 15 February, scion can be performed from 1 March and 1 April, T budding can be performed from 15 March to 1 April. The best result among the grafting methods used n the study was obtained from scions with a similar bud-take ratio in both rootstocks. The survival rates of the Atlantic mastic grafted by chip budding and T budding were higher.

KEYWORDS

Pistacia lentiscus var. chia, grafting, budding, rootstock

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Poster Session 4

Submission ID: 552

THE USE OF CLOVES IN AKÇAKATIK CHEESE

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ABSTRACT

The diversity of cheese production is influenced by many factors, such as the cultural level of the society, the social life conditions, the geographical situation of the region, the difference in the cheese processing technologies, the milk type used in production and the substances used for seasoning (spice or herb mixtures). It is reported that there are approximately 50 cheese varieties in Turkey where people with different cultural characteristics have been living for centuries. However, it is speculated that in many regions of Turkey, there are still cheese varieties that have no commercial value or their domestic production is on the verge of extinction. Among the traditional products, Van herby cheese (as a cheese type in the herbed cheese group) and Hatay Sürk cheese (as a cheese type in the seasoned cheese group) are the most widely known and consumed cheese types. Adding nigella to Tulum cheese, a cheese type produced in many regions, is also a common practice. Another property of the seasoning substances used in cheese production is their effect on health. The clove, produced by the *Syzygium aromaticum* tree, has antimicrobial properties along with its positive effects on health including its analgesic properties, its ability to help treat the common cold and sinusitis, its positive effects in treating coughing and bad breath, its expectorant properties, its ability to boost the immune system and prevent diarrhea. Clove powder is used in Akçakatik cheese, which is one of the traditional cheese types in Turkey. This cheese variety, which is produced in Burdur province and its vicinity by adding clove and nigella to strained yogurt, remains in the closed family economy and is yet to be produced on an industrial scale. The most important effect of using cloves in cheese production is to give the product a unique aroma. The main substance in cloves that give the products their smell and taste is the volatile oil called eugenol. This substance, extracted from clove, has the most significant antioxidant properties when compared to other substances in the plant. Moreover, terpenic compounds, such as benzyl alcohol, 2-heptanone, ethyl hexanoate, calcaren, calamenene, etc., are also part of the oil composition, albeit in minor amounts. However, overuse of cloves in the product spoils the taste, making it bitter. The spice and seasoning substances used in cheeses also affect their color. As the addition of cloves to cheese curd increases, the color of the cheese gets browner, which results in an undesirable appearance. Another property of the seasoning substances is that they have antioxidant properties. Studies have shown that cloves have an antioxidative effect as strong as butylated hydroxytoluene and butylated hydroxyanisole. Current studies have focused on the standardization of Akçakatik cheese production and the effect of the ratio of cloves in the product.

KEYWORDS

Akçakatik Cheese, clove, sensorial properties, health

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Poster Session 4

Submission ID: 553

SCREENING OF POLYPHENOL LEVELS IN OLIVE TREE (OLEA EUROPAEA) LEAVES DRIED BY SEVERAL METHODS

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ABSTRACT

In this study, effects of microwave treatment on olive leaves were investigated in terms of total polyphenols (TP) and major phenolic compound of olive leaf, oleuropein. Microwave drying (MD) conditions regarding microwave irradiation power, sample mass and drying time were optimized by Face Centered Composite Design (FCCD) through Response Surface Methodology (RSM). Root mean square deviation (RMSD) was employed to assess the relationship between the observed and estimated results in addition to coefficient of determination (R²). Findings achieved under the optimal conditions of MD were compared with those of freeze drying (FD), vacuum drying (VD), oven drying (OD) and ambient air drying (AAD) methods. The antioxidant activity (AA) of the leaves was also evaluated by 2,2'-azino-bis-(3-ethylbenzothiazoline-6-sulfonic acid) diammonium salt (ABTS) method. The correlation between TP/oleuropein and AA values were quantified by Pearson correlation coefficient (r).

KEYWORDS

Olea europaea; microwave; oleuropein; polyphenol; optimization

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Poster Session 4

Submission ID: 554

USING AROMATIC PLANTS IN TRADITIONAL DAIRY PRODUCTS

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ABSTRACT

One of the most important methods used to prevent the development of foodborne microbial diseases, especially pathogens, is to add aromatic volatile oils. These are derived directly, or by steam distillation, from plant parts that are aromatic volatile oil sources including leaves, root parts, seeds, twig parts and fruits. Essential oils – along with their antibacterial, antiviral, antimycotic, antioxidant, antiparasitic and insecticidal properties – add flavor, aroma and color to products. Terpenoids, including carvacrol, carvone, thymol and phenylpropanoid groups including cinnamaldehyde, eugenol and anethole, appear in various parts of plants acting as active components and have antibacterial effects towards most bacteria. Thanks to these properties, they are added to many food products and affect various properties of these products, particularly their chemical and sensory properties. In milk and dairy products, these aromatic components are either added directly to the milk, depending on the animal feeding pattern, or are added externally to the dairy products during production. For example, the amount of carvacrol that passes to the milk when hair goats feed on natural vegetation in the high plateaus greatly affects the aroma of the products obtained from the goat's milk. In addition, nigella is commonly used in Tulum cheese, which is among the most widely consumed traditional cheese types in Turkey, and helps take thymoquinone into the body as an active component. Thymoquinone has antioxidant and anti-inflammatory effects, and inhibits tumor growth. Hatay Sürk cheese, another traditional cheese type in Turkey, contains a mixture of various spices including nigella, black pepper, clove, thyme, red pepper, cumin, coriander, nutmeg, mahaleb, peppermint, garlic, cinnamon, pimento and ginger. This is why it is one of the richest dairy products in volatile aromatic compounds produced in Turkey. In addition, the use of rosemary, a good antioxidant, is common due to its inhibition of oxidation in butter. It was determined that spices and volatile oil components added to dairy products through local herbs show antibacterial activity at varying rates against pathogens that are important for food safety including *Listeria monocytogenes*, *Salmonella typhimurium*, *Escherichia coli* O157:H7, *Shigella dysenteriae*, *Bacillus cereus* and *Staphylococcus aureus*. For example, it was determined that the "sirmo" (*Allium* sp.) in Van herby cheese had a high antimicrobial effect, the "mendo" (*Anthriscus* sp.) in the herb mixture had inhibitory effects on *K. pneumoniae*, *P. aeruginosa* and *S. aureus* and "heliz" (*Prangos* sp.) in the herb mixture had inhibitory effects on *P. aeruginosa*, *E. faecalis* and *S. aureus*.

KEYWORDS

Traditional cheese, seasoning, volatile oils, antimicrobial effect

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Poster Session 4

Submission ID: 555

PHYSICO-CHEMICAL PROPERTIES OF GOJI BERRY AND ITS HEALTH BENEFITS

GÖKSEL TIRPANCI SİVRİ¹, SERAP DURAKLI VELİOĞLU¹, KADIR GÜRBÜZ GÜNER¹

ABSTRACT

Berries and red fruits are rich sources of polyphenols which are known with their health benefits. Goji berry (*Lycium barbarum* or *Lycium chinense*), belongs to Solanaceae family which is deciduous shrubbery growing in China, Tibet, and other parts of Asia. Goji berry is known with its health-promoting properties, which comes from high content of phytochemical substances. Berry fruits are often the richest source of antioxidant among fruits and vegetables. There are many studies present on phenolic profiles of Goji berry extracts which indicate a strong capacity to scavenge oxygen radical species and to inhibit oxidation as well as growth of pathogenic bacteria. Based on the available data from several studies, total phenolic content of goji berries around 281.91 mg GAE/100 g FW, total bioactive compound content 6048.24 mg/100 g FW and antioxidant capacity 2300 mg/mL IC 50 of DPPH radical scavenging. The major antioxidant compound identified in commercially available goji berries was N-feruloyl tyramine. In recent years, popularity of Goji berry was increased because people's awareness on its various health-promoting properties among several illnesses (reduced risk of cancer, cardiovascular disease, heart disease and stroke). Important health-promoting properties are related to phenolics, including antioxidant activity, regulation of some metabolizing enzymes, and modulation of gene expression and subcellular signaling. The aim of this review is to discuss phytochemical profile of goji berry and its potential health effects.

KEYWORDS

Goji berry, Phytochemicals, health benefits

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Poster Session 4

Submission ID: 556

HONEY PLANTS USED IN KEPSUT (BALIKESİR) FOR YARDOP FIELD

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ABSTRACT

In this study, it was aimed to improve beekeeping activities in nearby villages by planting rich species included pollen or nectar among fire resistant plants in Kepsut-YARDOP (Balıkesir) trial areas and nectar. With this study, the peoples who living with beekeeping in settlement units around YARDOP areas have been established honey production areas which contributed economically to the people. In the research area; preferring for nectar and pollen of honey bees and species distributed naturally in Balıkesir were *Salvia virgata*, *Origanum onites*, *Lavandula angustifolia*, *Rosmarinus officinalis*, *Rhus coriaria*, *Erica arborea*, *Elaeagnus angustifolia*, *Arbutus unedo*, *Pyrus elaeagnifolia*, *Morus alba*, *Amygdalus communis* ve *Robinia pseudoacacia*. These species were periodically maintained for 2 years, their development observed and their retention rates determined.

KEYWORDS

YARDOP, Kepsut, Economic, Beekeeping.

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Poster Session 4

Submission ID: 557

EFFECT OF DIFFERENT PASTEURIZATION AND STORAGE TIMES ON MICROBIAL QUALITY OF FRESH PASTA

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ABSTRACT

Fresh pasta has short shelf life because of high water contents (>24%). Pasteurization and modified atmosphere packaging (MAP) applications are used to extend shelf life of fresh pasta. In this study, the effects of different pasteurization and storage times on microbial quality of fresh pasta prepared with different antioxidant and dietary fiber sources were researched. For this purpose, three different combinations of dietary fiber and antioxidant sources (comb1: oat fiber 15% + flaxseed 5%, comb2: barley fiber 15% + flaxseed 5%, comb3: oat fiber 15% + pomegranate seed 5%) were used in fresh pasta formulation. Control fresh pasta prepared with wheat semolina. Pasteurization was applied to fresh pasta samples at 90 °C for 60, 120 and 180 second. After cooling of fresh pasta, MAP was applied to fresh pasta using 50-50% nitrogen-carbon dioxide gas mixture. Packaged fresh pasta samples were stored at 8 weeks at 4 °C. The effects of different times of pasteurization and storage on microbial quality of fresh pasta were researched. While combined samples without pasteurization preserve microbiological quality until 14th day of storage with only MAP application, storage time was prolonged until 56th day by 180 second pasteurization applications. In fresh pasta production process, pasteurization at 90 °C and 180 second coupled with MAP application prolonged the shelf life of fresh pasta. Bu çalışma, TÜBİTAK tarafından 114O389 nolu proje ile desteklenmiştir.

KEYWORDS

Antioxidant, dietary fiber, fresh pasta, storage

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Poster Session 4

Submission ID: 559

USAGE OF DAIRY BY-PRODUCTS IN THE PRODUCTIONS OF FUNCTIONAL CEREAL PRODUCTS

SELMAN TÜRKER¹, AYŞE BÜŞRA MADENCİ¹

ABSTRACT

Cereal products have an important place in daily nutrition in our country [1]. Wheat that raw material of cereal products, is rich in vitamins such as thiamine, riboflavin, pentotenic acid, nicotonic acid and tocopherol [2]. Despite its economic and nutritional advantages, wheat is not sufficient in terms of protein quality due to inadequacy in terms of essential amino acids [3]. During the processing of milk to various products, by-products having different properties are obtained. Skim milk, buttermilk, whey, ayran and blanching water are some of the dairy by-product (DBP) [4]. DBP are frequently used food components in the nutritional and functional enrichment of cereal products. Skim milk has almost the same components as milk, except fat [4], which is widely used to increase the nutritional value and quality of cereal products [5]. The buttermilk increases the flavor of the product used and also has an effect on the product structure with emulsifying properties. Buttermilk that has high-protein and lecithin, is used in production of products such as biscuits, crackers and cakes [3]. Whey is one of the important DBP when produced during the production of cheese and is a good source of protein. The Maillard reaction that occurs between lactose and free amino acids of whey is contributes to the desired crust color of bread. [6,7]. It is stated that whey protein concentrate can be used instead of egg in the production of products such as biscuits, cakes and bread, and can be effective in obtaining the desired color and brightness of these products. It has also been reported that hydrolyzed whey can be used to remain of bread and various cereal products as fresh for a long time and to limit mold growth [8]. In a study on Kadayif production, it was determined that the use of whey increased the nutritional value of samples and the best sensory properties were formed at the rate of 50% usage [9]. In a study using different DBP in bread production, it was indicated that these DBP could be used to improve the nutritional properties of the bread and increase bread quality [5]. In another study where whey and buttermilk used in the production of flat bread, it was determined that the use of DBP improved the properties of the dough. It has also been reported that the use of whey increased the protein content of flat bread to 14.6% [10]. [1] Elgün A, Ertugay Z. 1995. Tahıl İşleme Teknolojisi. Atatürk Üniversitesi. Ziraat Fakültesi Yayınları No:718, Erzurum. [2] Hosney, R.C., 1986. Principles of Cereal Science and Technology. American Association of Cereal Chemists. Ins. St. Paul Minnesota, Cereal Chem. 37: 9-18. [3] Doğan, İ. S., Küçüköner, E. 1998. Süt ürünlerinin unu mamullerinde kullanımı. Gıda 23(1):43-47. [4] Tan, G., Ömeroğlu, S., Balıkcı, U. 2003. Sütçülük Yan Ürünleri. Gıda 28(3): 323-336. [5] Demir, M. K., Elgün, A., Argun, M. S. 2009. Sütçülük Yan Ürünlerinden Peynir Altı, Yayık Altı ve Süzme Yoğurt Suları Katkılarının Bazı Ekmek Özelliklerine Etkileri Üzerine Bir Araştırma. Gıda 34(2): 99-106. [6] Elgün A. 1986. Farklı Un Örneklerine L-askorbik Asit ile Birlikte Katılan Peynir Suyu Tozunun Hamur ve Ekmek Özelliklerine Etkisi. Doğa 10(1):56-67. [7] Pyler EJ. 1988. Baking Science and Technology. 3rd ed. Sosland Publishing Company, Kansas. [8] Gökalp, H. Y., Zorba, Ö., Çağlar, A., Özdemir, S. 1995. Süt Bileşenleri ve Süt

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KEYWORDS

Dairy by-products, whey, cereal products, bread

Poster Session 4

Submission ID: 560

ANTIOXIDATIVE AND ANTIHYPERGLYCEMIC EFFECTS OF ALLIUM TUNCELIANUM ON STREPTOZOTOCIN-INDUCED TYPE I DIABETES

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ABSTRACT

Nowadays, diabetes does not have a certain treatment method and the existing methods are because of both expensive and causing the various complications, researchers are tend to investigating new antidiabetic agents. It is be stated that oxidative stress is effective on the formation of Diabetes mellitus and its complications. For this reason, interest in natural antioxidant agents and phytochemicals has been increasing in recent years. *Allium tuncelianum* is an endemic garlic species localized in Tunceli / Turkey. It is stated that garlic has anticarcinogenic, antimutagenic, antibacterial, antiprotozoal, antifungal, antiviral effects as well as antioxidant properties thanks to its bioactive components. There are insufficient studies on the pharmacological activities of this garlic species. In this study aims to investigated that effects of *Allium tuncelianum* extract on hyperglycaemia and oxidative stress in diabetes rats with streptozotocin-induced. In this study, 40 female Sprague-Dawley rats, each 1-2 months old, were used and randomly divided into 4 groups as 10 animals in each group. Group I: Control (C), Group II: Diabetic control (DC), Group III: Diabetic+insulin (D+I), Group IV: Diabetic+*Allium tuncelianum* extract (D+AT). Diabetes was induced in rats by a single dose intraperitoneal injection of freshly prepared streptozotocin (50 mg/kg). 72 hours after STZ administration, blood glucose level of each rat was determined. Rats with a blood glucose range of 200mg/dL were considered diabetic and included in the study. 1000 gr of minced garlic sample was waited in 5000 ml of ethanol for 20 hours at room temperature and then the mixture was filtered. The liquid fraction was removed and evaporated at 30 °C. on a rotary evaporator. The plant extract was administered by oral gavage to rats at a dose of 250 mg / kg and insulin 2 IU subcutaneously daily for 28 days. Also physiological saline was administered to the control groups to equalize stress induced by oral application in all groups. Our data show that fasting blood glucose levels were significantly increased in DC group compared to C group ($p<0.001$). However, statistical significance was not determined between DC group and D+AT group. HbA1c level was significantly increased in the DC group while insulin level was significantly decreased ($p<0.001$). There was no significant change in insulin levels despite a significant reduction in HbA1c levels in the AT group ($p<0.05$). Although the TBARS levels in the liver and kidney tissues were significantly increased in the DC group compared to the C group, the SOD and CAT levels were significantly reduced ($p<0.001$). On the other hand, in

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the AT group when compared to the DC group was observed increase in SOD and CAT levels ($p<0.001$) as well as a decrease in TBARS levels ($p<0.05$). In conclusion, the current data revealed that *Allium tuncelianum* extract administration possessed conspicuous modulating effects and was capable to overcome oxidative stress in liver and kidney tissues through its antioxidant properties.

KEYWORDS

Allium tuncelianum, Type I Diabetes, Antioxidant, Antihyperglycemic effects

Poster Session 4

Submission ID: 561

USAGE OF FLAXSEED AND POMEGRANATE IN THE PRODUCTIONS OF FUNCTIONAL CEREAL PRODUCTS

SELMAN TÜRKER¹, AYŞE BÜŞRA MADENCİ¹

ABSTRACT

Functional food are products that have been shown to have health effects in protection or treatment of various diseases [1]. Cereals and cereal products are the most important food groups in terms of human nutrition. Vegetable food sources account for about 90% of daily calorie intake, while 53% of this value is due only to the consumption of cereal products [2]. Antioxidant activities of cereal products, which are very important for human nutrition, can be increased by using various natural sources and new functional products can be produced. With antioxidant-rich nutrition, body can be protected from adverse effects of free radicals leading to various chronic disorders such as cancer, parkinson and alzheimer [3,4]. Natural antioxidant sources have become very interesting products in enrichment of various food in terms of functional properties. Flax is a plant that has been cultivated since ancient times and has attracted attention in recent years as a functional food component with positive effects on health. Flaxseed is an important source of fiber, α -linolenic acid, lignan and protein and also a rich source of phytochemicals which have antioxidant properties [5]. Flaxseed is a frequently used product in the functional enrichment of various food. Studies have been carried out on the using of different properties and proportions of flaxseed for functional enrichment of bread [6], unleavened flat bread [7], muffin [8], cakes and biscuits [9], noodles [10] and pasta [11]. Several studies have been carried out on the health effects of pomegranate [12], which has high antioxidant activity such as flaxseed [13,14]. Edible parts and seed of pomegranate contain significant amounts of minerals and phytochemicals which have antioxidant activity [15,16]. The use of pomegranate and its by-products in the functional enrichment of cereal products has recently become a current issue and studies in this area are still limited. In a study on the enrichment of bread with antioxidants, pomegranate husk was added to bread formulation at different ratios and it was determined that the addition of pomegranate husk increased the antioxidant activities and the total phenolic content of bread [17]. In a study of the effects of pomegranate powder additions on biscuit samples, an increase in the total polyphenol content of the samples was reported due to increased addition ratios [18]. In another study, pomegranate seeds were added at different ratios to the noodle (erişte) formulation and it was stated that a sensory-acceptable product was obtained with using of 5% pomegranate seed [19]. [1] Calderelli, V. A. S., Benassi, M. T., Visentainer, J. V., Matioli, G. 2010. Quinoa and Flaxseed: Potential Ingredients in the Production of Bread with Functional Quality. Brazilian Archives of Biology and Technology, 53(4):981-986. [2] Elgün, A., Ertugay, Z. 1995. Tahıl İşleme Teknolojisi. [3] Collin, R., 1999, Oxidative DNA damage, antioxidants, and cancer, Bio-Essays, 21:238-246 [4] Floyd, R. A., 1999, Antioxidants, Oxidative stress, and degenerative neurological disorders, Proceedings of Society for Experimental Biology and Medicine, 222:236-245. [5] İşleroğlu, H., Yıldırım, Z., Yıldırım, M., 2005, Fonksiyonel bir gıda olarak keten tohumu, GOÜ Ziraat Fakültesi Dergisi, 22(2):23-30. [6] Menteş, Ö., Bakkalbaşı, E., Ercan, R., 2008, Effect of use of

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KEYWORDS

Functional food, cereal products, flaxseed, pomegranate, antioxidant

Poster Session 4

Submission ID: 563

BENEFITS OF THE SHEA TREE

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ABSTRACT

Shea butter is a solid fatty oil extracted from the nuts of shea (Karite) tree also known as *Vitellaria paradoxa* or *V. nilotica*. The tree grows naturally in the wild across sub-saharan savannah belt stretching across West and Eastern Africa covering about 20 countries. The tree has enormous socio-cultural and economic importance to peoples living in its geographic catchment area. Its leaves, stems, roots bark are used in various traditional medicine to treat a variety of diseases and injuries including stomach ache, headaches, fever, jaundice among others. The butter extracted from the fruit is used locally as food and as a cosmetic product for the skin and hair. In recent times there has been an increasing commercial and industrial demand of shea products. This is attributed to the discovery of its importance in the cosmetic and confectionary industries. Shea butter is used in cosmetic products and in the food industry where it is used as a cocoa butter substitute in the chocolate industry. In Africa where shea butter is produced it is also used as cooking oil. Shea butter is solid at room temperature but quickly melts at around body temperature. The chemical composition of shea butter includes a saponifiable fraction composed primarily of stearic and oleic acids with lesser amounts of palmitic, linoleic and arachidic acids. It also contains a substantial unsaponifiable fraction composed of bioactive substances that are responsible for Shea butter's medicinal properties. It has sun screening properties and acts as an emollient and skin moisturizer. Shea butter has is also reported to demonstra anti-aging and anti-inflammatory properties. Consumption of Shea butter has hypocholesterolemic effect and reduces serum and organ protein concentrations.

KEYWORDS

Shea tree, shea butter, fatty acids, chemical composition, fruit pulp

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Poster Session 4

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BIOLOGICAL ACTIVITY OF CAPPARIS SPINOSE L. LEAF, FLOWER AND FRUIT EXTRACTS AGAINST SOME PLANT PATHOGENS

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ABSTRACT

In this study, the bioactivity of ethanol extracts from different parts (leaf, flower and fruit) of Capparis spinosa L. plant was investigated against four different plant pathogens (*Alternaria solani*, *Fusarium oxysporium* f. sp. *radicis-lycopersici* (FORL), *Monilia fructigena* and *Verticillium dahliae*) causing problems in agricultural areas. Extracts at doses of 10, 50, 100, 200 and 500 mg/ml were used in the activity studies. Activity studies of the extracts were carried out using the agar plate method against the test fungi. The highest efficacy from *C. spinosa* extracts was flower, fruit and leaf extracts, respectively. Activity was observed in all doses used. Strong antifungal effects were respected between 92% and 100% against test fungi at 500 mg/ml doses of extracts. Thiam 80% was used in the positive control and 50% acetone was used in the negative control. Also, lethal doses (LD10-50-90) of the extracts were determined against the pathogens. In addition, LD90 values for each pathogen were calculated to be 270 to 446 mg/ml in *C. spinosa* leaf extract, 210 to 924 mg/ml in *C. spinosa* flower extracts and 205 to 765 mg/ml in *C. spinosa* fruit extracts. According to all these results, it was determined that the extracts of *Capparis spinosa* had strong biological activity in control of plant pathogens.

KEYWORDS

Plant pathogenic Fungi, Plant extracts, Biological Activity, Capparis spinosa

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Poster Session 4

Submission ID: 565

EFFICACY OF ENDOPHYTIC AND EPIPHYTIC BACTERIAL ANTAGONISTS FOR BOTRYTIS BLIGHT CAUSED BY BOTRYTIS CINEREA ON SWEET BASIL

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ABSTRACT

Being an economically important herb used in the food industry and for medicinal purposes, sweet basil (*Ocimum basilicum* L.) is harvested several times a season. *Botrytis cinerea* Pers. is one of the main foliar pathogens in the cultivated area of sweet basil. Gray mold infects the fresh wounds created during harvesting and also develops on harvested shoots. This fungal pathogen causes outstanding blossom and leaf blight symptoms. Control of this pathogen can be achieved with application of fungicide, however, a few chemical fungicides are registered against gray mold in sweet basil in Turkey. Additionally, fungicide resistance of causal agent is well known. Aiming at discovering efficient biocontrol agents against grey mold on sweet basil, we have selected 31 endophytic and epiphytic antagonist bacterial isolates from our biocontrol bacterial culture collection. Among 31 putative bacterial isolates, 10 bacterial isolates were found effective to inhibit of development *B. cinerea* in dual-culture assay. These antagonist bacterial isolates were identified as *Arthrobacter oxydans*, *Arthrobacter queen*, *Bacillus simplex* (2), *Bacillus endophyticus*, *Bacillus megaterium* (2), *Bacillus pumilis*, *Enterobacter cloacae* and *Micrococcus luteus* using morphological, biochemical tests and MALDI-TOF MS identification system. Among bacterial isolates against *B. cinerea*, *A. oxydans* was found to suppress mycelial growth (66.6%) significantly. Isolates of *Bacillus* spp. were also effective in mycelial growth inhibition in dual-culture assay. These bacterial isolates were observed to produce at least one of the antagonism mechanisms (such as phosphate solubilisation, cell wall degrading enzyme and siderophore production etc.), which might be involved in their mechanisms of suppressing the mycelial growth. Based on the origin of these bacterial isolates appear to be a good source of potential biocontrol agents against grey mold.

KEYWORDS

Sweet basil, Botrytis cinerea, biological control, antagonist.

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Poster Session 4

Submission ID: 566

EFFECT OF AUXIN AND CITOKININ COMBINATIONS ON REGENERATION OF HULLED EINKORN (TRITICUM MONOCOCCUM SSP. MONOCOCCUM) WHEAT

MEHMET ÖRGEÇ¹, GÜNCE ŞAHİN¹, FATMA PEHLİVAN KARAKAŞ¹, NUSRET ZENCİRCİ¹

ABSTRACT

As known, the life and the nutrition cycle depend on the vegetative production. Moreover, rapidly increasing population worldwide makes a sufficient and balanced nutrition uptake difficult because of rapidly declined agricultural lands for the production. Therefore, plant improvement, which aims to increase yield and to produce high quality, biotic and abiotic stress resistant cultivars, receives even more attention either by application of classical and / or modern techniques. Wheat, an important cereals consumed in the World and in Turkey, is consumed a lot for its nutritive and health properties. Unfortunately, biotic and abiotic stresses due to climatic fluctuations cause serious yield losses in wheat. Nowadays, these problems are, in addition to classical methods, solved by applying biotechnological methods and utilizing new sources of wheat genetic resources. These two are considered to prevent 25% of crop loss by increasing wheat tolerance/resistance against biotic and abiotic stresses. Among these, one important genetic source is diploid einkorn (*Triticum monococcum* ssp. *monococcum*; 2n=14) wheat, which dates back 12-13 thousand years and is the ancestor of today's wheat. It is now rarely grown in distant mountainous terrains of Turkey, Italy, Yugoslavia, etc. Einkorn wheats should be used as genitors in wheat improvement programs. An *in vitro* einkorn (*Triticum monococcum* ssp. *monococcum*) wheat production protocol is highly expected to contribute to these improvements. This is the first, to say, *in vitro* production protocol for einkorn wheat. In this study, we tested IAA-TDZ combinations for an efficient regeneration protocol for einkorn wheat. MATERIALS AND METHODS Sterilization procedure: Removed hulled grain structure of healthy einkorn seeds was put into 100 ml distilled water with 5 drop of Tween20 for 1 min. Seeds were then washed 3 times with sterile water. After this, all seeds were put into % 20 Domestos for 10 min and, again, washed 3 times with sterile water. Germination media: For germination induction, einkorn seeds were cultured on 4.4 g/l Murashige and Skoog nutrient medium (MS) supplemented with 30 g/l sucrose and 8 g/l agar. The pH of all media was adjusted between 5.7-5.8 using 1 N HCl and 1 N NaOH before autoclaving. After autoclave, seeds were planted into medium and all cultures were incubated in growth room under the conditions of 16 h light 8 hours dark at 23±2 °C for 10 days. Regeneration media: For regeneration, einkorn seeds were cultured on 4.4 g/l MS, 30 g/l sucrose and 8 g/l agar with combination of IAA (0, 0.5, 1, 2, and 3mg/l)–TDZ (0.5, 1, 2, and 3mg/l). Root, coleoptile, and leaf were used as explants. After explants were planted, petri dishes were put into growth room for 15 days under the same conditions as germination process. RESULT AND DISCUSSION We studied the effect of 20 different IAA–TDZ combinations on regeneration. The lowest shooting combination was 3.0 mg/l TDZ–2.0 mg/l IAA (0.1333), and the best shooting combination was 0.5 mg/l TDZ–0.0 IAA (2.5333). There were two combinations with a shooting

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bigger than 1.0: 1.0 TDZ – 0.0 IAA (1.0667) and 2.0 TDZ – 0.0 IAA (1.5333). The shootings in other combinations were less than 1.0. Considering this study is the first one on in vitro einkorn (*Triticum monococcum* ssp. *monococcum*) wheat production protocol, the results of ours might seem a good start. According to our findings, the 3 best shooting combinations do not consist IAA a derivative of auxin hormone. Therefore, we suggest that the best combination is 0.5 TDZ–0.0 IAA, and IAA does not have an effect on the shooting of einkorn wheat.

KEYWORDS

Auxin, Cytokinin, Einkorn, In vitro, Triticum monococcum ssp. *monococcum*

Poster Session 4

Submission ID: 567

EFFECTS OF DIFFERENT SOWING AND HARVEST TIMES ON YIELD AND ESSENTIAL OIL CONTENT

AYŞE BETÜL AVCI¹, ÖZLEM ALAN¹, R. REFIKA AKÇLALI GIACHINO²

ABSTRACT

Parsley is a biennial plant belonging to the family Apiaceae. In the first year, the plant grows leaves and vegetative structures, and in the second year it produces flowers and then fruits (Ceylan, 1997). Parsley is one of the Mediterranean plants and is found wildly in Spain, Greece, Morocco, Turkey, Algeria and Tunisia. Cultivation of the plant are made commercially in the Mediterranean, Aegean and Marmara Regions and grown in the gardens throughout the country. Leaves and seeds contain essential oil, often the main component of the oil is apiol. Leaves are rich in C and K vitamins, and it used as a diuretic, stomachic, blood pressure promoter. Parsley can be usually harvested 4-8 times in temperate climates, if some special precautions are taken it may be 10-15 times. In arid, hot and cold climate regions, 2-4 harvests can be obtained. In this study, different numbers of harvest were obtained in autumn and spring sowing, and plant height, fresh herb and drug herb yields and essential oil contents were determined. The field research was carried out in 2014 and 2015 years according to the randomized blocks design with three replication in Odemis Vocational School. As a result of the study, 4 harvests were carried out in spring of 2014 sowing and the difference between the harvests was statistically found significant in terms of plant height, fresh herb yield, drug herb yield and essential oil content. While the essential oil content reached its highest value in the second harvest in July, all the other parameters provided the highest yield in the fourth and last harvest in September. The highest values for 2014 were 10.076 kg / da in fresh herb yield, 2171 kg / da in drug herb yield and 0.7% in essential oil content. In autumn sowing of 2015, two harvested could be done and no statistical differences identified in terms of the characteristics examined. In the second year, the highest green herb yield was determined as 1850 kg in decare, while the drug herb yield was 490 kg and the essential oil content was recorded as 0.6%. According to the results of the study, it is considered that spring cultivation for the production of parsley for Odemis conditions can be recommended in terms of yield and essential oil content.

KEYWORDS

plant height, fresh herb yield, drug herb yield, essential oil content

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Poster Session 4

Submission ID: 568

ASSESSMENT OF UNIVERSITY STUDENTS' THOUGHTS ABOUT FUNCTIONAL FOODS

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ABSTRACT

Functional foods are nutrient and nutritional compounds that contribute to prevention of diseases and the maintenance of healthier life and which have positive effects on the physiological and metabolic functions of body, as well as meeting basic nutrient needs such as carbohydrates, proteins, fats and vitamins and minerals in the body. This study was planned and conducted to determine the knowledge and thoughts of university students about functional foods. A questionnaire developed by researchers on functional foods and characteristics, was applied to the students. The questionnaire consists of four parts. In the first part of questionnaire, demographic information of students and the source of information obtained, in the second part opinions of students about functional foods, in the third part whether some foods are functional or not and in the last part Functional Food Information Form, developed by researchers consisting of 28 questions, was applied in order to measure the knowledge of students about functional foods. Students got 1 point for each question correctly answered and 0 point for each question answered incorrectly. The lowest and highest score that can be taken from these questions is 0 and 28, respectively. Students who scored 14 and over are classified as having sufficient knowledge level, those who score lower than 14 are classified as having insufficient knowledge level. The study was carried out on total 150 university students, 104 female and 46 male. Mean age of students was 21.1 ± 1.2 years and mean Body Mass Index (BMI) was 21.7 ± 3.2 kg / m². According to BMI classification of university students, 74.0% are normal, 14.0% are weak and 12.0% are overweight/obese. 54.3% and 51.9% of male and female students have information previously about functional foods, respectively. Students declared that information about functional foods was obtained from internet (44.3%), television (20.3%) and doctor-dietitian (17.7%). More than half of students have no information about price, content, effects, production and purpose of functional foods and majority of students think that functional foods are accessible, delicious and harmless for health and should be consumed by healthy persons. Majority of students think nutrients containing low-calorie, dietary fiber content, diabetic (no sugar) foods, enriched foods, probiotic and prebiotics and foods containing omega-3, omega-6, omega-9 as functional foods and they are undecided about low-sodium, gluten-free, antiaging and echinacea, ginkgo ginseng-added foods, and think that energy drinks are not functional foods. Mean score of male students regarding the Functional Food Information Form was 18.1 ± 7.3 while mean score of female students was 19.5 ± 6.8 and difference was not statistically significant. Mean scores of students classified as weak, normal and obese according to BMI were respectively 18.7 ± 6.9 ; 19.1 ± 6.6 and 18.5 ± 6.5 and difference was not statistically significant. Functional food knowledge score of students with normal body weight is higher than weak and obese students. It was determined that 78.0% of the students had sufficient knowledge and 22.0% had insufficient knowledge level. In the direction of the data obtained in the study, majority of university students have sufficient knowledge about functional foods but they do not exactly know

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functional foods in the market. It is thought that mass media such as the internet and television are effective in increasing level of knowledge about healthy nutrition and functional foods of students and it may be important that health professionals who has right information in internet and television for public health.

KEYWORDS

Functional foods, Healthy eating, University students

Poster Session 4

Submission ID: 569

EFFECT OF THERMOTOLERANCE ACQUISITION AND DIETARY ORANGE PEEL ESSENTIAL OIL ON HISTOMORPHOMETRY AND SEROTONIN-IMMUNOREACTIVE ENDOCRINE CELL NUMBERS IN THE SMALL INTESTINES OF HEAT STRESSED JAPANESE QUAILS

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ABSTRACT

Heat stress in animals is the main problem of productivity and causes significant economic losses. Many methods such as feed removal, changing the feed content, various feed supplements, early age thermal conditioning are being tested to protect the animals from adverse effects of heat stress. Today the new technologies in orange juice industry have served us the orange peel essential oil which has antimicrobial, antioxidant and antifungal properties. This study was conducted in order to measure the effects of early period thermal conditioning, feed restriction, supplementation of orange peel essential oil (OEO) into ration or combinations of them on small intestinal morphology and density of serotonin-immunoreactive (IR) endocrine cells (ECs) found in small intestines. 168 7-day-old Japanese quails were divided into six groups of 24-h fasting or thermal conditioning and their subgroups with and without supplementation of OEO (300 ppm) into ration. We determined that fasting and thermal conditioning increased villus height for duodenum in control groups and for jejunum in OEO groups. In addition, we detected that while fasting and thermal conditioning increased villus height/crypt depth (VH/CD) ratio in duodenum and jejunum, these applications did not affect this ratio in ileum. We found that supplementation of OEO into ration increased the number of serotonin-IR ECs in crypts of small intestine. We revealed that early period thermal conditioning increased the number of serotonin-IR ECs in duodenum, jejunum, and ileum especially in groups in which OEO was supplemented into ration. These results indicated that applications of early period thermal conditioning and feed restriction in quails may generally prevent adverse effects caused by heat stress on intestinal morphology and orange peel essential oil supplementation has strengthened these positive effects.

KEYWORDS

Thermotolerance, Orange peel essential oil, Intestinal morphology, Immunohistochemistry, Serotonin

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Poster Session 4

Submission ID: 571

MEDICINAL PLANTS USED IN KEPSUT (BALIKESİR) YARDOP AREAS

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ABSTRACT

The fire, which is always important among the factors damaging the forest, is one of the most important factors that endangering continuity of the forests in our country. For this purpose, YARDOP areas have been established in Turkey. In this study; Planting of medical plants provided the economic contribution of the indigeneous people of the region and the resistance to fire were carried out while it was being built fire-resistant forests in Kepsut (Balıkesir). In the research process, 13 species founded medicinal value were carried out plantings. These species are *Salvia virgata*, *Origanum onites*, *Lavandula angustifolia*, *Rosmarinus officinalis*, *Nerium oleander*, *Rhus coriaria*, *Erica arborea*, *Elaeagnus angustifolia*, *Arbutus unedo*, *Pyrus elaeagnifolia*, *Ficus carica*, *Morus alba*, *Amygdalus communis*. During the 2 years after the planting, by making periodical maintenance of the planted species was observed its development conditions and were provide to adapt of species. As a result, along with served as a barrier to prevent possible forest fires of the planted medicinal species, the local people living in settlements around the trial area were provided benefited for economic and medicinal purposes from these plants.

KEYWORDS

Medicinal plants, YARDOP, Kepsut, Economic, Fire-resistant.

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Poster Session 4

Submission ID: 572

THE INVESTIGATION OF GENOTOXIC EFFECTS PLANTAGO OVATA FROSSK. AND LINUM USITATISSIMUM L. VIA ALLIUM CEPA L. TEST

ALEVCAN KAPLAN¹

ABSTRACT

With people heading towards nature, interest in medical and aromatic plants is increasing day by day. Medical aromatic plants are plants that have been used as medicine since the beginning of human history to prevent and cure diseases and maintain good health. However, unconscious widespread use, can adversely affect human health. Although plants are considered to be reliable since they are natural, but does not mean that the natural is always reliable. *Plantago ovata* Frossk. and *Linum usitassimum* L., which have laxative effect, have been used widely in recent times. *Plantago ovata* Frossk. plant has plenty of soluble fibre in the seed coat. In the seeds of the *Linum usitassimum* L. plant, there is also high amount of mucilage from the soluble fibres. In this study, genotoxic effects of these species have been examined using *Allium cepa* L. root tip meristem cells. As treatment group, three concentrations (For *Plantago ovata* Frossk.; 1/2 C:7.2 mg/mL, 1C:14.4 mg/mL and 2C:28.8 mg/mL; For *Linum usitassimum* L.; 1/2 C:20 mg/mL, 1C:40 mg/mL ve 2C:80 mg/mL) and as negative control distilled water, as positive control methyl methane sulfonate (MMS) was used. To evaluated the mitotic index and abnormalities of onion root tip meristem cells, 1000 cells per group including controls were counted. *Plantago ovata* Frossk. and *Linum usitassimum* L. plants were found to cause changes in the rates of mitotic index and chromosome anomalies relative to the negative control in *A. cepa* L. due to the increased concentration.

KEYWORDS

Plantago ovata Frossk., *Linum usitatissimum* L., *Allium cepa*, Genotoxicity, Mitotic index.

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Poster Session 4

Submission ID: 573

UTILIZATION OF GRAPE SEEDS AS AN ANTIOXIDANT SOURCE IN BISCUIT PRODUCTION

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ABSTRACT

Nowadays, researches are being done to produce functional foods (those containing various factors to ensure or enhance health). One of the most important of these studies is the food products enriched with antioxidants. In this study, grape seeds were added in the biscuit formulation at different rates (0, 2.5, 5, 7.5 and 10%). The chemical (ash, moisture, crude fat, total phenolic content), physical (diameter, thickness, color) and sensory properties of biscuits enriched with grape seeds were investigated. As a result of the analysis, it was observed that as the proportion of grape seeds increases, thickness and spread ratios of the biscuits increased. L*, a* and b* values of the biscuits ranged from 57.36 to 73.49, from 1.94 to 6.29 and from 17.45 to 26.36 respectively. With the addition of grape seeds, the value of L* decreased and the biscuit color darkened. When grape seeds supplement level increased in biscuit formulation, a* values increased significantly. Ash values of biscuits ranged from 1.41 to 2.68%. The highest ash value was obtained with the biscuits enriched with 10 % grape seed. Grape seed is a strong antioxidant, it is supported with total phenolic content of biscuits enriched with grape seed. At the end of the sensory analysis, it was decided that the most desirable biscuit was the biscuit containing 2.5% grape seed.

KEYWORDS

grape seed, antioxidant, biscuit, functional food

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Poster Session 4

Submission ID: 576

EFFECTS OF OZONE ON THE FATTY ACID COMPOSITION OF COMMERCIAL HAZELNUT

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ABSTRACT

Corylus avellana L. (hazelnut) is one of the most popular tree nuts worldwide and ranks second in tree nut production after almond. *Corylus avellana* kernels are consumed all over the world, not only as a fruit but also in a diversity of manufactured food products. Hazelnuts (*Corylus avellana* L.) are mainly produced in Turkey, Italy, Spain and the USA. Hazelnut has beneficial effects for human diet, i.e. consuming hazelnuts prevents cholesterol based atherosclerosis and ischemic cardiovascular diseases. In this study, we analyzed the fatty acid composition of four commercial hazelnut products. Total fat was extracted with n-hexane (60°C) for 6 h using a Soxhlet extractor and FAMES were prepared using boron trifluoride in methanol (20% of BF₃ in methanol) and extracted with n-hexane and then analyzed by GC. We found monounsaturated and polyunsaturated fatty acids were the most predominant fatty acids in hazelnut oil extracted from samples. A one way analysis of variance revealed significant differences for fatty acid content between hazelnut products. The most abundant fatty acid in hazelnut was oleic acid (C18:1). Furthermore, after ozonation process of these oils obtained from *Corylus avellana*, GC-MS analyses were performed and the percentages of their chemical contents were compared with the data before ozonation.

KEYWORDS

Corylus avellana L., Hazelnut, GC-MS, ozonation

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Poster Session 4

Submission ID: 579

INVESTIGATION OF OPERATION PARAMETERS INFLUENCE ON BIOACTIVE INGREDIENTS OF ENDEMIC *SIDERITIS MONTANA* L. OF TURKEY

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ABSTRACT

Sideritis montana L., an endemic species of Turkey is a genus of *Sideritis* L. belonging to the family of Lamiaceae. It is generally consumed as herbal tea and folk medicine as locally named “yayla çayı (mountain tea)” in Turkey. It has so many beneficial effects such as antiinflammatory, antistress, analgesic, antibacterial and antioxidant activity due to its biophenols having a strong free radical scavenging capacity as well as diterpenes and essential oils. In this study, Response Surface Method (RSM) has been applied in order to generate a mathematical model and optimize the response value as well as design of experiments. The aim of this study is to present the effects of operation parameters on total polyphenols (TP), total flavonoids (TF) and antioxidant activity (AA) of endemic *Sideritis montana* L. extract obtained by homogenizer-assisted extraction (HAE).

KEYWORDS

Sideritis species; natural antioxidants; polyphenols; RSM; optimization

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Poster Session 4

Submission ID: 580

ANTIOXIDANT PROPERTIES AND PHENOLIC COMPONENTS OF DELPHINIUM FORMOSUM

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ABSTRACT

Delphinium formosum Boiss. & Huet is an endemic plant with 26 species in Turkey and it is a perennial, herbaceous, flowering plant (Meriçli et al., 1996). In this study, the antioxidant properties and phenolic components were determined of methanolic extracts of flower, leaf and stem parts of plant collected from 1500 m altitude from Sürmene country of Trabzon. It was determined that the total amount of phenolic substance for flower 677 mg GAE/100 g, for leaf 601 mg GAE/100 g and for body 99 mg GAE/100 g body. The ferric (III) reducing antioxidant power (FRAP) were found for flower, leaf and stem as 21.17; 54.05; 9.89 µM Trolox®/g dry plant respectively. Thirteen phenolic compounds were analyzed by reversed-phase high performance liquid chromatography (RP-HPLC-UV). As a result of this study, it was determined that the plant, especially the flower part, is much richer than phenolic acid and flavanoids. References Meriçli. F., Meriçli. A. H., Becker. H., Ulubelen. A., Özden. S., Dürüst. N., & Tanker. M. (1996). Norditerpenoid alkaloids from Delphinium formosum. Phytochemistry. 42 (4) 1249-1251.

KEYWORDS

Delphinium formosum, antioxidant, phenolic compound

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Poster Session 4

Submission ID: 582

ASSESSMENT OF HERBAL MIXED TEA IN TERMS OF HUMAN HEALTH AND WEIGHT LOSS DIET

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ABSTRACT

Obesity is one of the chief problem increasing dramatically and causes many health problems all over the world. People living in countries where obesity is a problem have been significantly aware of the importance of weight control for a healthy life and an aesthetic appearance. Like other health problems, the use of medicinal plants is preferred by many people who want to lose weight. Herbal teas are the first choice of the people because of their ease of use and easy availability. The content of 24 kinds of herbal mixed tea belonging to 14 brands, which are commonly used in Turkey and emphasize weight loss feature with the expression of "Form", have been investigated. A total of 65 different herbal preparations (flowers, seeds, leaves, etc.) were used in herbal mixed tea, varying from their mix 5 to 15 different herb, and it was seen, their proportion are not indicated on most of the labels. Rosemary, fennel, cassia, mate, erica and cherry stalk are the most common, milk thistle, diffuse knapweed, daffodil flower, shepherd obliterated, elderberry fruit, garlic, coriander, chia seed, guarana, golden flower, sweet blackberry leaf, chicory, buckthorn, juniper seed, beech tree leaf, calendula, mulberry leaf, lemon grass are the most rarely used plants. Unconscious use of certain infusions of plants can have significant adverse effects on health and It is a fact their mixed lead to more serious health problems. For example; scientific studies have been carried out to indicate that cassia may cause hepatitis, cherry stalk to kidney stones, bacillary gastroenteritis and nephritis, especially in prolonged and intensive use. It should be considered that use of herbal mixed tea can be harmful for people of all age who don't know about proper dosage, adverse effect etc. In the direction of research, control and advice of scientists studying in this area, more comprehensive and enlightening label information should be prepared due to prevent from adverse effect of these teas on health.

KEYWORDS

Herbal mixture, tea, diet, obesity

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Poster Session 4

Submission ID: 583

PHENOLIC COMPONENTS AND ANTIOXIDANT ACTIVITY OF PRIMULA VULGARIS (PRIMROSE)

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ABSTRACT

Primula vulgaris subsp. Is a wild species that opens in the first spring months and the flowers are dried and consumed as tea. It is a herbaceous species found in the Eastern Black Sea Region, which is yellow, white, pink and purple in color, according to the acidity of the cultivated soil. In the study, the antioxidant activities and phenolic compositions of the methanolic extracts of *Primula vulgaris* collected from Uğurlu Village of Trabzon in March 2017 were determined. As antioxidant parameters, total amount of phenolic, flavonoid, condensed tannin contents, ferric (III) reduction/antioxidant power (FRAP) tests were studied. Total amount of phenolic content were determined for flower 2498 mg GAE / 100 g dry sample, for leaf 838 mg GAE / 100 g dry sample. 14 phenolic compounds were analyzed by reverse phase-high performance liquid chromatography (RP-HPLC-UV) using liquid-liquid extraction method. Vanilic acid, epicatechin, p-coumaric acid, ferulic acid, daidzein and luteolin were found in varying amounts in both parts of the *primula vulgaris* plant, while gallic acid, protocatechuic acid, catechin, caffeic acid and rutin could not be detected in both parts. As a result, the presence of antioxidant activity at different levels in both flower and leaf parts of the methanol extracts of *Primula vulgaris* was determined.

KEYWORDS

Primula vulgaris subsp, FRAP, condensed tannin, phenolic

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Poster Session 4

Submission ID: 584

EVALUATION OF HEALTH SCHOOL STUDENTS' CONSUMER PERCEPTION ON FUNCTIONAL FOODS

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ABSTRACT

Introduction: Functional food is the food made by adding bioactive substances obtained completely from natural foods into the foods we consume in daily life. Changing lifestyles have led changes in the health effects expected by the consumers from the foods and in the nutrition field. This study was designed to evaluate consumer perception of students, who were studying in Bitlis Eren University School of Health, regarding functional foods. **Material and Method:** This cross-sectional study was conducted between November and December 2016. The population of the study consisted of 480 students who were actively enrolled in Bitlis Eren University School of Health. 74.6% (n = 358) of the population were reached. The questionnaire used in the study involved questions for determining socio-demographic characteristics such as Do you have knowledge about functional foods?, Which ones are functional foods?. A Likert-type scale, which was developed by Kopuz (2011) regarding the consumer perception on functional foods, consists of 18 items and is scored between 1-5, was used. This scale consists of 4 subscales. The Cronbach's alpha reliability coefficient of the scale is $\alpha = .909$. While judgment mean score between 1-1.49 signifies the lowest level of participation, those ranging between 1.50-2.49 signify a low level of participation, those ranging between 2.50-3.49 signify the indecisiveness level, those ranging between 3.50-4.49 signify the positive opinion level for the judgment and those ranging between 4.50-5.00 signify the highest participation level. Frequency tables, Anova analysis, Independent samples t test, and Tukey test were used in the statistical evaluation of the data. Permission was obtained from the Ethics Committee of Bitlis Eren University in order to conduct the study. **Results:** 358 students including 199 males and 159 females participated in the study and their average age was 20.88 ± 2.18 . 36% of the students were studying in Nutrition and Dietetics and 38.3% of them were studying in Nursing department, and 25.7% were studying in Social Work Department. 72.1% of the students had no knowledge about functional foods and 69.3% wanted to be informed about functional foods. 27.9% of the students consumed functional food. When the distribution of the students based on their knowledge about functional foods was examined; it was found that while the low-calorie foods are known as functional foods with the highest rate of 50.0%, those increasing immune system and delaying aging (physical and mental) were known correctly with the rate of 19.6% and the foods whose fatty acids of omega 3, omega 6, and omega 9 as essential fatty acids were increased were correctly known with the rate of 18.7%. foods they had least knowledge about were modified margarine products containing phytosterols and plant stanol esters with the rate of 9.5%, gluten-free foods with the rate of 13.7% and the foods containing herbal additives such as Echinacea, ginseng, and common st john's wort with the rate of 13.7% rate, respectively. When the mean score and standard deviations of the 4 subscales for functional foods were examined, the

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perception regarding the effect on health was 3.204 ± 0.651 , consumption perception was 3.365 ± 0.643 , necessity of use and product prestige perception was 2.600 ± 0.634 , physical quality perception was 3.616 ± 0.644 . As is seen, while the participants' physical quality perception on functional products was observed as "I agree", their perceptions on the effect on health, consumption and necessity of use and product prestige perception were observed as "Undecided" or in other words neither positive nor negative. In terms of necessity of use and product prestige perception level of functional foods, perception of the students in Nutrition and Dietetics Department was found to be significantly higher than those studying in Nursing Department ($p = 0.011$). The mean scores for the perception on the effect of the functional foods on health, necessity of use and the product prestige perception, were found to be significantly higher in the first class than the other classes ($p = 0.001$, $p = 0.001$, respectively). When the result of the independent samples t test was examined, it was determined that there was no significant difference among students according to their gender and place of residence in terms of the 4 subscales of the functional foods ($p > 0.05$). Conclusion and Recommendations: According to the results of this study, it was observed that on the effect on health and the necessity of use and product prestige perception status of the students studying in the school of health about the functional foods was at undecided level. Since the students in the Department of Nutrition and Dietetics took the course of functional foods in their curriculum and it is a subject related to their field, their perceptions were found to be higher than the students in the other departments. In general, elective courses about functional foods can be added to all students or functional foods can be introduced via seminars given by experts in order to increase awareness.

KEYWORDS

Functional Food, Perception, Health

Poster Session 4

Submission ID: 585

ANATOMICAL PROPERTIES OF CRENOSCIADIUM SIIFOLIUM BOISS. & HELDR. (APIACEAE) ENDEMIC TO TURKEY

NAGEHAN SALTAN¹, AYLAY KAYA¹

ABSTRACT

ANATOMICAL PROPERTIES OF CRENOSCIADIUM SIIFOLIUM BOISS. & HELDR. (APIACEAE) ENDEMIC TO TURKEY Nagehan SALTAN and Ayla KAYA Anadolu University, Faculty of Pharmacy, Department of Pharmaceutical Botany, 26470, Eskişehir, Turkey (ndagdeviren@anadolu.edu.tr) The Apiaceae is one of the best known families of flowering plants which contains a number of aromatic plants. The member of this family Crenosciadium Boiss. is represented by only one species (Crenosciadium siifolium Boiss. et. Heldr.) in the Flora of Turkey [1]. It is an endemic, eastern Mediterranean element and hazard category (EN) which is collected from Kütahya, Turkey. C. siifolium is locally known as "kırkısrak" in the regions where they grow [2]. It grows damp meadows and stream sides in Pinus nigra forest [1]. In this anatomical study, the internal structure of this plant is illuminated with the section taken from stem, leaves and fruits for the first time. According to our anatomical results; stem is round and ribbed. 13-17 vascular bundle are observed in the stem. The pith is empty. The leaves are bifacial. The different types of stomata (anomocytic, anisocytic and paracytic) are observed on both of leaf surfaces. Fruit is schizocarp which has two mericarps. Each mericarp has 3-5 vittae on the vallecule and, 6-8 on the commissural. Vascular bundles are located on rib. References [1] Hedge, C. and Lamond J. M. Crenosciadium, In: Davis, P.H. et al. (eds.), Flora of Turkey and the East Aegean Islands, University Press, Edinburgh, 1972, Vol. 4, p. 473. [2] Güner, A, Aslan, S, Ekim, T, Vural, M, Babaç, MT. Türkiye Bitkileri Listesi (Damarlı Bitkiler), Nezahat Gökyiğit Botanik Bahçesi ve Flora Araştırmaları Derneği Yayını, İstanbul, 2012, sf 70.

KEYWORDS

Crenosciadium siifolium, Apiaceae, Anatomy.

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¹ANADOLU ÜNİVERSİTESİ ECZACILIK FAKÜLTESİ FARMASÖTİK BOTANİK ABD

Poster Session 4

Submission ID: 586

DISTRIBUTION OF HULLED WHEATS IN THE WESTERN BLACK SEA REGION WITH THEIR MACRO - MICRO ELEMENT CONTENTS AND SOIL CHARACTERISTICS

HURİ MELEK YAMAN¹, FATMA PEHLİVAN KARAKAŞ¹, BÜLENT ORDU², NUSRET ZENCİRCİ¹

ABSTRACT

Distribution of Hulled Wheats in the Western Black Sea Region with Their Macro - Micro Element Contents and Soil Characteristics Batı Karadeniz bölgesi Siyez ve Gernik Buğdaylarının Coğrafi Dağılımı ile Yetiştirildiği Toprakların ve Danelerinin Makro ve Mikro Element İçerikleri Huri Melek YAMAN¹, Fatma PEHLİVAN KARAKAŞ^{1,2}, Bülent ORDU³, Nusret Zencirci¹ 1Abant İzzet Baysal University, Department of Biology, Faculty of Science and Art, Bolu 2Abant İzzet Baysal University, Department of Field Crops, Faculty of Agriculture and Natural Sciences, Bolu 3Abant İzzet Baysal Univ., Economical and Commercial Faculty, Business Dept., Bolu Email: hurimelek14@hotmail.com Keywords: Einkorn, Emmer, Ethnobotany, Macro and Micro Elements. SUMMARY Wheat is a basic product of human nutrition. This importance has led to an intensive breeding for yield, quality, and disease resistance. Unfortunately, Turkey, one of the wheat origin countries, does not yield enough. The excavations named the first wheat states in Anatolia. i.e. Soli-Pompeiopolis, Mezitli, Mersin had the forked cypress wheat from the Neolithic period. Hulled einkorn (*Triticum monococum* ssp *monococum*) and emmer (*Triticum dicocum* Schrank.) are the ancestors. The hulled character comes from two differences in the spike structure: the semi-brittle joints between the rachis internodes and the toughened glumes. Hulled state means other important characteristics. The thick and tough glumes protect to the grains everywhere: resistance to disease, tolerance under arid and poor soil conditions. Moreover, they are more nutritious, possess lower glycemic indices and less gluten. Einkorn and emmer are consumed mostly as bulgur, bread, macaroni, and cookies. These products have some advantages: no cholesterol and no unsaturated fat, folic acid content, and accelerated nutrient absorption. MATERIALS AND METHODS Questionnaires to obtain data on demography, agriculture, and trade in the western Black Sea regions were applied, after participants were informed about the study, to all possible participants (n=50) in the area. Grain and soil samples were collected from five cities (Karabük, Kastamonu, Samsun, Sinop, and Bolu) and analyzed for macro (N, P, K) and micro (Fe, Cu, Mn, Zn) elements. Moreover, energy, carbohydrate, crude protein, crude oil, raw fiber, total sugar, starch, raw ash, hectoliter, and thousand-grain weight were also determined. The survey as well as grain and soil sample collections were carried out in parallel. Descriptive and advanced statistical analysis were run, of which some were given here. RESULTS Previous studies have shown that there is a strong relationship between diet and chronic vascular diseases, especially obesity, diabetes, and cancer, which could be avoided by some changes in the diet. Therefore, the intake of healthy food such as einkorn and emmer, with better nutrient content and lower glycemic indexes might decrease the risks related to these chronic diseases. We can summarize the study under three headings: 1. Ethnobotanical background Data on demography, agriculture, and

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trade of hulled wheats indicated that 1) hulled wheats were grown in distant mountainous areas, 2) the yields were low, and 3) the trade was limited. 2. Grain and soil macro-micro element contents, The grains and the soils of hulled wheats diversified for macro and micro elements in the region. N, P, Fe, Cu, Mn, and Zn were the highest in einkorn while K is in emmer. Carbohydrate, energy, starch, crude oil, and thousand-grain weight were higher in emmer whereas crude protein, hectoliter, and total sugar in einkorn. The higher Ca, K, Mg, Na, Mn, Zn, Cu, and Fe in the soil, the higher they were in the grain. 3. Grains' some physical and chemical quality characteristics. Grains of hulled wheats in the western Black sea differentiated most physical and chemical quality characteristics. In conclusion, we can say that hulled wheats in the western Black sea diversify for macro-micro elements and quality characteristics. Therefore, they are good for healthier foods and potential genitors in wheat quality breeding programs.

KEYWORDS

Einkorn, Emmer, Ethnobotany, Macro and Micro Elements

Poster Session 4

Submission ID: 587

PHENOLIC PROFILE AND ANTIOXIDANT AND ANTIMICROBIAL ACTIVITIES OF EXTRACTS OF LEAVES AND FLOWERS OF OENOTHERA GLAZIOVIANA

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ABSTRACT

The present study aimed to determine the potential of extracts of *Oenothera glazioviana* flowers and leaves as a source of antioxidant and antimicrobial compounds. After the drying and grinding of the samples, soxhlet extraction (with methanol) were used to prepare the extracts. Total phenolic compounds (using the Folin–Ciocalteu method), antimicrobial activity (microwell-dilution assay) and antioxidant activity (by DPPH and FRAP assays) were used to evaluate for these extracts. The individual phenolic compounds found in the extracts were characterized and quantified by RP-HPLC analysis. *Oenothera glazioviana* leaves showed the highest total phenolic value at 299.23 mg GAE/g extract. Gallic acid was the most abundant phenolic compounds in the leaf and flower extracts (17.42 and 14.57 mg phenolic/g dry sample, respectively). Leaves exhibited the highest antioxidant activity in the DPPH assay at IC₅₀: 5.47 µg/mL. Extract of the leaves exhibited more ferric reducing power than the flower extract (1496 µM FeSO₄.7H₂O equivalent/g extract). Flower extract showed no antimicrobial activity against test microorganisms. But leaf extract showed moderate antimicrobial activity against microorganisms especially *Yersinia pseudotuberculosis* and *Staphylococcus aureus* (MIC: 125 µg/mL). In conclusion, these results indicate that the *Oenothera glazioviana* leaves can be considered as a promising source of phenolic compounds, with appreciable antioxidant properties and moderate antimicrobial activity.

KEYWORDS

antioxidant, antimicrobial, phenolic, Oenothera glazioviana

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Poster Session 4

Submission ID: 588

IN VITRO EFFICACY OF PLANT EXTRACTS AND USAGE OF SOME PLANT EXTRACTS AS SEED TREATMENTS TO CONTROL BACTERIAL SPEAK DISEASE OF TOMATO

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ABSTRACT

Tomato (*Solanum lycopersicum*) is the most grown and consumed vegetable crop in the world. Seed-borne bacterial pathogen *Pseudomonas syringae* pv. *tomato* (Pst) is one of the most important bacterial diseases of tomatoes. Pathogen-free seeds should be used to manage the disease. In this study, twenty five individual medical and aromatic plants including *Allium sativum*, *Allium cepa*, *Aloe vera* L., *Anethum graveolens* L., *Calendula officinalis*, *Coriandrum sativum*, *Cuminum cyminum*, *Echinacea purpurea*, *Eucalyptus* sp., *Foeniculum vulgare* Mill., *Lavandula angustifolia*, *Myrtus communi* L., *Matricaria chamomilla*, *Mentha piperita*, *Nerium oleander*, *Ocimum basilicum* L., *Origanum onites*, *Pimpinella anisum*, *Raphanus sativus*, *Rosmarinus officinalis*, *Salvia officinalis*, *Sinapsis nigra*, *Thymus vulgaris*, *Thymbra spicata* L. subsp. *spicata*, *Zingiber officinale* were included to test their antibacterial activity against bacterial speck in vitro conditions using efficacy paper disc method and seed treatments. Coriander (*Coriandrum sativum*), eucalyptus (*Eucalyptus* sp.) and garlic (*Allium sativum* cv *Kastamonu*) has inhibited Pst development giving mean inhibition zones of 6.5 mm, 2.0 mm and 1.5 mm, respectively. For seed experiments, extracts from coriander, eucalyptus, *Kastamonu* garlic, zinger (*Zingiber officinale*), Istanbul thyme (*Origanum vulgare* subsp. *hirtum*) and Izmir thyme (*Origanum onites*) were used. Artificially inoculated tomato seeds were soaked into aqueous plants extracts for extra thirty minutes on a rotary shaker at 150 rpm/min. Treated seeds were sown in plastic trays containing sterilized soil as five replicates consisting of 30 seeds per tray. Immersed tomato seeds were subsequently air-dried at room temperature (20±2°C) for a day. After seed germinations, seedlings were controlled daily for disease development. The experiments were evaluated when the necrotic symptoms appeared on the cotyledons of the control plants. Disease incidence was recorded according to symptom presence/absence on cotyledons. Disease severity was evaluated by 0-3 scale: 0: no disease symptom; 1: 1 spot on cotyledons; 2: 2-3 spots on cotyledons; 3: 4 and more spots on cotyledons. Our results showed that all six tested plant extracts and all of mix plant extract reduced disease incidence and disease severity. Garlic, Izmir thyme, Istanbul thyme and mix extracts reduced the disease incidence and severity among 53.5-99.3% and 58.8-99.4%, respectively. Aqueous garlic extract was the most effective seed treatments. It's concluded that endemic plant extracts are promising for bacterial disease management and can be adopted to organic seed producers. This study was financed by Cukurova University with the project number FDK-2015-4071.

KEYWORDS

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Pseudomonas syringae pv. *tomato*, seed treatment, antibacterial effect, plant extracts, organic farming

Poster Session 4

Submission ID: 589

COMPARATIVE STUDY OF ANTIOXIDANT, ANTIMICROBIAL PROPERTIES OF FOUR PLANT COLLECTED FROM ERZINCAN, TURKEY.

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ABSTRACT

In recent years, plant secondary metabolites (natural products) are attracting attention due to their use as natural preservatives in different fields. Because of their various biological activities, phenolic compounds can be used in the treatment of a wide variety of diseases such as cancers, cardiovascular diseases and neurodegenerative diseases. Because of this, many plant species have been used for years as medicinal plants worldwide. The aim of this research is to investigate the antioxidant and antimicrobial activities of methanolic extracts of 4 endemic plants, namely *Onobrychis nitida* Boiss., *Hedysarum cappadocicum* Boiss., *Ebenus laguroides* Boiss. var. *laguroides* and *Ebenus macrophylla* Jaub. & Spach, collected from Erzincan, Turkey. Antioxidant activities of samples were examined by DPPH and FRAP assay and their phenolic content was determined by using the Folin – Ciocalteu method. Moreover, the antimicrobial activity of methanolic extracts against bacterial strains and yeast isolates were determined based on a microwell dilution method and minimal inhibition concentration (MIC) values ($\mu\text{g/mL}$) were calculated. None of the plant extracts showed significant antibacterial activity against tested microorganisms. Tested plant extracts showed similar antimicrobial effects against microorganisms except *P. aeruginosa*, *A. baumannii*, *E. cloacea* and *C. albicans*. MIC values varied from 1250 to 5000 $\mu\text{g/mL}$. The highest antimicrobial activity was detected in *Hedysarum cappadocicum* against *B. subtilis* and *S. aureus* with a MIC value of 1250 $\mu\text{g/mL}$. All plant extracts had inhibitory activity on DPPH radicals. IC₅₀ values of *O. nitida*, *H. cappadocicum*, *E. laguroides* var. *laguroides* and *E. macrophylla* were determined as 77.29 $\mu\text{g/mL}$, 108.32 $\mu\text{g/mL}$, 88 $\mu\text{g/mL}$ and 69.45 $\mu\text{g/mL}$, respectively. The ability of the extracts to reduce iron(III) to iron(II) ions were determined as 519, 429, 719, 572 $\mu\text{M FeSO}_4 \cdot 7\text{H}_2\text{O}$ equivalent, respectively. The total phenolic contents of plants were defined to be in the range of 50.96 ± 1.01 – 101.73 ± 0.52 mg GAE/g extract. Phenolic content was found to be higher in *O. nitida* extracts (101.73 GAE/g extract) compared to all other plants.

KEYWORDS

antioxidant, antimicrobial, phenolic, HPLC

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¹GİRESUN ÜNİVERSİTESİ

Poster Session 4

Submission ID: 591

USE OF OLIVE LEAF AS MEDICAL AND AROMATIC PLANT

KÜBRA DOĞAN¹, FATİH TÖRNÜK¹

ABSTRACT

Use of Olive Leaf as a Medical and Aromatic Plant Kübra Dođan, Fatih Törnük Yıldız Technical University, Faculty Of Chemical/Metallurgical Engineering, Department Of Food Engineering, 34210 Istanbul,Turkey E-Posta: dogannkubraaa@gmail.com Olive leaf has been used in folk medicine for centuries. It is known that it was used as a remedy against outbreaks of malaria (malaria) in the 1800s. The American Cancer Research Center states that olive leaf is one of the important plantspossessing antimicrobial and antiviral effects. Till now, 69 books, >1.800 articles, magazines and various papers related to phytochemical properties of olive leaf have been published. The largest consumer of olive leaf in the world is USA while China is the biggestolive leaf producer country. It is known that olive leaf is naturally resistant against microorganisms and insect attacks. The medicinal effect of olive leaf was first reported as a fever reducer in 1854, after which antihypertensive and antibacterial effects were reported. According to the researches made, olive leaf contains active constituents more than 100. The most abundant active ingredient is oleuropein that is one of the polyphenolic antioxidants and converted to " calcium elenolate " after digestion in the body. In vitro antibacterial, antifungal and antiviral properties of elonic (oleonic-oleanolic) acid have been proven. Extracts of olive leaves have been demonstrated to have potential to be used as a functional food additive and pharmaceutical agent due to their antimicrobial, antifungal and antioxidant properties. Vasodilator, hypotensive, antirheumatic, diuretic, hypoglycemic and anti-cholesterol properties of the extracts obtained from olive leaves have also been well established. In this study, bioactive constituents of olive leaves and their pharmaceutical and food related beneficial properties were discussed. Keywords: olive leaf, medicinal, aromatic, bioactive compounds

KEYWORDS

olive leaf, medicinal, aromatic, bioactive compounds

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Poster Session 4

Submission ID: 592

OPTIMIZATION OF SUPERCRITICAL CO₂ EXTRACTION CONDITIONS OF MICROMERIA FRUTICOSA L. DRUCE FOR PULEGONE

MURAT TÜRK¹, E. SULTAN GIRAY², SALIHA KIRICI³, SERKAN KARACA², DENİZ YILDIRIM¹

ABSTRACT

ABSTRACT Response surface methodology (RSM) is a collection of statistical and mathematical techniques based on the multivariate non-linear model and useful for developing, improving, and optimizing processes. RSM provides better advantages than classical methods for optimization of parameters and includes three steps: (1) designing an experiment and executing of designed experiment, (2) calculating the coefficients of proposed mathematical model, and (3) testing the model adequacy and predicting the response. *Micromeria fruticosa* is a widely distributed perennial herb, growing up to 20-60 cm high and smelling of peppermint when crushed and found in the rocky areas of the southern and eastern Anatolia region of Turkey. Members of the genus *Micromeria* are typical Mediterranean plants. Pulegone is found to be the major component and an allelochemical widely occurring in plants of the Labiatae family. Pulegone has a pleasant mint like odor and therefore is used, directly or as a constituent of a variety of essential oils, in beverages and processed foods for human consumption. The toxic potential of pulegone to humans has been recognized following several reports of ingestion of large quantities of pennyroyal oil intended to cause abortion. In this study, *Micromeria fruticosa* L. Druce, was extracted by supercritical CO₂ and the extraction conditions were optimized by using response surface methodology for pulegone, one of the major content of *Micromeria fruticosa* L. Druce. The independent parameters were selected as temperature, pressure and extraction time. The mathematical relationship between the response and independent parameters were explained by quadratic equation. For supercritical CO₂ extraction, the statistically significant relationship was obtained between the experimental results and predicted results. According to the results of Anova for the proposed quadratic model the determination coefficient (R²) was 0.91 and the optimal extraction conditions were as follows: extraction temperature, 46.77 oC, and extraction pressure, 238.92 atm and extraction time 18.00 min.

KEYWORDS

Supercritical CO₂ extraction, Response surface methodology, Pulegone

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Poster Session 4

Submission ID: 593

OPTIMIZATION OF SUB-CRITICAL WATER EXTRACTION CONDITIONS OF MICROMERIA FRUTICOSA L. DRUCE USING RESPONSE SURFACE METHODOLOGY FOR PULEGONE AMOUNT

MURAT TÜRK¹, E. SULTAN GIRAY², SALIHA KIRICI³, SERKAN KARACA², DENİZ YILDIRIM¹

ABSTRACT

ABSTRACT Members of the genus *Micromeria* are typical Mediterranean plants. This genus is represented in Turkey by 14 species and 22 taxa, 12 of them being endemic. *Micromeria fruticosa* is a widely distributed perennial herb, growing up to 20-60 cm high and smelling of peppermint when crushed, found in the rocky areas of the southern and eastern Anatolia region of Turkey, and is used as a spice, a flavoring agent, and as herbal tea in the region, with names such as "taşnanesi,". They have also been reported to have sedative, anesthetic, antiseptic, abortifacient, antirheumatic, and CNS-stimulant properties and have been used in the treatment of heart disorders and colds. Response surface methodology (RSM) is an effective and powerful statistical method for optimizing the extraction process while reducing the number of experimental trials required. In this study, the optimal extraction conditions for pulegone were determined using response surface methodology. Pulegone was fundamental component of sub-critical water extracts of *Micromeria fruticosa* L. Druce. The independent parameters which are effective on the yield of pulegone were selected such as temperature, pressure and time. The mathematical relationship between the responses and independent parameters were explained by quadratic equation. However, the statistically significant relationship was not obtained between the experimental results and predicted results for subcritical water extraction. According to the results of Anova for the proposed quadratic model the determination coefficient (R²) was 0.54 and optimal extraction conditions were as follows: extraction temperature 150 oC, extraction pressure 150 atm and extraction time 21.11 min.

KEYWORDS

Subcritical water extraction, Response surface methodology, Micromeria Fruticosa L. Druce, Pulegone

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Poster Session 4

Submission ID: 594

EFFECT OF DIFFERENT EXTRACTION METHODS (SUBCRITICAL, SUPERCRITICAL AND CONVENTIONAL) ON CHEMICAL COMPOSITION OF MICROMERIA FRUTICOSA L. DRUCE: A COMPARISON STUDY

E. SULTAN GIRAY¹, MURAT TÜRK², SALIHA KIRICI³, SERKAN KARACA¹

ABSTRACT

ABSTRACT *Micromeria fruticosa* is belong to Lamiaceae family. Members of the genus *Micromeria* are typical Mediterranean plants. This genus is represented in Turkey by 14 species and 22 taxa, 12 of them being endemic. *Micromeria fruticosa* consists of four subspecies, spp. *Giresunica* P. H. Davis, spp. *brachycalyx* P. H. Davis, ssp. *Serpyllifolia* P. H. Davis, and spp. *giresunica* P. H. Davis, and spp. *barbarta* Bois&Kotschy in Turkey. Subsp. *Serpyllifolia* is grown naturally in Northeast Anatolia and is used as a spice, a flavoring agent, and as herbal tea in the region, with names such as "taşnanesi," while subsp. *brachycalyx* grows naturally in South Anatolia. They have also been reported to have sedative, anesthetic, antiseptic, abortifacient, antirheumatic, and CNS-stimulant properties and have been used in the treatment of heart disorders and colds. The conventional methods used to prepare essential oils are steam distillation and solvent extraction. Steam distillation is also the most commonly used method to prepare essential oils on a commercial basis. However, there are a few adjustable parameters to control the selectivity of these methods. Therefore, developing alternative extraction methods with better selectivity and efficiency are highly desirable. Recently, more efficient extraction methods, such as supercritical fluid extraction (SCFE) have been used for the isolation of organic compounds from various natural products. This technique has recently been used for the isolation of essential oils from plants. However, CO₂ is unable to dissolve some moderately polar compounds such as alcohols, esters, and ketones. In recent years, a continuous and static subcritical water extraction technique has been used for the extraction of essential oils. Subcritical water extraction uses water as an extractant at temperatures between 100 and 374 °C and at a pressure high enough to maintain the liquid state. It has been reported that subcritical water is a powerful alternative for the extraction of essential oils because it enables a rapid extraction and the use of low working temperatures. The volatile extract composition of *Micromeria fruticosa* L. obtained by subcritical water extraction (sbcWE), supercritical carbon dioxide extraction (scCO₂E), subcritical ethanol extraction (sbcEtOHE), organic solvent extraction under ultrasonic irradiation (USE), hydrodistillation (HD), and organic solvent extraction (OSE) were estimated by gas chromatography-mass spectrometry (GC-MS). A total of 122 components by sbcWE, 230 components by scCO₂E, 68 components by sbcEtOHE, 62 components by USE, 112 components by HD and 50 components by OSE were detected. The major component characterized in the essential oils was pulegone and other main components were determined as isomenthone p-menthone, and piperitenone. The essential oils of sbcEtOHE were poor for monoterpenes. However, the oxygenated compounds were found in higher amounts. The quality of the oil can be linked to the amount of oxygenated compounds present in it.

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According to these facts, subcritical water and subcritical ethanol can be suggested as good extractants for the extraction of essential oils from *Micromeria fruticosa* L.

KEYWORDS

Subcritical and Supercritical Extraction, Micromeria Fruticosa L. Druce Chemical composition of essential oils

Poster Session 4

Submission ID: 595

EFFECT OF DIFFERENT EXTRACTION METHODS (SUBCRITICAL, SUPERCRITICAL, AND CONVENTIONAL) ON ANTIOXIDANT ACTIVITY OF MICROMERIA FRUTICOSA L. DRUCE: A COMPARISON STUDY

E. SULTAN GIRAY¹, MURAT TÜRK², SALIHA KIRICI³, SERKAN KARACA¹

ABSTRACT

ABSTRACT *Micromeria fruticosa* is a widely distributed perennial herb, growing up to 20-60 cm high and smelling of peppermint when crushed, found in the rocky areas of the southern and eastern Anatolia region of Turkey. Members of the genus *Micromeria* are typical mediterranean plants. This genus is represented in Turkey by 14 species and 22 taxa, 12 of them being endemic. *Micromeria fruticosa* consists of four subspecies, spp. *Giresunica* P. H. Davis, spp. *brachycalyx* P. H. Davis, ssp. *Serpyllifolia* P. H. Davis, and spp. *giresunica* P. H. Davis, and spp. *barbarta* Bois & Kotschy in Turkey. Subsp. *Serpyllifolia* is grown naturally in Northeast Anatolia and is used as a spice, a flavoring agent, and as herbal tea in the region, with names such as "taş nanesi," while subsp *brachycalyx* grows naturally in South Anatolia. They have also been reported to have sedative, anesthetic, antiseptic, abortifacient, antirheumatic, and CNS-stimulant properties and have been used in the treatment of heart disorders and colds. Antioxidant supplements or antioxidant-containing foods may be used to help reduction of singlet oxidative damage in the human body. There are two basic categories of antioxidants, namely synthetic and natural ones. However, the use of these synthetic antioxidants has been restricted in some countries, mainly because they are suspected to be carcinogenic. Many researchers have focused on natural antioxidants and in the plant kingdom numerous crude extract and pure natural compounds were previously reported to have antioxidant properties. Therefore, the development and utilization of more effective antioxidants of natural origin are desired. *Micromeria fruticosa* L. extracts were obtained by subcritical water extraction (sbcWE), supercritical carbon dioxide extraction (scCO₂E), subcritical ethanol extraction (sbcEtOHE), organic solvent extraction under ultrasonic irradiation (USE), hydro distillation (HD), and organic solvent extraction (OSE). Essential oils and extracts of all extraction methods were also investigated for antioxidant activity using three different methods (DPPH, Cuprac, Folin). Extracts of sbcEtOHE displayed the most antioxidant activity in the three different methods.

KEYWORDS

Antioxidant activity, DPPH, Cuprac, Folin, Micromeria Fruticosa L. Druce

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Poster Session 4

Submission ID: 596

KONYA MEDICAL AND AROMATIC PLANT PARK

AYSUN ÖZTÜRK¹, CEYLANI KILIÇ¹

ABSTRACT

Plants that are important in human life have been a source of life throughout history and will continue to exist. In addition to being used as a medicine, the basic requirement of human beings in the formation of oxygen when you are showing the building block it improves the quality by cleaning the air in terms of cities. While the cities that are trying to be green are planning, the use of medical and aromatic plants has begun to be formed in the landscaping areas. A park project in which only medical and aromatic plants are located has been prepared in the together association of the Ministry of Water and Forestry, Konya Metropolitan Municipality and Necmettin Erbakan University. These plants, which provide therapeutic and visual feasts, do not only effect people and animals. They also play an important role in the interaction of the plant with another plant and in the destruction of microorganisms. In the past şifahane have been established in the treatment of diseases and plants have been tortured at certain rates in order to be transformed into medication and then tried to be obtained by beating and boiling. According to the kind of the disease, the plants are collected. Occasionally dry, sometimes fresh, occasionally stored in special rooms dedicated to this job as an aromatic-volatile oil. However, the recognition of plants today, until it is collected and converted into medication the attarlars who undertake this work and the medical and aromatic plant selling are serious problems at the point of information flow in the places. So, to revitalize the history and to introduce the plants, growing and by in the name of transfer of usage forms as well as a park project will be realized will be realized. This project details to be 1500 m² air-conditioned greenhouse (hmax. 10m, single floor); production, exhibition and sale, laboratory to be composed of three parts. In addition to sera, plant drying chambers, product packaging chambers, seed storage chambers, cold storage, aromatic oil production plant planning will also take place. Another building is the flower (botanical), restaurant 1200m² (400m² x 3 floor); will be presented as a three- floor flower shaped (outer covering, covering) motified structure and bistro cafe on the first floor, regional-herbal product sales departments, second floor conference room, the third floor is the restaurant (eat and salad made with the products produced in the field) will serve as. Apart from these, children's play area (2048 m²), fitness area (195 m²), basketball court (495 m²), volleyball court (595 m²), football field (705 m²), parking lot (17000 m²), total production area (2575 m²), total rubber area (2243 m²), total cast rubber area (2290 m²), total printed concrete (20500 m²), total locked parquet area (17000 m²), total building area (81500 m²) available. Administrative building (dining hall, WC, shower room, mosque, meeting room, administrative staff room) will be made for both the visitors and the staff for meet and coordinate their needs. In the name of reviving the vineyards of Meram which is the historical texture of the city, 400 m² (200 m² x 2 floor) Meram vineyard house is planned as a two storey house to be according to the original architecture. In addition, has been hosting the silk bug in the past in accordance with the historical texture of the our kadim city the symbolically mulberry trees will be planted in the park to

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raising silk bug. For the protection of the park, the access control building is planned as 50 m² (25 m² x 2 part). The total green area of the park is 73130 m², the total area is 154630 m².

KEYWORDS

Medical, Aromatic, Plant, Production, Park

Poster Session 4

Submission ID: 597

ANTIOXIDANT ACTIVITIES OF OCIMUM BASILICUM AND THYMBRA SPICATA FROM AMASYA

OMER ERTURK¹, GULER INCI TANRIKULU², CEREN YAVUZ², ZEHRA CAN³, HILAL EBRU CAKIR⁴

ABSTRACT

Abstract It has been known that essential oil and extracts from aromatic plants contain phenolic compounds. These compounds have redox properties and those properties make them good antioxidants acting as reducing agent, hydrogen donors and singlet oxygen quenchers. The use of antioxidant from natural sources has become popular as slowing down ageing process and treatment of human disease such as cancer. Two aromatic plants, *Thymbra spicata* (thyme) and *Ocimum basilicum* (basil), are commonly consumed in Amasya. In this study, it has been investigated antioxidant capacity and chemical composition of essential oil and extracts of thyme and basil. The polyphenolic contents of samples were used in four different ways; Total Phenolic Contents (TPC)¹, Total Flavonoid Contents (TFC)² and Condensed Tannin (CT)³ and ferric reducing antioxidant power (FRAP)⁴. Moreover chemical composition were analysed by RP-HPLC. It was observed that antioxidant capacity of the thyme was higher than that of basil. In addition, fourteen phenolic compounds were identified in thyme and basil. Results showed that thyme and basil are rich in phenolic compounds and antioxidant properties. Our results are expected to contribute knowledge about new drug development. References : [1] Singleton, V. L., Rossi, J. L. (1965). Colorimetry of total phenolics with phosphomolybdic phosphotungstic acid reagents, *American Society for Enology Viticulture* 16, 144-158. [2] Fukumoto, L.R., Mazza, G.(2000). Assessing antioxidant and prooxidant activities of phenolic compounds, *Journal of Agricultural and Food Chemistry* 48, 3597-3604. [3] Julkunen-Titton, R. (1985). Phenolic constituents in the leaves of northern willows: methods for the analysis of certain phenolics, *Journal of Agricultural and Food Chemistry* 33, 213-217. [4] Benzie, I.F.F., Strain, J.J. (1999). Ferric Reducing/Antioxidant Power Assay: Direct measure of total antioxidant activity of biological fluids and modified version for simultaneous measurement of total antioxidant power and ascorbic acid concentration, In *Methods in Enzymology*. 299, 15-27.

KEYWORDS

Antioxidant activities, HPLC, Lamiaceae

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Poster Session 4

Submission ID: 598

CHEMICAL COMPOSITION OF ROSACEAE

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ABSTRACT

Abstract The genus Rosa (Rosaceae) includes about 200 species worldwide, approximately 20 species in Yeşilirmak Basin, distributing across from cold temperate to the subtropical regions. Many of this species are well known as fruits and some species are used for spice and folk medicine. The aim of this paper is to review the most recent literature regarding biological activities of Rosaceae chemicals. Chemical investigations on Rosaceae have revealed the presence of flavonoids, triterpenoids, steroids, tannins, ligans and polysaccharides. Especially gallic acid, philoridzin, catechin have been reported from Rosaceae¹. These compounds are powerful antioxidants and have attracted increased interest in the last years. For example, anti-microbial activity and anti-biofilm activity of gallic acid on Staphilococcus aureus were investigated². The other flavonoid, phloridzin, have been commonly investigated by mammalian physiologists since its ability to block sodium-linked glucose transport and block renal re-absorption of glucose in the kidney³. Moreover health-benefits of catechin have been reported in terms of anti-inflammatory, anti-hypertensive, anti-obesity and anti-carcinogenic^{4,5}. The phenolic constituents of Rosaceae family have been commonly researched. However, our knowledge is still primitive state. Therefore many different studies should be performed to identify the effects of chemical composition. References : [1] Yan, G., Li, S., Hu, J., Zhai, X., Ma, W., Li, N. (2014). Phenolic constituents from the roots of Rosa laevigata (Rosaceae), Biochemical Systematics and Ecology 52, 23-26. [2] Liu, M., Wu, X., Li, J., Liu, L., Zhang, R., Shao, D., Du, X. (2017). The specific anti-biofilm effect of gallic acid on Staphylococcus aureus by regulating the expression of the ica operon, Food Control 73, 613-618. [3] Ehrenkranz, J.R.L., Lewis, N.G., Kahn, C.R., Roth, J. (2005). Phlorizin: a review, Diabetes/Metabolism Research and Reviews 21, 31-38. [4] Loke, W.M., Proudfoot, J.M., Hodgson, J.M., McKinley, A.J., Hime, N., Magat, M., Stocker, R., Croft, K.D. (2010). Specific dietary polyphenols attenuate athero-sclerosis in apolipoprotein E-knockout mice by alleviating inflammation and endothelial dysfunction, Arteriosclerosis, Thrombosis, Vascular Biology 30, 749-757. [5] Ma, H., Huang, X., Li, Q., Guan, Y., Yuan, F., Zhang, Y. (2011). ATP-dependent potassium channels and mitochondrial permeability transition pores play roles in the cardioprotection of theaflavin in young rat, Journal of Physiological Science 61, 337-342.

KEYWORDS

Catechin, gallic acid, phloridzin, Rosaceae.

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Poster Session 4

Submission ID: 599

ESTIMATION OF YIELD AT DIFFERENT HARVESTING TIMES IN FENUGREEC PLANTS (*TRIGONELLA FOENUM GRAECUM L.*)

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ABSTRACT

Fenugreec is grown in warm regions in our country as winter or early spring, and cold regions as summer. It is a plant with many advantages with its root caused being a legume plant. Fenugreec is used in many different forms. In Kırşehir province, planting has begun to increase in recent years. This study was conducted under the ecological conditions of Kırşehir province in 2016. Local population was used as material in the study. In the study conducted with three replications for random blocks, it was determined that four different time periods were used before flowering, flowering time, after flowering and before harvesting. Plant height, fresh and dry yields were determined before and after the plants were formed. Subsequently, protein analysis was performed in the laboratory to determine the effect of protein time on shape time. Variance analysis was performed to determine the difference in form times for the obtained data. We also tried to estimate the yields of plants using the Richards model. As a result, except for the protein ratio, all of them were obtained after the flowering after flowering, and the amount of protein was obtained in the period of seed formation. The statistical significance of the difference in form times is significant. Estimates of yields are made very close to real values.

KEYWORDS

Fenugreec, harvest time, Richards models, yield

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Poster Session 4

Submission ID: 600

PROJECTION STUDY ON THE FUTURE OF THYME FARMING IN TURKEY

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ABSTRACT

Thyme is an important drug and spice plants. There are many different uses. Due to these characteristics, the cultivation area and production in our country continues to increase every year. Turkey provides about 70% of the world's thyme trade. Planned production always guarantees the success of production. Therefore, it is possible to make programming in thyme farming for the future. In this study, it is aimed to predict how the cultivation of thyme will change in terms of planting, production and yield in the coming years. For this, data were used on the organs of sowing, production and yield of 2004-2016 obtained from Turkish Statistical Institute. While it has been determined how they can develop in the last 15 years with the time series analyzes, it has been tried to determine how the future regeneration prediction might change. In the time series analysis $Y = 45059 + 5141,26t$ for the sowing area, $Y = 5809,15 + 664,703t$ for the production value and $Y = 127,885 + 0,17033t$ for the yield. According to this, while there is an increase in sowing area and production amount, it is seen that there is not a significant change in productivity. It is estimated that the yield and area of production will increase some more in the coming years in the estimation of the regression set up for the future, but it is estimated that productivity will not increase again.

KEYWORDS

Thyme, projection, time series, estimation

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Poster Session 4

Submission ID: 601

ETNOBOTANIC STUDIES FOR ANKARA INSTITUTION OF THE FOREST DIRECTORATE

AYDIN YUMUŞ¹, MUSTAFA ÖZKAYA¹

ABSTRACT

In this study, the use of wild plants that naturally grown at boundaries of Ankara Regional Directorate of Forestry that have been consumed as folk medicine, food and spices and used for other purposes (to prepare ornaments and household goods, as incense and protect against nazar, to prepare soap and using as a stain) have been investigated. Institution employees of Ankara, Çankırı, Kırşehir provinces and Eskipazar district of Karabük, ethnobotanical research done in the regions where lining places of local people who uses most of plants for therapeutic purposes and as food. Eventually, it has been found that uses as 37 spices at folk medicine, as 16 spices at food and one spice for other purposes. Which part of the plant is used for what purposes (medicine, food e.g.) and it is used for treatment how it is prepared and which effect is used to obtain has been questioned. This plants have been scientifically identification and local names, used parts and usage patterns and the places where the plants are identified has been given in tabular form. Obtained findings were compared with literature knowledge.

KEYWORDS

Ethnobotany, folk medicine, medical plants, food, spices

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Poster Session 4

Submission ID: 603

GC-MS ANALYSIS OF THE GRAPEFRUIT (CITRUS PARADISI L.) PEEL ESSENTIAL OILS OBTAINED BY HYDRODISTILLATION

FATMA TULAY TUGCU¹, KADIR TURHAN¹, YUSUF CAN GERÇEK², GÜL CEVAHİR ÖZ²

ABSTRACT

Grapefruit (*Citrus paradisi* L.) belongs to the Citrus genus, a taxa of flowering plants in the family Rutaceae. Grapefruit has attracted much attention in recent years owing to its nutritional and antioxidant properties. Furthermore, it has been known that citrus compounds have antiviral, anticancer, anti-inflammatory, antiallergenic and analgesic activities. Citrus essential oils have been applied in many products, such as foods, beverages, cosmetics and medicines, as flavouring agents as well as for aromatherapy. In this study, the chemical composition of the essential oil (EO) obtained by hydrodistillation from the peel of grapefruit (*Citrus Paradisi* L.) was analyzed by gas chromatography/mass spectrometry (GC/MS). Twenty-five components were identified in the essential oils. Limonene was observed as dominant respectively. β -Pinene, linalool, α -terpinene and the other minor components were also detected.

KEYWORDS

Citrus paradisi L., Grapefruit, GC-MS, Citrus essential oil

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Poster Session 4

Submission ID: 604

THE EFFECTS OF OZONATION ON THE CHEMICAL COMPOSITION OF ESSENTIAL OILS FROM CITRUS BERGAMIA RISSO

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ABSTRACT

Bergamot is the common name for *Citrus bergamia* Risso, a plant belonging to the Rutaceae family (subfamily Esperidea). The peel is smooth and thin, whereas the pulp is slightly green–yellow, with an acidic and bitter taste. Among them, bergamot (*Citrus bergamia* Risso) peel oil is the most valuable essential oil due to its unique fragrance and freshness. The essence composed of a volatile part and non-volatile fraction find application in the cosmetic, pharmaceutical and food industries. In recent years, ozonated vegetable oils are used effectively in industries such as food, cosmetics, cleaning, pharmaceuticals and medical. It is suggested that ozone increases the shelf life of the oils and makes their chemical content more effective in treatments. Oxygenated terpene contents found in the plants attract attention because of their antimicrobial activities and antioxidant properties. *Citrus bergamia* Risso, is from citrus family that is rich in d-limonene and oxygenated terpene content. For this purpose, chemical analyses were carried out through GC-MS by obtaining volatile oils from *Citrus bergamia*'s shells using claevenger method. From the spectrums obtained consequently to the analysis, terpene, flavonoid, alkaloid contents and percentages of *Citrus bergamia* were determined. After ozonation process of these volatile oils obtained from *Citrus bergamia*, GC-MS analyses were performed and the percentages of their chemical contents were compared with the data before ozonation. It was observed that ozonation increased the percentages of phenolic compounds. In line with these results, it is thought that *Citrus bergamia* which demonstrate strong antimicrobial activity augment their activities by being ozonated.

KEYWORDS

Citrus bergamia Risso, bergamot peel oil, essential oil, GC-MS, Ozonation

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Poster Session 4

Submission ID: 606

HERBAL GALACTAGOGUES THAT INCREASE THE BREAST MILK

MERYEM AYRANCI¹, HAKAN VATANSEV², HATICE FEYZA AKBULUT³

ABSTRACT

Nowadays, breast milk is accepted as the gold standard of infant feeding. Despite many efforts to facilitate breastfeeding, it has been shown that numerous social and cultural factors, such as cultural norms and the social environment, affect successful breastfeeding rates. The most common cause reported by mothers of the early cessation of breastfeeding around the world is the perception that their mother is inadequate in breast milk production. Poor breastfeeding techniques, inadequate mammary gland tissue and maternal hormonal imbalances cause insufficient milk supply. To overcome this inadequacy, the use of galactagogues is usually considered in mothers whose milk production is still inadequate following training and other strategies provided by breastfeeding consultants. Galactagogues are substances that are thought to help in the initiation, continuation or reproduction of breast milk production. Galactagogues contain natural pharmaceutical ingredients and herbal supplements. Some herbal galactagogues are proposed by the public and health professionals as alternatives to medical pharmaceutical agents in terms of increasing the breast milk. It is estimated that 15% of women lactating in the United States and internationally 43% use herbal galactagogues. It has been reported that cause of the using herbal galactagogues is seen as a reinforcement as part of the perception and tradition of inadequate milk supply. Although the mechanisms of action of herbs and foods used to enhance the breastmilk are unknown, traditional experiences and beliefs suggest that they are effective and reliable. Among the herbal galactagogues they used to enhance the breastfeeding performance of participants were fenugreek (*Trigonella foenum-graecum*), blessed thistle (*Cnicus benedictus*), fennel (*Foeniculum vulgare*), goat's rue (*Galega officinalis*), nettle (*Urtica dioica*), blackthorn berry (*Prunus spinosa*), torbangun (*Coleus amboinicus*) and shatavari (*Asparagus racemosus*). However, there is no standard information on the use of these herbs, their dosages and their composition. There is a need for well-designed and well-conducted clinical trials that address limitations to determine the efficacy of these herbs in lactating women.

KEYWORDS

Galactagogue, breast milk, breastfeeding, nutrition.

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Poster Session 4

Submission ID: 607

INVESTIGATION OF ANTIMICROBIAL ACTIVITIES OF LAURUS NOBILIS ESSENTIAL OILS

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ABSTRACT

This study aimed to research antimicrobial activity of essential oils and evaluate two different oil solution preparation method. For this purpose, essential oil that get from leaves of *Laurus nobilis* L. spread in Mediterranean plant area has been used. Oil solutions which prepared by using different emulsion concentration (0-5-10-25-50 uL/mL) and different volumes of pure oil (5-10-20-30 uL) applied to bacteria (*Escherichia coli*, *Salmonella*, *Staphylococcus aureus*) using Kirby-Bauer disc diffusion method. After contamination of bacteria to Nutrient agar in petri dishes, these discs were put on agar and incubated 24 hours at 37 °C. Each application had three petri dishes and each petri had three discs. Antimicrobial activity of oils determined according to zone diameter that formed around antimicrobial disc. Although emulsion concentrations have not been effective on any bacteria, all pure oil concentrations have found effective. 20 and 30 ul pure essential oil doses have found most effective. However this doses have not statistically differences on disc zone diameter. So it can be considered that sufficient dose was 20 ul pure essential oil.

KEYWORDS

Laurus nobilis, Laurel, Essential oils, Antimicrobial

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Poster Session 4

Submission ID: 608

PESTIL (GRAPE LEATHER) ENRICHED WITH WHEAT AND SOY FLOUR: SOME PHYSIOCHEMICAL AND SENSORY PROPERTIES

FERHAT YÜKSEL¹, TOLGA GUDELEK¹, CEMALETTİN BALTACI¹

ABSTRACT

The aim of the current study was to investigate the some physiochemical and sensory properties of Pestil (grape leather) enriched with wheat (1th sample) and soy (2th sample) flour and wheat:soy flour (3th sample) mixture. Protein, ash and moisture content of samples were determined and sensory analysis was carrying out with non-education thirty panelist group members from the University of Gumushane. The moisture content of samples was determined 9.78, 11.06 and 9.96, respectively. Addition of soy flour increased the protein and ash values of the samples. The protein values was 6.27, 16.97 and 9.78 and ash values of sample was 0.76, 1.98, 1.33, respectively. As can be seen from these values, the protein and moisture values of sample increased and they speculated that higher moisture values could be due to protein level in mixture. The increase of soy flours in the mixture a significantly affected to sensory score ($p<0.05$). The sensory properties of sample decreased with the increase of soy flour while the sensory properties of sample increased with addition of wheat flour in the formulation. Nevertheless, some sensory scores such as hardness and adhesiveness had taken positive sensory scores with using soy flour in the formulation. The hardness values were 5.26, 3.43 and 4.26, respectively. The highest score of overall acceptability of sample was 5.37 in 1th sample and the lowest score was 3.30 in 2th sample. The current results could be important for the Pestil production and the wheat and soy flour could be used in Pestil formulation. However, the soy flour amount needs to study in the Pestil formulation at next future.

KEYWORDS

Pestil (grape leather), wheat and soy flour, physiochemical and sensory analysis.

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Poster Session 4

Submission ID: 609

USE OF CINNAMON IN TYPE 2 DIABETIC PATIENTS

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ABSTRACT

Diabetes mellitus (DM) is one of the most common endocrine disorders in the world. The global diabetes prevalence has increased rapidly along with the growing number of sedentary lifestyles and this has been described by the World Health Organization (WHO) as an epidemic. According to the International Diabetes Federation (IDF), the number of diabetic patients in the world in 2013 is estimated to be 382 million, and in 2035 this figure is expected to reach 592 million. Although this is not so different in Turkey, Turkey has become one of the countries with the highest incidence of diabetes, and the prevalence of diabetes has risen to 13.7% with a very rapid increase in 12 years. Herbal treatments are one of the most commonly used complementary and alternative medicine (CAM) methods in the treatment of many diseases. Treatment with plants is the oldest treatment. The most important difference between phytotherapy applications that have been applied in the past and phytotherapy applied in today's medicine is that they are used not for all but useful parts of plants. 80% of people use herbal medicines in a fraction of their lives. Among these herbal therapies, cinnamon has been found to be very important in many studies carried out in recent years. Cinnamon has antioxidant, vasodilator, anti allergic, antiulcerative, antithrombotic, antibacterial properties. Most of the studies concerned Type 2 Diabetes Mellitus, metabolic syndrome and insulin resistance. In this report we aimed to evaluate the importance of CAM in addition to medical treatments in diabetic patients and the effects of using cinnamon among them.

KEYWORDS

Complementary and Alternative Medicine, Diabetes, Cinnamon

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¹SAĐLIK BİLİMLERİ ÜNİVERSİTESİ KONYA EĐİTİM VE ARAŐTIRMA HASTANESİ AİLE HEKİMLİĐİ ANABİLİM DALI

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Poster Session 4

Submission ID: 610

**CHANGES IN BACTERIAL COMMUNITY STRUCTURE IN THE
INTESTINAL MICROBIOTA OF RAINBOW TROUT
(ONCORHYNCHUS MYKISS), FED WITH GARLIC SUPPLEMENTED
DIET BY NEXT-GENERATION SEQUENCING**

MIRAY ETYEMEZ BÜYÜKDEVECİ¹, İBRAHİM DEMIRKALE¹, SUAT DİKEL¹

ABSTRACT

The present study was conducted to test the hypothesis that the bacterial community structure of the intestinal microbiota is altered when rainbow trout are fed with different level of garlic supplemented diet. For this purpose, two hundred and forty fish, weighing between 7 and 9 g, were distributed into 12 cages standing in a concrete pond where four experimental groups were established. Fish were fed with the commercial basal diets supplemented with different levels of garlic (0, 10, 15 and 20 g kg⁻¹ diet) to represent a feeding group of 0 g (=Control), 10 g (=Garlic 1), 15 g (=Garlic 2) and 20 g (=Garlic 3) 100 g⁻¹ of feed for a period of 120 days.. At the end of the feeding trial, all intestine samples of six fish from each tank were removed and then genomic DNA was extracted using the DNeasy Blood & Tissue Kit (Qiagen, Germany). The taxonomic characterization and composition of bacterial communities of rainbow trout intestine among the experimental groups have been explored and compared by using a 16S rRNA approach on an Illumina MiSeq platform. Overall taxonomic characterization of the bacterial community was conducted. For instance, Betaproteobacteria and Gammaproteobacteria were the most abundant classes in the control, whereas Gammaproteobacteria and Bacilli were dominant in fish that received the highest level of garlic in the diet (Garlic 3). A phylogenetic analysis was then carried out to establish the taxonomic affiliation of each OTU (Operational taxonomic unit) and the results demonstrated that the most abundant OTUs were affiliated to the genera Deefgea (15.1 %) and Aeromonas (17.4 %) in the control, whereas members belonging to the genus Aeromonas (44.6 %), and to a lesser extent, the genera Deefgea (13.9 %) and Exiguobacterium (14.8 %) were dominant in the group that received the highest level of garlic (Garlic 3). The results confirm that administration of garlic can induce changes in the bacterial community composition, resulting in distinct communities within the fish intestinal ecosystem.

KEYWORDS

Intestinal microbiota, Rainbow trout, Garlic, Next-generation Sequencing

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¹ÇUKUROVA ÜNİVERSİTESİ SU ÜRÜNLERİ FAKÜLTESİ

Poster Session 4

Submission ID: 611

SCREENING OF BIOLOGICAL ACTIVE INGREDIENTS OF THE MOST CONSUMED BEVERAGES: A COMPARATIVE STUDY

EBRU KURTULBAŞ¹, ELAF ELHUSSEIN¹, SELİN ŞAHİN¹, MEHMET BILGİN¹

ABSTRACT

In this study, biological active ingredients of drip coffee, instant coffee, Turkish coffee, green tea, camomile tea, fennel tea, rose hip tea, apple tea, sage tea, linden tea and black tea were investigated in terms of total phenolic content (TPC), total flavonoid content (TFC) and total antioxidant activity (AA). These beverages are most consumed liquid products in Turkey. Beverages were prepared according to their traditional methods. Total phenolic content (TPC) was expressed as gallic acid equivalent per gram of dried material (mg-GAE/g-DM), total flavonoid content (TFC) was given in Catechin equivalent per gram of dried base (mg-CE/g-DM). Two different radical scavenging activity assays were used to determine the antioxidant capacity of the beverages (mg-TEAC/g-DM). The findings were also evaluated with one-way analysis of variance (ANOVA) test.

KEYWORDS

Tea, coffee, phenolic compounds, flavonoids, antioxidant activity, ANOVA.

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¹İSTANBUL ÜNİVERSİTESİ

Poster Session 4

Submission ID: 612

EVALUATION OF THE THERAPEUTIC POTENTIAL OF ORIGANUM MINUTIFLORUM O. SCHWARZ ET. P.H. DAVIS

CEREN ANLAS¹, FULYA USTUN ALKAN¹, ATAMAN BILGE SARI¹, TULAY BAKIREL¹, OYA USTUNER¹

ABSTRACT

Objective: It is known that failure of chemotherapy with conventional agents as a result of development of resistance and dose-limiting toxicity is a major problem in the clinical management of the cancer. Therefore, medicinal plants are increasingly used as complementary and alternative therapy for improve the outcome of patients suffering from the tumors and to reduce the long-term toxicities associated with the current standard of treatment. The aim of the present study was to investigate the cytotoxic effects of aqueous extract and essential oil of *Origanum minutiflorum* O. Schwarz et. P.H. Davis on normal and cancer cells, also determine the antioxidant activities and contents of total phenolics. **Material and Methods:** Cytotoxic effects of aqueous extract and essential oil of *O. minutiflorum* O. Schwarz et. P.H. Davis on canine mammary tumor cell lines (CMT-U27 and CMT-U309) and Swiss 3T3 albino mouse fibroblast cell line were determined by MTT assay. Also, for the determination of antioxidant activities and total phenolic contents of extract and essential oil DPPH free radical scavenging assay and Folin-Ciocalteu reagent were used, respectively. **Results:** Cytotoxic effects of essential oil obtained from *O. minutiflorum* O. Schwarz et. P.H. Davis were observed on canine mammary tumor cell lines in concentration dependent manner (86.67-7.51% and 74.45-2.42%). Cytotoxic effect of the essential oil was observed only at the highest concentration on Swiss 3T3 albino mouse fibroblast cells. Cytotoxic effect was not determined in aqueous extract. It has been determined that DPPH free radical scavenging activity of essential oil (IC₅₀ 173.09 µg/ml) and extract (IC₅₀ 173.76 µg/ml) were close to each other, while total phenolic content of essential oil (318 mg GAE/g) was higher than the extract (36.59 mg GAE/g). **Conclusion:** The results have indicated that essential oil extracted from *O. minutiflorum* O. Schwarz et. P. H. Davis has shown selective toxic effect on canine mammary tumor cells. Therefore, this essential oil can be investigated as an alternative therapy on cancer treatment.

KEYWORDS

Origanum minutiflorum, cytotoxicity, DPPH, Folin- Ciocalteu, canine mammary tumor

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¹İSTANBUL ÜNİVERSİTESİ VETERİNER FAKÜLTESİ FARMAKOLOJİ VE TOKSİKOLOJİ ANABİLİM DALI

Poster Session 4

Submission ID: 613

BIOACTIVE CONTENTS OF COMMONLY USED SPICES IN TURKEY: A COMPARATIVE STUDY

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ABSTRACT

Globally for thousands of years spices are used not only as food additive, but also for medical and food preservation application. In this study, bioactive contents of 9 various types of commonly used spices in Turkey were compared in order of total phenolic content, total flavonoid content and antioxidant capacity of their extracts. All their methanolic extracts were obtained under suitable conditions of Homogenizer- Assisted Extraction (HAE) method. According to the Folin-Ciocalteu method and Aluminium chloride colorimetric method the amount of total phenolic content (TPC) and total flavonoid content (TFC) were determined. The cupric ion reducing antioxidant capacity (CUPRAC) assay and α , α -diphenyl- β -picrylhydrazyl (DPPH) free radical scavenging method were applied to measure the antioxidant capacity and antioxidant activity (AA %) of extracts. TPC, TFC and AA were expressed in mg of gallic/catechin/trolox equivalent per g of dried weight (mg-GAE/g-DL), (mg-CE/g-DL) and (mg-TEAC/g-DL). Distribution of results was statistically examined by Tukey's range test.

KEYWORDS

Spices; Extraction/Separation; bioactive contents; antioxidant capacity, ANOVA

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Poster Session 4

Submission ID: 614

DISTRIBUTION AND IMPORTANCE OF SÜTÇÜLER PLATEAU THYME (ORIGANUM MINUTIFLORUM) GROWING AS ENDEMICALLY IN ISPARTA PROVINCE

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ABSTRACT

Despite the presence of many aromatic plant species belonging to Lamiaceae family, which is defined as "kekik" in Turkey, the species containing especially volatile oil carvacrol and thymol are accepted as "thyme". Plateau thyme "Origanum minutiflorum" which grows endemically in the mountainous regions of the province of Isparta in the province of Isparta, is among the 10 most important species to be protected. Sütçüler Plateau thyme (Origanum minutiflorum), also known as 'Sütçüler kekiđi' and 'Tota kekiđi' in the thyme market, is an endemic species which is distributed in the Sütçüler region of Isparta province and which is concentrated in wildly dense and exported 80-90% (Özhatay ve ark., 1997). By this study, it is aimed to put forward the applications on distribution, potential, production, contribution to the local people and precautions for continuity of breeding of this thyme species.

KEYWORDS

Origanum minutiflorum, plateau thyme, Sütçüler

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Poster Session 4

Submission ID: 615

ANTIOXIDANT AND ANTIMICROBIAL PROPERTIES OF CISTUS SPECIES

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ABSTRACT

Different parts of *Cistus* species are traditionally used in folk medicine as remedy for several microbial disorders and infections. Therefore, biological activities including antimicrobial and antioxidant capacity of this plant are very important for the use of this plant in different industrial applications such as dietary supplements, functional foods and food packaging etc. In the first part of the study, the crude extract of the *Cistus* leaves was obtained to determine its antioxidant and antimicrobial activities. Then volatile compounds were extracted using hydrodistillation and hexane. The *Cistus* oil was obtained by hydrodistillation of fresh material, using leaves, in an altered Clevenger-type device. Aqueous extract of *Cistus* leaves were neutralized to precipitate the gums. The yield of gum was determined as 1%. Resinoid was obtained after ethanol extraction of the gum. Antibacterial activities of the extract were determined using disc diffusion and micro-dilution assays methods against gram-positive and gram-negative bacteria. The extract of *Cistus* leaves tested and exhibited antibacterial activities by inhibiting one or more microorganisms. The tested plant extract was more active against gram-positive bacteria compared with gram-negative bacteria, depending on the different structural and inherited features of these two groups. Total phenol content of the extract was determined with Folin-ciocalteu method. Total phenolic content of *Cistus* extract was 520 ± 15 mg GAE/ g extract. The water soluble (ACW) and lipid soluble (ACL) antioxidant capacities of the extract were also determined. ACW and ACL of *Cistus* extract was found as 650 ± 80 μ g Ascorbic acid/ mg extract as 540 ± 30 μ g Trolox Equivalent/ mg extract, respectively. In this study there is a clear relationship between the analysis results and important biological activities. In that manner, bioactive natural compounds present in *Cistus* species can be used as natural raw material in some related industrial applications.

KEYWORDS

Cistus genus, Antibacterial activity, Antioxidant Activities

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Poster Session 4

Submission ID: 617

ROOT OF ERYNGIUM CAUCASICUM TRAUTV A VALUABLE SOURCE FOR STEROLS

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ABSTRACT

This study investigates root sterol contents of *E. caucasicum* Trautv which used in Iran as an edible aromatic plant and a traditional remedy for men infertility treatment. Current study presents an overview about root *E. caucasicum* as a valuable source for sterols extraction. Sitosterol, α -spinasterol, stigmastanol, campestanol, sitostanol, and stigmasterol constituted the major compounds of *E. caucasicum* sterol content. The sterol content of the root of *E. caucasicum* ranged from 8.35% to 10.39% of plant total extract. The sitostanol, stigmastanol and stigmasterol constituted the most important sterols. *E. caucasicum* could be considered as a new valuable source for phytosterols extraction.

KEYWORDS

E. caucasicum; Sterol; Gas chromatography-mass spectrometry

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Poster Session 4

Submission ID: 618

HEPATOPROTECTIVE POTENTIAL OF THE ACANTHOLIMON GENUS

ARDALAN PASDARAN¹, ZELİHA SELAMOGLU², ARSALAN PASDARAN³

ABSTRACT

This study investigates the aerial parts hepatoprotective potential of hydro alcoholic (ethanol: water, 70: 30) extract of *Acantholimon cymosum* Bge. The hydro alcoholic extract showed an excellent protective effect on hepatocyte against formaldehyde intoxication with doses 5 and 10 mg. Also in this research isolated the major compounds of hydro alcoholic extract compounds. They were identified as 6-hydroxy-kaempferol and 4-O- α -L-glucopyranoside protocatechuic acid based on spectroscopic methods. Results showed that the hydro alcoholic extract of the *A. cymosum* has a good protective effect on liver in functional and enzymatic levels. Congested sinusoids, congested vessel, and infiltration of inflamed cells (lymphocytes), necrotic sections observed in the control group showed liver injuries. Test group, especially 5, 10 mg ameliorated intoxication of formaldehyde particularly. These effects previously reported from *Acantholimon* genus in animal models. Two major compounds 6-hydroxy-kaempferol and 4-O- α -L-glucopyranoside protocatechuic acid reported for first time from this genus. The results of this investigation and previous studies suggested that *Acantholimon* genus could be considered as a valuable plant for hepatoprotective agent development. Based on phytochemical investigation this activity probably yielded by high phenolic content of this genus plants.

KEYWORDS

Hepatoprotective effect, Acantholimon, liver

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Poster Session 4

Submission ID: 619

CITRIC ACID PRODUCTION AS FUNCTIONAL INGREDIENTS FROM BEET MOLASSES BY A MUTANT ASPERGILLUS NIGER STRAIN

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ABSTRACT

Citric acid, a crystalline powder obtained from fermentations, is a widely used preservative and antioxidant in food, cosmetic, personal care and cleaning products. The citric acid slows the oxidation process that changes the flavor, color and texture of foods exposed to air. Citric acid also slows the oxidation process that causes fats to turn rancid and proteins to deteriorate, which inhibits spoilage of foods and other products that contain fats, proteins and amino acids. The interest in the functional elements (such as citric acid) in foods has increased in recent years. Citric acid have a potential to use as ingredients in the production of functional foods. The microbial production of a unique organic acid and its rapid improvement is a promising method for developing functional foods and nutraceuticals. The citric acid concentration produced by wild strains is too low for economical processes, strain improvement was carried out to develop mutants of parent strain for increased production of the products. However, strain development from wild strains to mutants depends mainly on the process of mutagenesis (physical and chemical agents). Developments of mutant strains which can synthesize higher concentration of citric acid within a short fermentation time and capable of growing at lower pH are preferred. The yield of citric acid was further enhanced by optimizing the fermentation parameters like temperature, pH, incubation time, substrate concentration, nitrogen source and several other ingredients to accumulate citric acid including strains of *A. niger*. The present work, therefore, is concerned to improve a novel *A. niger* mutant strain for production of citric acid by submerged fermentation process using non-treated beet molasses. Commercial production of citric acid utilizes *Aspergillus niger* in an industrial-scale submerged fermentation process. The effects of initial pH, sugar and different ingredients on the citric acid production from non-treated beet molasses were studied in submerged fermentation using *Aspergillus niger* OE55. Maximum amount of citric acid (19.13 and 34.62 g/L) was achieved when the initial pH of fermentation medium was 6.0 from 200 g/L and 150 sugar respectively. Citric acid production and biomass formation continuously increased during fermentation period in the media initially containing 200 g/L sugar. Remaining sugar (from 3.20 to 6.03 g/L) was higher at the end of fermentation in the media initially containing 160 g/L sugar than 200 g/L sugar. Yield of citric acid after 4 days of fermentation were ranged from 0.16 to 0.28 g/g from 160 g/L sugar. The high phosphorus and nitrogen levels stimulated biomass formation and reduced citric acid production. The optimum time of incubation for maximal citric acid production varies both with the sugar concentration in non-treated molasses and fermentation conditions for the novel *A. niger* strain.

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KEYWORDS

Aspergillus niger, Citric acid, Beet molasses, Functional foods

Poster Session 4

Submission ID: 623

STATISTICAL EVALUATION OF ANTIMICROBIAL EFFECTS OF AROMATIC PLANT ESSENTIAL OILS ON BACTERIA, YEASTS AND MOLDS

ANASS ALMOHAMMAD¹, RECEP BINDAK¹, OSMAN ERKMEN¹

ABSTRACT

The aim of this study was to investigate antimicrobial characteristics of aromatic plants (thyme, anisium, mint, chamomile and basil) essential oils on bacteria and fungi. Aromatic plants were obtained from Gaziantep and Halep regions. Essential oils of aromatic plants were extracted by hydrodistillation using a Clevenger apparatus. Antimicrobial activities of essential oils were tested on seven bacterial pathogens, two yeasts and 6 molds. Minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) of essential oils on microorganisms were detected by broth dilution and spread plate methods respectively. The experiments were repeated three times. The significance was set to $p < 0.05$ for the ANOVA value among treatments (MIC/MBC) using t-test, one-way and multiple-range analysis of variance to compare means on the assays. When MIC/MBC differences among tested factors were close to one, this was considered as significant ($p < 0.05$). Antimicrobial effect (MIC/MBC) of five plant essential oils on *E. coli*, *P. aeruginosa*, *L. monocytogenes*, *S. dysenteriae*, *B. cereus*, *K. pneumoniae*, *E. faecalis* and *S. thermophilus* were not significantly different ($p > 0.05$). On the other hand, antimicrobial effects on *S. Typhimurium*, *Y. enterocolitica*, *S. aureus* and *B. subtilis* were significantly different ($p < 0.05$). Antimicrobial values of MIC and MBC of basil on *S. Typhimurium* was lowest while it was higher for thyme. Similarly, MIC and MBC values of anisium indicated on *Y. enterocolitica* was lower and it was higher for thyme. On the other MIC and MBC differences on *S. aureus* and *B. Subtilis* were lower for anisium and higher for mint. Antimicrobial effects of thyme, mint and chamomile essential oils were not significantly different ($p > 0.05$). On the other hand, antimicrobial effects of anisium and basil on tested microorganisms were significantly different ($p < 0.05$). MIC/MBC values of anisium on *E. coli* were lower while they were higher on *Y. enterocolitica*. Basil MIC/MBC values were lower on *E. coli* and higher for *P. aeruginosa*. Antimicrobial effects of essential oils on *S. dysenteriae* obtained from two regions were significantly different ($p < 0.05$), MIC/MBC ratios were higher for essential oils obtained from Gaziantep than Halep. MIC/MBC values of essential oils obtained from Gaziantep and Halep for other bacteria were not significantly different ($p > 0.05$). The lowest MIC/MBC values for plants collected from Syria and Turkey were obtained with thyme. The highest MIC/MBC values for plants collected from Syria and Turkey were obtained with basil. Order of antimicrobial effects (MIC/MBC) of aromatic plant essential oils collected from Syria were thym < chamomile < anisium < mint < basil while it was thyme < chamomile < mint < anisium < basil from Turkey. The antimicrobial effects of five aromatic plants obtained from Syria and Turkey were not statistically significant ($p > 0.05$).

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KEYWORDS

Aromatic plants, Essential oil, Antimicrobial, Bacteria, Fungi

Poster Session 5

Submission ID: 625

INVESTIGATION OF ANTIPROLIFERATIVE EFFECTS OF RHODODENDRON FLOWER EXTRACTS ON NORMAL AND CANCER CELLS

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ABSTRACT

More than 100 cancer types are formed by uncontrolled proliferation of cells in various regions of our body. According to the World Health Organization (WHO), there will be about 19.3 million new cases of cancer in 2025 due to increase in both population and age. Cancer is the second leading cause of death in Turkey. Although many synthetic or herbal medicines have been used in recent years for cancer therapy, a desirable outcome has not been achieved. Among the herbal and plant medicines, Rhododendrons have gained prominence in recent years for their anti-carcinogenic potential, which are in plentiful supply in the Black Sea Region of Turkey. In this study, the cytotoxic effects of various extracts (water, ethyl acetate, and methanol) of Rhododendron on normal (ARPE) and cancer cell lines (HeLa, A549, CRL-2923, HT-29) were investigated. Cytotoxic activity measurement was determined by MTT (3-[4,5-Dimethylthiazol-2-yl]-2,5-diphenyltetrazolium bromide) method. The results indicated that water/DMSO extract showed a dose dependent cytotoxic effect on both normal and transformed cell lines. 600 µg /ml of water soluble extract resulted in 45.72%, 66.97%, 69.94, 32.88% cell death in HeLa, A549, HT-29 and CRL-2923 cell lines, respectively, Whereas non-cancerous ARPE cells were less sensitive to the same concentration since only 20% of these cells were affected. >266 µg /ml or= concentrations of ethyl acetate extract showed dose dependent cytotoxicity for all cell lines. The most sensitive cell line was HT-29, since 118µg /ml of ethyl acetate led to 41. 2% cell death. However, the same concentration of ethyl acetate extract killed only 8.77% of normal cells (ARPE).The concentration of 400 µg /ml of the methanol extract was found to be cytotoxic to all cells. When the concentration of the methanol extract was decreased to 166µg /ml, the cytotoxic effect on all cell lines tested was abolished, except for the HT-29 cells that showed 33.96% cytotoxicity. In the present study, the results demonstrated that total Rhododendron flower extracts induced selective cytotoxic effect on different types of cancer cell lines. Further work is needed to identify the activity of the compound/compounds that may induce selective effect on different type of cancer cells.

KEYWORDS

Rhododendron , Cancer, MTT, A549, HT-29,

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Poster Session 5

Submission ID: 626

ASYMMETRIC REDUCTION OF KETONES BY BIOCATALYSIS USING MEDICINAL AND AROMATIC PLANTS

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ABSTRACT

Chiral compounds are important building blocks in the synthesis of useful chemicals for pharmaceuticals, agrochemicals, and food ingredients. The production of single enantiomers of chiral intermediates has become increasingly important in the pharmaceutical industry¹. Asymmetric syntheses of chiral alcohols have found wide application in the production of drugs, agrochemicals, flavours and pigments. These alcohols may be obtained by enantioselective reduction of prochiral ketones². The catalysts for the asymmetric reduction of ketones can be classified into two categories: chemical and biological methodologies.³ This study aimed to develop novel green procedures for the synthesis of optically active alcohols. Enantiomerically pure 1-phenylethanol was produced via asymmetric bioreduction of acetophenone. The bioreduction of the keto group was performed using ginger (*Zingiber officinale*), fennel (*Foeniculum vulgare*), coriander (*Coriandrum sativum*) as biocatalyst, obtained from local market. The bioreduction method presented allows chiral phenyl alcohols to be obtained with a very good enantioselectivity by using a methodology which is more environmentally friendly than classical reductions of prochiral ketones. In conclusion, optically active chiral alcohols with excellent good enantiomeric excesses (99.9-78%) were synthesized using ginger (*Zingiber officinale*) to be a promising biocatalyst for the production of key intermediates.

KEYWORDS

Bioreduction, Biocatalysis, medicinal and aromatic plants, enantiomeric excess

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Poster Session 5

Submission ID: 628

EVALUATION OF MEDICAL AND AROMATIC PLANTS FOR FOOD SAFETY

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ABSTRACT

Medical and aromatic plants are a large group of plants that have differences in terms of their use and growing conditions. The food products obtained from the plants in this community have attracted consumers and become popular. The increasing use of medicinal and aromatic plants in the food sector is due to their antimicrobial, antioxidant and functional properties. Plants that we call medical and aromatic in our country contain a large number of species and are used as food additives, herbal tea, spices and food supplies in the food sector. Some of these plants, which are consumed in various product forms in our country, are obtained from natural sources. According to World Health Organization (WHO) data; 80% of the medical and aromatic plants used in different parts of the world are collected from nature. It has become evident that the increasing number of these plant communities have to pass through certain stages and legal arrangements should be made before reaching the consumer. In order to ensure the food safety of the medical and aromatic plants used in the food sector studies are carried out by the Ministry of Food, Agriculture, and Livestock in Turkey, the European Food Safety Authority (EFSA) in the European Union countries, the United States Food and Drug Administration (FDA) in the USA and such legal authorities. The correct identification of the names of medicinal and aromatic plants and doing sales under this standard are among the first points to be considered in terms of food safety. Another issue that needs to be considered in this respect is that these crops collected do not harm human health, they are produced and consumed in healthy conditions, they are not physically, chemically or microbiologically contaminated, and do not have pest problems. In addition, inadequate drying, inadequate personal hygiene, and unsuitable storage conditions are among the issues to be considered. For example, the use of plan sifters and aerial cleaners, metal detectors before the packaging process is considered as an effective step in removing physical contamination such as stones and soil. In this study, it was aimed to determine the chemical, physical and biological contamination within the scope of food safety, to evaluate the precautions to be taken and to evaluate human health before the medical and aromatic plants reach the consumption stage.

KEYWORDS

aromatic plant, biological contamination, physical contamination, chemical contamination, medical plant

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Poster Session 5

Submission ID: 629

SOME PROPERTIES OF COLOCASIA ESCULENTA (TARO) STARCH AS A FUNCTIONAL COMPONENT

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ABSTRACT

Abstract: Taro (*Colocasia esculenta*) a member of the Araceae family is a tropical and sub-tropical climate plant and its tuber frequently consumed in many countries due to its high nutritional value. In our country, it is widely grown and consumed in districts of Mersin province. The taro tuber has a rich starch content and therefore has a great potential as a source of starch and carbohydrates. In this study, the various properties of taro starch and the influence of different hydrocolloids (guar gum, xanthan gum and mixture of these gums) at different concentrations (0.5 and 1%) on the pasting properties of the starch was investigated because hydrocolloids are used to improve functional properties of starches. The starch was isolated from taro tubers which were obtained from Anamur district of Mersin. When the morphological structures of the starch granules were examined, it was found that they had an irregularly shape, polygonal structure and the average size of the starch granules varied from 0.5 to 3 μm . The crystallographic structure of starch displayed A-type XRD pattern. The total starch content of the taro starch was 84.29%, the resistant starch was 3.14% and the amylose content was 9.92%. The amylose content of the taro starches was found to be lower than potato and rice starch. The low level of amylose makes taro starches more hydrolysable when compared to starches with high level of amylose. The moisture, protein, ash and fat contents of starch were 11.42, 1.29, 1.39 and 0.11% respectively. The L*, a* and b* values of the starch were found as 90.87, 2.19, 4.71 respectively. The swelling power of starches increased according as starch suspension heated from 60 to 90°C, and swelling power was 14.22 g/g at 90°C. When the pasting characteristic of the taro starch were analyzed, addition of hydrocolloids significantly affected the pasting parameters of the taro starch. As the increase of xanthan and guar gum concentrations significantly increased the peak viscosity, final viscosity, holding strength, breakdown viscosity and trough viscosity parameters. Guar gum had more dominant effect when compared with the xanthan gum, and mixture of guar-xanthan gums. Addition of 1% guar gum increased peak, final, breakdown and setback viscosity values from 1786.5 cP to 8787 cP, from 2804.5 Cp to 6439 cP, from 453.6 cP to 5760 cP, from 1471.5 cP to 3412 cP, respectively. As a result taro starch has been proposed as an alternative source for food product development due to its physicochemical and functional properties. *This work is supported by TUBITAK (Project number: 1140391).

KEYWORDS

Taro starch, functional, physicochemical, guar gum, xanthan gum, pasting properties

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Poster Session 5

Submission ID: 630

TWO ECONOMICALLY IMPORTANT PLANT THOSE CAN BE GROWTH IN TÜRKİYE; LIPPİA CITRİODORA, CYMBOPOGAN CİTRATUS

NIHAL ÖZEL¹

ABSTRACT

Having rich plant diversity, Türkiye has rich medicinal and aromatic plant diversity. But in this subject, the most important problem is their decreasing quantitatively because of collecting uncontrolled from nature, being not growth and lacking knowledge on processing. Therefore this subject is standing in front of Turkish researcher and practitioner. With the project, investment and publication studies to be carried out in this direction, collectors and producers can provide more efficient, more effective and conscious production / collection activities about medical and aromatic plants. In Türkiye, studies on growth of medicinal and aromatic plants were started and continue. But these studies are not expected level yet. While these studies going on, it will also be useful for the country to carry out adaptation studies with new economic species while these studies continue. *Lippia citrodora* (synonym: *Aloysia citrodora*), also known as lemon beebrush, is a species that is consumed both as a food and used in many fields in terms of medicine. *Cymbopogon citratus*, also known as lemon grass, is a vegetable that is both consumed as a food and of a medicinal property. In this study, these two species, biological, ecological features and usage will be introduced and it will be discussed whether it is suitable for Turkey.

KEYWORDS

Keywords: Lemon beebrush, Lemon grass, Lippia citrodora, Cymbopogon citratus

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Poster Session 5

Submission ID: 631

**SPREADING AREAS, GROWTH ENVIRONMENT
CHARACTERISTICS AND PROTECTION OF BOŞŞALBA IN
KUTAHYA REGION. (BIG BLOOMING SAGE- SALVIA
TOMENTOSA)**

CİHAN KÖSE¹, CEZMİ ÖZEL², SÜLEYMAN TOPAL³

ABSTRACT

Approximately 90 species of Salvia species belonging to the family of Greater henbit (Lamiaceae) are naturally distributed in our country. Salvias is a precious plant with a wide range of uses such as health, food and cosmetics. Salvia has a rich potential in our country in terms of natural sprawl and number of species. It is the largest flowering sage known as Boşşalba (S.tomentosa), which is the most used and economical value of about 11 species grown in Kütahya region. This plant is known as "boşşalba", "şalba" or "çalba" and citizens of this region only consumes the tea of sage. Commonly boşşalba's is used a source of healing. Morphologically, in the form of a cluster of "boşşalba" type is 0.3 - 0.8 m long perennial, half-bloomed plant. Leaves are simple and egg-shaped. Especially in the young development cycle, the leaves are white-gray to silver with varying colors and they are hairy. Usually flowers are violet (purple) color. The flowering time is -depending on the height- end of June to July. Even though the plant is seen separately in the province individually; Harvest plans were made in order to cover the years 2014-2034 and to provide production supply each year by making determinations at the Tükmandağı and Gümüş region, which are of importance in terms of area size, integrity and density. A total of 1529.6 hectares of field and three harvest plans were made in Kütahya Operations Directorate. Kütahya is located between the part of Western Anatolian Phyogeography Region and Iran-Turan Phytogeography Region to the Central Anatolian Region. When the climate characteristics of the plant's growing environment were evaluated according to Erinç's Rainfall Efficiency Index criteria, it was found that it has the qualities of "Very humid climate type" and "Very humid forest flora". Physiographically, the plant is mostly dry, shallow and stony in mountainous terrain and is slightly inclined and sloped (9% -32%) in the lands of 800-1850 m. Mostly in southern exposures, partly in eastern and western exposures, and never in northern exposures. Analyzes of soil specimens taken from the Turkmen Mountain and Silver Mountain growing environments were made. Refrence to this, texture of the soil, structure, porosity, permeability etc. such as the physical properties and chemical properties of the soil have been determined. The entire plant growth environment is the area under the forest regime. Nowadays these areas are now relatively far from settlement and industry pollution hazards, they are at risk from illegal and inappropriate production methods of animal grazing and plant suppliers.

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KEYWORDS

Boşşalba, Salvia tomentosa, Growth Environment, Protection

Poster Session 5

Submission ID: 633

FUNGAL RISKS THAT MAY CAUSE PROBLEM IN THYME CULTIVATION IN TURKEY

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ABSTRACT

Thyme (*Origanum* spp.) is an important spice plant that widely used in Turkey. Thyme is used as raw material in pharmaceutical and perfumery industry due to it contains the essential oils such as thymol and carvacrol, and also in the control of plant diseases due to its antimicrobial effect. Turkey is one of the most important thyme producer and accounts for approximately 70% of world thyme production. The production of thyme, an important export product, is restricted by different plant pathogens. However, little information is available on plant pathogens, affecting thyme production in Turkey. In previous studies, performed in our country and in the world, *Macrophomina phaseolina*, *Fusarium* spp., *Colletotrichum* spp. *Alternaria* spp., *Botrytis cinerea*, *Stemphylium botryosum*, *Cladosporium cladosporioides*, *Phoma multirostrata* var. *macrospora* and *Rhizoctonia solani* have been reported as the most important plant pathogens, causing infections in the root, stem and foliage of the thyme plant. This study included a general evaluation on morphological characteristics, symptoms and control methods of fungal pathogens to be potential risk in thyme production areas in Turkey.

KEYWORDS

Thyme, fungal diseases, potential risks, Turkey

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Poster Session 5

Submission ID: 634

OXIDATIVE STRESS AND HEAVY METAL CONTENTS OF GANODERMA APPLANATUM

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ABSTRACT

This study aimed to determine the heavy metal levels and the oxidative stress state of *Ganoderma applanatum* (Pers.) Pat. The mushrooms were extracted in the soxhlet extractor. Total antioxidant levels (TAS) and total oxidant levels (TOS) were determined using Rel Assay Diagnostics kits. OSI value was calculated by TOS / TAS ratio. Heavy metal contents (Fe, Cu, Zn, Pb and Ni) were determined using atomic absorption spectrophotometer. As a result of the studies made, the TAS value of the mushroom was measured as 2.681 mmol Trolox Eq/L. The TOS value was determined as 36.644 μ mol H₂O₂ Eq/L. Based on TAS and TOS results, OSI level was determined as 1.367. Fe, Cu, Zn, Pb and Ni contents were measured as 459.71, 117.11, 168.78, 16.62 and 11.08 mg / kg, respectively. It has been determined that *G. applanatum* may be used as a potential antioxidant source due to its high antioxidant levels. But the high oxidant value indicates that the mushroom must be carefully and limitedly used in this region. In addition, the heavy metal content, especially the Pb and Ni content is high, suggesting that there may be heavy metal pollution in this region.

KEYWORDS

Ganoderma applanatum, Antioxidant, Oxidant, Heavy metal, Gaziantep

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Poster Session 5

Submission ID: 635

CHANGES ON SOME BIOCHEMICAL PARAMETERS IN RAT LIVER AFTER GRAPESEED AND LOW LEVEL LASER APPLICATIONS

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ABSTRACT

The study was aimed to investigate changes that occurred in rat liver tissue as a result of use of grapeseed extract (GSE) and Low Level Laser Therapy (LLLT) in healing of experimentally fractured mandible analyzed with biochemical parameters. The animals were initially divided into 5 main groups each containing 12 animals in random order (Control, fractured mandible [FM], FM + GSE, FM + LLLT, FM + LLLT + GSE), and then these groups were divided into two groups each as 7 days and 21 days to create total 10 groups (n = 6). The subjects were administered 300 mg/kg/day GSE until the day they were sacrificed. On the other hand, LLLT was applied on 2 different points on the fracture line in 23 J/cm² doses for 7 days in the 7 days groups and for 21 days in 21 days groups in 48 hour intervals. The changes caused by GSE and LLLT treatments in mandible fractures on rat liver tissues were determined with malondialdehyde (MDA) and reduced glutathione (GSH) levels and superoxide dismutase (SOD) and catalase (CAT) activity analyses. Significant changes in biochemical parameters such as MDA, GSH levels and SOD, CAT activities in liver tissues caused by applications of GSE and LLLT during 7 and 21 days to experimentally mandible fractured rats are obtained. It was determined that the oxidative damages induced by mandibular defects both in 7th and 21st days in rat liver tissue were mostly removed by especially GSE administration.

KEYWORDS

Low laser level therapy, defected mandible, oxidative stress, grapeseed extract, liver, rat.

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Poster Session 5

Submission ID: 636

BLACK CUMINS' POSITIVE EFFECTS ON HEALTH

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ABSTRACT

Black cumin, one-year herbaceous plant belonging to the family Ranunculaceae and strain of *Nigella sativa*, originated in Southern Europe And Western Asia. Black cumin is known in different parts of the world with different names, in French it is called nigelle cultivée and cumin noir, in German as echte schwarzkummel, in Italian as nigella, in Spanish as neguilla and pasionara, in Turkish as kalonji, in Hindi as kala jeera, in Arabic as Habbatul Sauda and Habbatul Barakah. In public it is also known as black sesame, novel coriander or small coconut flower. Seeds of black cumin contain essential oil (0.38-0.49%), fixed fat (30-40%), protein (20-30%), saponin, melanthigenin, nigellin and tannin. The biologically active compounds of black cumin are thymoquinone, dithymoquinone, thymohydroquinone, p-cymene, α -pinene, carvacrol, 4-terpineol, citronellol; but thymoquinone, with significant antioxidant activity, is the most important bioactive component of black cumin. Thymoquinone (C₁₀H₁₂O₂, 2-isopropyl-5-methyl 1,4-benzoquinone), 18.4-24% in essential oil of *Nigella Sativa*, is the active ingredient of black cumin which has important spices for alternative medicine and pharmacology both in our country and in the Middle East in recent years. It has been widely used in the treatment of many diseases such as colds, headache, asthma, diuretic, hepatitis, various rheumatism and inflammation diseases for centuries. In addition, it has a wide range of effects, including antioxidant, antihistaminic, anti-diabetic, antihypertensive, inflammatory and antimicrobial activities. It has been reported that the seeds of black cumin are cytotoxic against various cancer cells, promoting cellular activation and the production of specific antibody specific antibodies and has a positive effect on fasting blood sugar, total cholesterol and LDL cholesterol. Fixed and essential oils of black cumin are a rich source of phytochemicals that have curative effect against hyperglycaemia and hypercholesterolemia. It also has milk-boosting for breastfeeding mothers, appetizing, antimicrobial effects and is used in treatment of hair loss and scurf. According to Muslims, black cumin is considered as one of the greatest source of curative medicine because it is the remedy for all diseases except death. As a result, it is thought that in humans, the daily use of 30 mg / kg of the seeds of the black cumin may activate the immune system, but further studies are needed to clarify this issue.

KEYWORDS

Black Cumin, Health, Nigella Sativa, Nutrition, Thymoquinone

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Poster Session 5

Submission ID: 641

ENRICHMENT OF PHENOLIC CONTENT OF BREAD BY USING OF MEDICINAL AND AROMATIC PLANTS

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ABSTRACT

In recent years, there has been a large increase in consumer interest in functional food. The main reason for this is the presence of phenolic compounds and natural antioxidants in functional food and food components, that have positive effects on human health and nutrition. Many enriched product formulations are being developed for this purpose. Bread is produced by kneading the dough of bread wheat flour, water, salt and yeast mixture, left it for an appropriate period of fermentation and baked in the oven. In addition to the components mentioned in the definition of bread, breads containing cereal products and flavors are called "bread varieties". In Turkey, it is a fact that, on a daily diet, the bread located in the table in every meal is a good source of energy and an irreplaceable food for the human body. So, by diversifying the breads with aromatic or medicinal plants, enhancing nutritional value by enriching them with a protein, fiber or some other important components, can contribute to nutritional balance of the individuals. In this study, it was aimed to enrich the phenolic material content of bread by adding medicinal and aromatic plants and plant seeds to traditional bread to increase its antioxidant functionality. For this purpose, firstly during making the various breads, plants or plant seeds such as yellow / blue poppy seeds, black cumin, flax seeds, coriander, mahaleb, cinnamon and curcuma were added to bread dough. Subsequently, the breads made with these formulations were processed to suitable extraction and the total phenolic content of the samples were determined as gallic acid equivalent based on the Folin-Ciocalteu method, and the results were compared with the control white bread. In the study, the sample breads were prepared to be two parallel by using dual-pan bread making machine. In the direction of the data, when the same amount (3g) of mahaleb, cinnamon and curcuma powder added 300g of breads were compared to control white bread; especially the cinnamon (1660µgGAE) was found to be significant in increasing the total phenolic content of the control white bread (310µgGAE). When the same amount (20g) of yellow / blue poppy seeds, black cumin seeds, flax seeds, coriander added 300g of breads were compared to control white bread, it was determined that flax seeds (754µgGAE) and coriander (713µgGAE) significantly increased the total phenolic content and antioxidant activity of control white bread (310µgGAE). When all the results are considered, the contribution to the total phenolic content of cinnamon (although it is added in very small amounts) is found very high in bread making and it can be suggested to use it in the production of functional bread. Conversely, using blue poppy and curcuma in bread caused a decrease in total phenolic content. It may be thought that some of the components in these plants compose antagonist effect and cause a decrease in phenolic content in breads. [*] This work was supported by the BAP Coordinator of Gümüşhane University (Project Code: 13.A0114.02.2).

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KEYWORDS

Bread, functional, phenolic compound, antioxidant

Poster Session 5

Submission ID: 642

EFFECTS OF CAROB ON REPRODUCTIVE SYSTEM

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ABSTRACT

For centuries, plants have been used in alternative medicine treatments. People who benefit from the miraculous benefits of many plants also benefited from their carob. Carob (*Ceratonia siliqua* L.), which dates back to ancient times, is belong to the Ceasalpinaceae subfamily of the Leguminoseae family. The Carob growing in the areas where the mediterranean climate is dominant are located in the 1750 km area from İzmir Urla to Hatay Samandağı and they are seen intensely in the inner part of 1-2 km from the coast. This plant, which grows naturally, can be eaten with fruits and form of a continuous green bush or tree, can grow up to 10 meters in length. The fruit of the tree is initially green, but turns brown as it matures. The fruit nutrient rich in fruit insoluble pulp and polyphenols has many benefits for human health. It has been shown that there is a preventive and healing effect of obesity, cardiovascular and gastrointestinal diseases due to the high amount of dietary fiber it contains. Since it is rich in polyphenols, it has been reported to be effective as an antidepressant. In addition, studies on carob were also shown to have effects on osteoporosis, diabetes, cancer and the reproductive system. The reproductive system is one of the most important elements for the continuity of the descendants. Reproductive systems are the entire body of organs that perform reproductive functions and produce the hormones associated with it. Reproductive system organs have a very sensitive structure to many environmental agents, stresses and drugs. Studies have shown that environmental agents such as monosodium glutamate cause the harmful effects of vaginal, uterine, and ovarian metabolism and phytochemical content of the carob helps to reduce these negative effects. It has also been reported that live cervix cancer cells have significantly decreased thanks to carob content. In a study done in rat testis, it was shown that carob increases testosterone level, decreases LH level, does not cause any change in FSH level, and increases sperm density in seminiferous tubular. The present data shows that carob may have significant effects on the urinary system. More and more detailed work will reveal how these effects are; If any, will help determine the adverse effects.

KEYWORDS

Carob, Reproductive System

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Poster Session 5

Submission ID: 643

ESSENTIAL OIL COMPUNDS OF SOME MEDICINAL-AROMATIC PLANTS GROWN IN LIBYA

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ABSTRACT

More than 100 species are used by especially Bedouins in popular medicinal as hot or cold drinks, gum chewed raw fresh or dry in Libya. Also, these are used for treatment dermal disease, bacterial and viral infection, insect and animal bites, burns and sometimes for the treatment of hair problems. In Libya medicine plant exists in 4 main centers: The El-Jabal El-Akhdar which has about 50% of the total endemic species, the coastal belt, the central part of Sahara and the southern part of Libya involving Jabal Al Awaynat, Tibesti and Ghat Plateaus. The aim of the study, investigation of the fatty acid methyl esters of essential oil of ten plants (*Artemisia herba alba*, *Capparis spinosa*, *Globularia alypum*, *Matricaria chamomilla*, *Ocimum basilicum*, *Origanum majorana*, *Peganum harmala*, *Phagnalon rupestre*, *Punica granatum* (pomegranate) peel, and *Thymus vulgaris*) from Libya. As a result of this investigation, eucalyptol, methyl stearate, γ -terpinene, and *p*-cymene were found to have the highest proportion in these plants.

KEYWORDS

Essential oils of plants, eucalyptol, methyl stearate, γ -terpinene, p-cymene

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Poster Session 5

Submission ID: 646

CHERRY LAUREL

EZGİ KARATAŞ¹, ASLI UÇAR¹

ABSTRACT

Prunus laurocerasus L. (synonym: *Cerasus laurocerasus*, *Laurocerasus officinalis*) known as “laurel cherry” is a plant of the family Rosaceae, are red and purple summer fruits. Laurel cherry trees are generally grown in the Eastern Black Sea Region. The taste of wild growers is not preferred because it is burdensome. Specially grown fruits are big and their taste is sweet. The digestion of laurel cherry is easy and consumed nonfrozen, fresh, dried or roasted. In addition, molasses, jam, salting, pickles are made. The purpose of this study is to introduce the blackberry, a fruit that grows in the Black Sea region, to give information about the nutrient content and to show the relation with the diseases. The cherry laurel and its cultivars have been studied for fatty acids compositions in their seeds, phenolic acids, fatty acids and sugar contents as well as volatile constituents in the leaves and fruits, and benzoic aldehyde in the green fruits. The ripe fruit of the plant was reported to contain high levels of fructose and glucose as sugars, mainly vanillic acid as a phenolic acid, and linoleic acid as an unsaturated fatty acid. Cherry laurel is a good source of nutrients as well as a rich source of antioxidant substances. Besides its consumption as food, both fruit and seed of cherry laurel have been utilized as traditional remedy in Turkey for the treatment of digestive system complaints, including stomach ulcer, bronchitis (seeds), eczema, hemorrhoids and as diuretic (fruits). In addition, it has been reported that high antioxidant capacity of cherry laurel may be effective in preventing cancer and cardiovascular, chronic and neurodegenerative diseases. Diabetes mellitus (DM) is caused by a disorder in glucose homeostasis. Drugs that help control serum glucose levels are very important in the prevention of these complications and in alleviating the symptoms of DM. However, anti-diabetic agents are used in DM treatment have positive side effects as well as some side effects. At this point, search for alternative nutrients or treatment methods emerges to reduce side effects to the greatest extent. Cherry laurel is one of these foods. It has been determined that even if the number of studies conducted is limited, cherry laurel has an antidiabetic effect. The tea prepared from the leaves of the plant is used against neurological disorders by the local people in Anatolia. Therefore, based on these data some researchers have investigated evaluate the neuroprotective activity of the fruits and leaves of cherry laurel. It is thought that cherry laurel can be effective in neurological diseases. Cherry laurel can be used in the prevention and treatment of cancer with the antioxidant content. In particular, it is suggest that the use of chemotherapy drugs may prevent nephrotoxicity, cardiotoxicity, ototoxicity and peripheral neuropathy caused by free radicals. In addition, it inhibits lipid peroxidation and low-density lipoprotein (LDL) oxidation by inhibiting free radical formation. Therefore, it can be effective in protecting against cardiovascular diseases. In conclusion the fruit, seed and leaves of cherry laurel may be effective in the prevention of diseases and treatment, because it contains the presence of nutrients and components which are positive effects on health. Recent years, studies about this subject are increasing but there is not enough proof, yet.

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KEYWORDS

Aromatic plant, Cherry laurel, Disease

Poster Session 5

Submission ID: 647

A REVIEW ON BIOACTIVE POTENTIALS OF CROCUS SATIVUS L.

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ABSTRACT

Saffron (*Crocus sativus* L.) is one of the remarkable plant in the world. Saffron cultivating in too many countries in worldwide. Many of studies have been investigated about saffron. Saffron is cultivated at least 3,500 years in too many contries such as Iran, India, Pakistan, Greece, Spain, Italy, Turkey, France, Switzerland, Israel, Pakistan, Azerbaijan, China, Egypt, United Arab Emirates, Japan, Afghanistan, Iraq and recently Australia. Today Iran is one of the most important producer. Since ancient times, saffron has been used as a medicinal plant and a spice. It has been used as a antispasmodic, sedative agent, stimulant, stomachic, reperfusion, ischemia, aphrodisiac, anticonvulsant, antidepressant, anti-inflammatory, antitumor, anticancer, anti hypertensive, antioxidant and learning and memory improving effects. Antioxidant-rich saffron compounds may modulate disorders. It has great effects on central nervous system. The findings report that using traditional medicine saffron is very beneficial to protecting disorders. *Crocus sativus*, one of the most beneficial plant in the world, is the member of Iridaceae family. Various studies reported that saffron and its components, includes a significant amount of polyphenols, possess strong antioxidant effects against the free radicals. Finally, studies concentrated in biological activities of saffron.

KEYWORDS

Biological activity, Folk medicine, Medicinal plants, Saffron Crocus (Crocus sativus L.)

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Poster Session 5

Submission ID: 650

DEVELOPMENT AND VALIDATION OF AN HPLC METHOD FOR QUANTIFICATION OF GALANTAMINE IN NARCISSUS SP. BULBS.

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ABSTRACT

Galantamine, an alkaloid present in the Amaryllidaceae is currently undergoing clinical trials for the treatment of Alzheimer's. Common daffodils, *Narcissus* spp., contain galanthamine and other alkaloids. Galantamine is cholinesterase inhibitor and is used in treatment of Alzheimer, polio, narrow-angle glaucoma and as an antidote after poisonings and is still being investigated for use in treatment of alcohol and nicotine dependence, schizophrenia and cognitive memory disorders. In this study, in the first step, a simple, accurate and sensitive HPLC method was developed for determination of galantamine. The chromatographic separation was carried out on C18 ACE column (250 × 4.6 mm, 5 μm) using mobile phase 0.5 M potassium dihydrogen phosphate: methanol in the ratio of 65:35 v/v at flow rate 1 ml/min with UV detection at 290 nm. Retention time was 13.47 minutes. The calibration curve was linear ($r = 0.997$) in the concentration range 100-500 μg/ml. The method was statistically validated for precision, accuracy, LOD, LOQ, robustness and recovery. In the second step, ultrasound-assisted extraction (UAE) was applied to the extraction of galantamine from *Narcissus* sp bulbs. The galantamine were quantified and analyzed by high performance liquid chromatography coupled with UV detection (HPLC-UV). The content of galantamine in *Narcissus* sp. bulbs was determined as 0.1905%.

KEYWORDS

Narcissus sp, Galantamine. HPLC

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Poster Session 5

Submission ID: 651

LYCOPENE AND CANCER

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ABSTRACT

Adequate and balanced nutrition in sustaining a healthy life has a great importance. In the recent years, in the increase of cancer prevalence, it is seen that the unhealthy nutrition, sedentary life style, and stress are effective. In order to protect health, there is a need for a balance between oxidants and antioxidants. With taking the oxidative effective harmful substances in the body via environment and nutrition and advancing in age, as a result of decreasing in enzyme activity, anti-oxidative defending mechanism of the body remains inadequate. Since anti-oxidative nutrients, reducing oxidative stress, can provide protective effect against cancer, it is suggested to be increased the amounts in diet. Lycopene, which is naturally present in the vegetables and fruits, and gives the red color to them, shows antioxidative effect whose carotenoid is strong. Lycopene is present the most in tomatoes and fruits and vegetables such as watermelon and pink grapefruit. Processed products of tomato such as soup of tomato juice, tomato paste, ketchup, and sauce are good resources of lycopene. It was demonstrated that bio-benefits of lycopene in the products of processed tomato are higher compared to uncooked tomato and it reduced oxidative stress. **PURPOSE:** In this study, it was aimed to evaluate the studies examining the relationship between lycopene intake and sorts of cancer **METHOD:** In the study, the possible effect mechanisms of lycopene in being protected from cancer were scrutinized. In addition, examining the current literature data studying lycopene consumption and cancer relationship, the effects of lycopene on the formation of cancer and range of cancer formed were evaluated in detail. **RESULTS:** There are oxidative and non-oxidative mechanisms introduced in related to the role of lycopene consumption in the protection from cancer. Oxidative mechanism of lycopene actualizes by protecting lipids, lipoproteins, and DNA against oxidation. Its feature regulating the intercellular transition connection shows its effects via suppressing phosphorylation, induced by carcinogens, and decrease of cell proliferation, induced by insulin-like growth factor via non-oxidative mechanisms. In a number of studies carried out, it was seen that lycopene provides a protective effect against breast, uterine, and liver cancers, particularly prostate cancers. The risk of the cancer formation in the individuals, whose lycopene production is high, compared to that it is low, was frequently found low at the significant level. However, just as there are some studies showing that adding lycopene to the treatment process of cancer patients has a positive directional effect, there are also some studies, in which any effect is not observed. It is emphasized that that healthy individuals take lycopene in the dosage of 5-7 mg per day will be adequate in protecting from oxidative stress, and chronic diseases, which may be developed to this and/or preventing these diseases. **CONCLUSION:** It was seen that lycopene, an important antioxidant, has a protective effect against cancer by means of different mechanisms. Its positive effects in protecting against prostate cancer is remarkable.. However, the effect of lycopene in using for cancer treatment is not clear and there is a need for

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further studies about this subject. The resources of natural lycopene should be given more place in diet.

KEYWORDS

Lycopene, tomato, cancer, antioxidant, carotenoid

Poster Session 5

Submission ID: 652

TOTAL PHENOLIC CONTENTS OF THIRTY TAXA OF THE GENUS SALVIA (LAMIACEAE)

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ABSTRACT

Salvia, the largest genus of the family Lamiaceae and distributed world-wide, has an important role in medicinal and aromatic plants due to its antioxidant activity and phenolic content. The genus, known as “adaçayı” among local people, is represented by 100 species in Turkey. In this study, total phenolic contents in methanol extracts of thirty Salvia taxa from Turkey were investigated. The level of total phenols in methanol extracts was determined by using Folin–Ciocalteu reagent and external calibration with gallic acid. Briefly, 0.2 ml of extract solution and 0.2 ml of Folin–Ciocalteu reagent were added and then the contents were mixed thoroughly. After 4 minutes, 1 ml of 15% Na₂CO₃ was added. The volume was completed to 5 ml of demineralised water and then the mixture was allowed to stand for 2 hours at darkroom temperature. The absorbance was measured at 760 nm using a spectrophotometer. The concentration of the total phenolics was calculated as mg of gallic acid equivalent by using an equation obtained from gallic acid calibration curve. The highest total phenolic content in Salvia taxa was found in Salvia verticillata subsp. amasiaca with 77.50 mg.GAE/g.sample DW.

KEYWORDS

Lamiaceae, Salvia, Total Phenolics

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Poster Session 5

Submission ID: 653

SYNERGISTIC AND ANTAGONISTIC EFFECTS OF ESSENTIAL OILS IN HERBS AND SPICES AGAINST SOME BACTERIA

MUTLU BUKET AKIN¹, MUSA SERDAR AKIN¹, BÜŞRA GÖNCÜ¹

ABSTRACT

Plant-origin antimicrobials are obtained by various methods from aromatic and volatile oily liquids from flowers, buds, seeds, leaves, twigs, herbs, wood, fruits and roots of plants. Essential Oils (EO) in plants generally are mixtures of several components and have demonstrated antimicrobial effects against some pathogens. EOs are a group of terpenoids, sesquiterpenes and possibly diterpenes with different groups of aliphatic hydrocarbons, acids, alcohols, aldehydes, acyclic esters or lactones. The antimicrobial effects of the EOs acts by causing structural and functional damages to the bacterial cell membrane. Some EOs in oregano, clove, cinnamon, citral, garlic, coriander, rosemary, parsley, lemongrass, sage and vanillin have been used as antimicrobial agents. But EOs in the other spices, such as ginger, black pepper, red pepper, chili powder, cumin and curry powder, showed lower antimicrobial properties. When the combined effect of substances is higher than the sum of the individual effects, this is synergy; when a combination shows less effect compared to the individual applications, this is antagonism. EOs have been used as flavoring materials and natural antimicrobial agents in many countries. It is necessary to know and investigation of synergism and antagonism and safety data (toxicity, allergenicity) of these materials before their broad application in food. In this review, synergistic and antagonistic effects of herb and spices against some bacteria, especially pathogens, have been investigated.

KEYWORDS

Essential oils, Sinergistic and antagonistic effects, Pathogen

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Poster Session 5

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THERAPEUTIC PROPERTIES AND USE OF OLEASTER (ELAEAGNUS ANGUSTIFOLIA L.) IN FOLK MEDICINE

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ABSTRACT

Oleaster (*Elaeagnus Angustifolia L.*) is a member of elaeagnaceae family and occurring widely in Asia and Europe, particularly in Turkey, Iran, China, Mongolia, India, Caucasia and Central Asia. The fruit is reddish-brown and elliptical in shape, has a dryish mealy texture, edible and sweet, and generally collected in late September. Oleaster has been traditionally consumed fresh or dried as a rich source of proteins, sugars, minerals and vitamins such as tocopherol, carotene, vitamin C thiamine B1, and vitamins A, E, and K. Oleaster shows high phenolic content, antioxidant and antiradical activities. Researches revealed the presence of phytochemicals such as flavonoids, polysaccharides, sitosteroles, cardiac glycosides, terpenoids, coumarines, phenol carboxylic acids, amino acids, saponins, carotenoids, vitamins, and tannins in oleaster. Being a source of flavonoids, alkaloids, minerals and vitamins, it has been used as analgesic, antipyretic, cholegogic (for bronchitis), antihelmintic and diuretic, and anti-ulcer remedy for wound healing. In folk medicine, oleaster fruit and its preparations are used for the treatment of nausea, vomiting, jaundice, asthma, flatulence, tetanus and rheumatoid arthritis, sore throat, cough, flu, cold, fever, vomiting, diarrhea, kidney disorders (inflammation and kidney stone) and some other symptoms and diseases. In Turkey, it was also common to eat the fruits an hour before the meal as an appetizer. In Armenia a drug called "pshatin", a concentrate of polyphenolic compounds, is prepared from oleaster and used for the treatment of cholitis and other diseases of the gastrointestinal tract. The reports of many studies about oleaster and its extracts have provided a scientific verification for the traditional usage of this fruit as a remedy for the relief and cure of many common symptoms and problems as well as some other more serious diseases. All in all, oleaster can be used easily as an accessible and a rich source of natural antioxidants and as a functional food supplement or in the pharmaceutical industry with the phytochemicals beneficial for the human health.

KEYWORDS

oleaster, phytochemicals, antioxidant, phenolics, functional food

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POMEGRANATE PEEL EXTRACT: POTENTIAL USES AND APPLICATIONS IN FOOD SAFETY AND QUALITY

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ABSTRACT

Functional products are becoming increasingly important in the human diet. The free radicals, what are results of improving technology, UV rays, stressful life of our days, taking alcohol and smoking are the most important reason of a lot of illnesses and aging period. Additionally, synthetic products and additives are associated with many important diseases of our time like cancer, obesity, etc. Plant-based diet is a way in human life to protect against diseases. The use of bioactive components rich plants and these plants extracts in the food and beverage industry is a growing trend every day. These extracts used in the industry are selected according to their functional properties like antioxidant, antimicrobial, etc. and positive health effects, cheapness and properties that affect the final product (sensory, textural, etc.). The functional properties of plant extracts generally attributed to the phenolic compounds they contain. The pomegranate (*Punica granatum L.*) belongs the family of Punicaceae and originated in the Middle East and India. Pomegranate has reputation for its beneficial healthy properties. Pomegranate peel comprises about 33-40% of total fruit weight occurs as a by-product after pomegranate juice production. Pomegranate peel characterized by phenolic compounds such as flavonoids, condensed tannins and hydrolysable tannins. Pomegranate and its by-products (shell, flower, leaves, and seed) extracts are in the functional food category due to their positive effects on human health. It is suggested to use this by-product as a natural-cheap food additive which contains more phenolic material and strong antioxidant properties compared to whole fruit and individual parts of the fruit (pulp, seed etc.). Pomegranate peel has been used for health benefits of phenolics in ethnopharmacology in many countries such as Egypt and India through the centuries. Pomegranate peel extract (PPE) is suggested to be used as food preservative, stabilizer and functional ingredient in various food systems. Major phenolic compounds, such as anthocyanins, gallotannins, ellagitannins, gallagyl esters, hydroxybenzoic acids, hydroxycinnamic acids and dihydroflavanols, which provide antioxidant, antimicrobial, antimutagenic and antiviral properties of PPE increase its epidemiological significance. Researches have indicated that PPE has cardioprotective, anti-inflammatory, anti-allergic, anti-diabetic and anti-carcinogenic activity against many disease. PPE prevents the lipid oxidation in food systems with antioxidant properties and thus preventing the loss of essential fatty acids and vitamins, the formation of toxic substances, color loss and rancidity. PPE also shows antimicrobial activity against various food-borne pathogens like *Staphylococcus aureus*, *Escherichia coli*, *Listeria monocytogenes*. Antioxidant and antimicrobial properties of PPE help to preserve and increase the functional properties of foods. PPE also has quality improving properties such as the development of textural properties in raw sausage and the development of probiotic microbiota with its dietary fiber content. This review focused on functional, anti-infective properties of PPE and their application as food additive.

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KEYWORDS

Pomegranate peel extract, Functional additive, Antioxidant, Phenolics, Healthy effect

Poster Session 5

Submission ID: 657

THE ANTIMICROBIAL ACTIVITY OF ALLIUM AKAKA AND ALLIUM SCABRISCAPUM

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ABSTRACT

The genus *Allium* belongs to the Alliaceae and is one of the widest genera of the family. It is represented by 800 species in the world and by 197 taxa in Turkey. Members of this genus are wonderful plants that are known for their medicinal effects and are used for this purpose since ancient times. Onion, garlic and leek varieties are member of this genus. From this point of view, we aimed to determine the antimicrobial activity of *Allium akaka* and *Allium scabriscapum*. Root and aerial parts of the plants macerated with ethanol. The antimicrobial activity of the extracts was evaluated by minimum inhibitory concentration (MIC) against Gram positive (*Streptococcus pyogenes* ATCC19615, *Staphylococcus aureus* ATCC 25923) and Gram negative (*Pseudomonas aeruginosa* ATCC 27853, *Escherichia coli* ATCC 25922) bacteria and yeast (*Candida albicans* ATCC10231). The MIC values were determined by broth dilution method. All the extracts exhibited antimicrobial activity. The strongest antimicrobial activity was recorded by aerial parts of *A. scabriscapum* against *S. aureus* (150±0.2 µg/ml MIC value). The root extract of *A. akaka* showed the weakest activity with 800±0.5 µg/ml MIC value against *P. aeruginosa*.

KEYWORDS

Allium Akaka, *Allium scabriscapum*, antimicrobial activity, MIC

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Poster Session 5

Submission ID: 661

UTILIZATION POTENTIAL OF ALLICIN IN GARLIC (*ALLIUM SATIVUM* L.) TO INCREASE VIRUS ELIMINATION IN MERISTEM CULTURE

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ABSTRACT

The efforts to obtain virus-free plants from meristem culture, which is one of the plant tissue culture techniques, have been continued extensively. Chemotherapy, one of the methods used to increase the elimination of viruses in vitro culture, has been implemented in a shorter time, as more effortless and more practical than other methods. However, inadequate numbers of antiviral compounds used in the chemotherapy method have limited the work done in this area. Currently the most widely used ribavirin for this purpose is not sufficient for studies and therefore new antiviral compounds have been required. Allicin is one of the most important bioactive components of garlic. As a result of crushing, cutting or chewing of the garlic, allicin has formed via break down of the aliin by the alinaz enzyme. So far, studies have shown that allicin in garlic (*Allium sativum* L.) is the most important chemical compound causing pharmacological effects presented by garlic such as antiparasitic, antibacterial, antimycotic, antiviral, anticarcinogenic and immunological properties. In this paper prepared with a comprehensive literature search, the use of allicin, the most important compound of garlic, has been investigated to increase virus elimination as an antiviral compound during in vitro culture. Because allicin inhibits virus formation, it has been demonstrated that allicin has utilization potential as a novel compound alternative to ribavirin for chemotherapy application in meristem culture.

KEYWORDS

Meristem culture, chemotherapy, garlic, allicin

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Poster Session 5

Submission ID: 662

ETHNOBOTONICAL ASPECTS OF SOME SPECIES IN DÜZCE AND ITS VICINITY

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ABSTRACT

This study was carried out in Düzce and its vicinity. During the floristic studies in the area in 2016, the vernacular names and the usage of some plants were compiled. In the region, 56 plants used for medicinal purpose and as food materials were determined. In addition to their uses as foods or spices, Notes about the names and usage areas of the plants in the region were prepared with the information obtained from Provincial Directorate of Agriculture, herbalists, Düzce' people and agricultures engineers. The plants collected from this region were diagnosed with the Turkish Flora. However 19 plants were also reported for medicinal purposes. A pharmaceutical business was also established for one of those species, this plants are *Arbutus unedo*, *Brassica oleraceae* L. *Capitata*, *Capsella bursa-pastoris* (L.) Medik., *Carpobrotus edulis*, *Cirsium arvense* (L.) Scop. subsp. *vestitum*, *Corylus* L., *Cynara cardunculus*, *Juglans regia* L., *Malva sylvestris* L., *Mentha aquatica* L., *Ononis spinosa* L., *Petroselinum crispum* (Mill.) A.W.Hill., *Platanus occidentalis*, *Rosa Canina*, *rosmarinus officinalis*, *Sorghum bicolor* var. *Saccharatum*, *Taraxacum officinale* Weber, *Tilia argentea*, *Urtica pilulifera* L., ve *Vitis labrusca* L. *İsabella*. *Vitis labrusca* L. *İsabella* (locally known as black grape or migrant grape) to make its mass production for medicinal purposes. In Turkey, especially in Düzce Province and its neighborhoods, pharmaceutically valuable plants should be further investigated and efforts be also done for their market applications. This work is therefore thought to provide significant insights for future ethnobotanical studies on the subject

KEYWORDS

Ethnobotany, Düzce, medical

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Poster Session 5

Submission ID: 663

MEDICINAL PLANT APPROACH IN INFERTILITY

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ABSTRACT

Infertility is a challenging process that affects the quality of life by affecting the physical, emotional and social relations of people negatively. According to the definition of the American Society for Reproductive Medicine Practice Committee (ASRM), infertility is the inability to achieve pregnancy in at least one year, despite unprotected sexual intercourse. Nowadays, infertility affects 10-15% of the couples. Infertility incidence is 8.5%, this corresponds to 1.5 million couples and affects 3 million people in Turkey. The reproductive effort of the human being is based on the continuity of life. In all cultures, special attention has been given to being a fatherhood and motherhood, reproductive related folk medicine applications have been used intensely until today. The first articles about infertility are based on the years BC 2200-1950. The prescriptions for the early diagnosis of pregnancy and the prevention of infertility were first used in ancient Egypt. Hippocrates (BC 460-337) emphasized the prevalence of uterus, tubal and semen in pregnancy. Soranus (AD 98-138) was the first who described the fertile period. In human being's philosophy of existence, the continuity of life is essential. At the heart of this, there is woman with her spirit and body. Woman is considered to be the breath of God, during the Neolithic and Chalcolithic times, Hittites and Phrygians, owing to the fertility, and woman was crowned as "Mother Goddess", the greatest of the gods, also Mother of Goddess, known by "Kybele" is also the mother of gods and goddess. The privilege of fertility also extends the usage of folk medicine for this purpose. The usage of medical plants colloquially for many years have changed at the beginning of 20th century and various characteristics of plants that are used for medical purposes have been started to be investigated in laboratories. It is the socio-cultural situation of the people that determines the health level of the societies. By evaluating the socio-cultural situation of societies and regulating the wrong health practices by researching and education, health culture can be influenced positively. In this study, drug characteristic, forms of utilization, research results and pharmacological mechanisms of vitex (*Vitex agnus castus*), goat's head (*Tribulus terrestris*), nettle (*Urtica dioica*), yarrow (*Achillea millefolium*), locust (*Ceratonia siliqua*) and long pepper (*Piperis longum*) that are used in folk medicine frequently for infertility will be explained.

KEYWORDS

Infertility, traditional medicine, drug properties, pharmacological properties

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Poster Session 5

Submission ID: 665

A REVIEW OF PERILLA SEED OIL; A GOOD SOURCE OF PLANT BASED OMEGA-3 AND OMEGA-6

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ABSTRACT

Perilla frutescens is an edible plant which is commonly used in Asian Cuisine as a source of oil and colorants. The seeds of the plant is mostly used as an oil source, where the leaves are mainly used as a garnish for raw fish, flavor and also as a medicine for food poisoning due to its antidote property. Another main function of the seeds and leaves is the use as a medicine for colds and coughs as well as digestion promoter. As oil the *Perilla* seed is used and it is one of the potential sources with its good fat and protein with good quality. More importantly the seeds are good source of α -linolenic acid (C18:3 n-3; ALA). Despite its popular ancient use in Asian kitchen and herbal medicine, since early 2000s *Perilla* has been introduced to Europe and USA as an oilseed crop and as a source of Omega-3 and Omega-6. Researchers has shown that *Perilla* oil includes; terpenoids, phenolics, flavonoids, cyanogenic glycosides and anthocyanins. This review aims to emphasize the high potential of *perilla* oil with all its functional properties in terms of health. It is necessary to highlight that *perilla* seed oil has the highest ALA content amongst the other sources (56%). Additionally the consumption of *Perilla* seed oil was proven to be improving the learning ability, retinal function, suppressing of carcinogenesis, metastasis, thrombosis and allergies; meanwhile decreasing the circulating levels of serum cholesterol and triglycerides without showing toxicity.

KEYWORDS

Perilla Oil, Omega-3, Omega-6, α -linolenic acid

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Poster Session 5

Submission ID: 666

BUCKWHEAT AND HEALTH EFFECTS

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ABSTRACT

Buckwheat is a one-year-old plant and belonging to family Polygoneaceae. There is no kinship connection with grains. Buckwheat, which is a plant different from grains grown from agriculture such as wheat, rice and barley, is also included in pseudo-cereal group (cereal-like), which shows similarities and differences with cereals. The basic structural difference separating buckwheat from cereals and ability adapt to development at high altitudes in a short time. Buckwheat species use to as a food source. Buckwheat is not cultured in Turkey; but it is a vegetable produced in many countries of the world, has high economic value, at the same time increasing consumption and versatile usage. Because it is a strong ecological harmony of buckwheat, it can be grown almost everywhere in different habitats. Buckwheat has versatile usage and use to many local products of different cultures such as "stove", "kasha", "porridge", "crumpet", "naengmyeon" and "pizzoccheri" and in production of basic foodstuffs such as cakes, breads, pasta, noodles, muffins, crackers, cookies, crepes and tortillas, in puddings, desserts, poultry stuffed with cooked meat and vegetable products. Buckwheat has been described as an alternative food because of important effects on health and nutritional value. Studies on animals have shown that buckwheat inhibits high cholesterol, hypertension and diabetes. The routine glycoside contained in buckwheat is used to treatment of hypertension and cardiovascular disease resulting in retinal hemorrhage leading to tearing of blood vessels in brain or prevent this condition. This glycoside is also used in treatment of kidney hemorrhage, hereditary hemorrhagic lesions, haemophilia and some hemorrhagic diseases. Foods have characteristics such as protect, develop and reduce risk of disease besides nutritional effect, are defined as functional foods and this condition led to increase in the functional foods of consumers and supply of such products in the market. Buckwheat is used in many functional foods produced in the world, so buckwheat products are dual-use products as food and medicine and have interesting effects on human body in chronic diseases. Buckwheat is include of resistant starch. Foods containing resistant starch have generally low glycemic indexes. Considering that low glycemic indexed diets regulate blood sugar, help prevent obesity and reduce heart disease risk, buckwheat can also be used in treatment of some chronic diseases. Because of gluten-free it can find use in development of new, high-nutritional products for celiac disease. Buckwheat protein is one of the best sources of high-biological value proteins, as well as amino acid composition and nutritional superiority to other cereal proteins. Buckwheat has major components such as zinc, copper, manganese, selenium and macroelements such as potassium, sodium, calcium and magnesium, basic functional components such as flavonoids, polyphenols, inositol, organic acids and is highly nutritious with high levels of protein, dietary fiber, vitamins, mineral substances, basic polyunsaturated fatty acids. Iron content is highest among all cereals and legumes. It is an ideal product for people who have frequent anemia problems, pregnant women and infants. In addition, positive effects on health of buckwheat, it is include polyphenol, trypsin and alpha amylase inhibitors. Due to some anti-nutritional factors in buckwheat,

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human body can be more difficult to digest than wheat and legumes. As a result, buckwheat is an important food ingredient wherefore functional properties. It does not lose these components with processing steps, enriching product to which added nutritionally and functionally. In addition, more invivo and invitro studies should be done to improve nutritive properties of buckwheat.

KEYWORDS

Functional food, buckwheat, health

Poster Session 5

Submission ID: 667

**TAXONOMICAL EVALUATION OF MEDICALLY AND
AROMATICALLY VALUABLE YEDIKEKİK (SATUREJA
WIEDEMANNIANA) AND ÇİBRİSKA (SATUREJA HORTENSIS)
SPECIES IN CENTRAL ANATOLIA**

MEHTAP ÖZTEKİN¹

ABSTRACT

16 taxa of *Satureja* L. (Lamiaceae), known as *Kayakekiđi* (Savory), grow naturally in Turkey. Two species of this genus, *Satureja wiedemanniana* (Ave-Lall.) Velen. (*Yedikelik*) and *Satureja hortensis* L. (*Çipriska*), grows in Central Anatolia. *Yedikelik* (*Satureja wiedemanniana*) species which is a member one of the 5 endemic taxa in Turkey, is also grows more than one local region in Central Anatolia. *S. hortensis* grows extensively in Eastern Europe, especially in the Balkans and in every part of our country, and has intensive medical and aromatic use. In this study, the habitats at both species in Central Anatolia, their characteristics, usage area, medical and aromatic properties are given. The data of this study was compiled from "Taxonomic Studies on the Species of *Satureja* L. (Lamiaceae) in Turkey" the ongoing Ph.D. thesis study of the author.

KEYWORDS

Satureja L., Lamiaceae, savory, aromatic plant

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Poster Session 5

Submission ID: 669

THE ANTIOXIDANT AND APOPTOTIC EFFECTS OF THYMOL ON PANCREAS OF RATS

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ABSTRACT

Medicinal plants and their essential oils have been widely used to treat several diseases since ancient times and plant essential oils have been related to effectively improve several pancreas disease. Thymol (5-methyl-2-isopropylphenol) is a common constituent of essential oils derived from different plant species. It is phenolic compounds belonging to a class of natural antioxidants due to the presence of one hydroxyl group linked to aromatic ring and the possibility of stabilizing free radicals formation. Thymol is also believed to exhibit different biological properties such as antimicrobial, antifungal, antioxidant, anti-inflammatory, antibacterial, anti-hepatotoxic, antiapoptotic, neuroprotective, and radioprotective activities. Moreover, it has been reported to stimulate digestive secretions in pancreatic enzymes in rats. Therefore, this study was conducted to determine the effects of Thymol on performance antioxidant enzyme activities in rat pancreas. Fifteen Sprague-Dawley rats were randomly allocated into three groups including, control, groups which received orally 100, 200 and 400 mg/kg Thymol. After six hours from treatments, animals were sacrificed and their pancreases were removed. Caspase-3 activity, Total oxidative stress (TOS) and total antioxidant status (TAS) levels were evaluated in homogenized pancreas samples by ELISA. Besides, the histology of pancreas was examined by using three different staining methods: Hematoxylin-eosin, Periodic acid Schiff, Alcian blue. The results showed that compared to the control group, Thymol at the dosage of 400 mg/kg significantly increased the level of TOS and caspase-3 activation, while decreased level of TAS in tissue samples. On the other hand, Thymol at the dosage of 100 and 200 mg/kg significantly caused to no alteration the level of TOS and caspase-3 activation; but increased levels of TAS in tissue samples. As compared to two tested doses of 100 mg/kg and 200 mg/kg, Thymol at dose 200 mg/kg was showed significant anti-oxidative effect on the parameters studied. In addition, histopathological findings that observed in Thymol 400 mg/kg group in the pancreatic tissue is not seen in 100 and 200 mg/kg groups. The above outcome concludes that Thymol may exhibit promising anti-oxidant activity at low dosages; however, its high dosage has harmful effects for pancreas tissue. Thus, the dosage of Thymol should be taken into account for future investigations of novel treatment strategies for Thymol in pancreas. We hope that the results of this study will provide an impetus for future investigations of novel treatment strategies for Thymol in pancreas.

KEYWORDS

Histopathology, Oxidative stress, Pancreas, Thymol, Apoptotic

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Poster Session 5

Submission ID: 670

BIOSYNTHESIS AND CHARACTERIZATION OF COPPER OXIDE NANOPARTICLES USING CIMIN GRAPE (VITIS VINIFERA CV.) EXTRACT

DEMET DEMİRCİ GÜLTEKİN¹, HAYRUNNİSA NADAROĐLU¹, AZİZE ALAYLI GÜNGÖR¹, NURHAN HORASAN
KİSHALİ¹

ABSTRACT

Nowadays, nanoparticle synthesis has been a very important research area because of the wide use of nanoparticles in many fields. Green synthesis is one step ahead of other synthesis methods due to both cost reduction in production and environmentally friendly approach. For these reasons, we chose green synthesis method which is nature friendly in our research. In this study; It was aimed synthesis of copper nanoparticles by the green synthesis method using with the water extract of Erzincan Cimin grape (*Vitis vinifera* cv. Black plum) and 0.1 M CuCl₂ in the reaction medium¹. Then, optimum conditions for the green synthesis reaction have been determined and nanoparticle production optimized. The characterization of the copper nanoparticles obtained was then characterized using spectroscopic techniques such as UV-Vis, FTIR, XRD and SEM. It is understood that the CuO nanoparticles obtained by the green synthesis method have a spherical shape with a size of 25-50 nm. Due to the new physical and chemical properties of copper nanoparticles obtained using a cost-effective and environmentally friendly method; it is thought that many areas can be used².

KEYWORDS

Cuperoxide, Green synthesis, Nanotechnology

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Poster Session 5

Submission ID: 671

REMOVAL OF METHYLENE BLUE FROM AQUEOUS SOLUTION USING FENTON REACTION AND COPPER OXIDE NANOPARTICLES OBTAINED BY ENDEMIC CIMIN GRAPE

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ABSTRACT

Today, more than 10.000 denier synthetic paints are used in the industry food, paper, textile, etc. The annual amounts of these dyes used are rather high and 10-15% of these dyes are mixed with water as waste. For this reason, the systems that will eliminate the harmful effects of these waste dyes on the environment have been considered. At the beginning of these methods are chemical and physical methods, and biological systems have recently gained considerable importance¹. In the study, CuO nanoparticles were synthesized using Cimin grape, an endemic species belonging to the Erzincan City and of 0.1 M CuCl₂ solution by green synthesis in the first step. Then, these obtained metal nanoparticles were used to remove the methylene blue dye. For this purpose, Fenton reaction has been used. As a result of the studies, 95% of the methylene blue dye could be removed under moderate conditions at the end of two hours with the Fenton reaction used with CuO nanoparticles. When the results are evaluated, it is clear that this method can also be used to remove paint from waste water of textile or other industries². References: 1. Alayli Gungor A, Nadarođlu H, Kalkan E, Celebi H. Desalination and Water Treatment. 2015, 57:34,15889-15899. 2. Alayli Gungor A, Nadaroglu H, Celebi N, Environmental and Experimental Biology (2014) 12: 121–129.

KEYWORDS

Cimin grape, Biotechnology, Dye degradation.

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Poster Session 5

Submission ID: 674

**EVALUATION OF ANTIOXIDANT CAPACITIES AND
QUANTIFICATION OF SELECTED PHENOLIC COMPOUNDS IN
TILIA CORDATA FRUIT EXTRACTS BY LIQUID
CHROMATOGRAPHY-ELECTROSPRAY TANDEM MASS
SPECTROMETRY**

ESRA ALTUNTAŞ¹, MUSTAFA CİTTAN¹, ALI ÇELİK¹

ABSTRACT

Reactive oxygen species (ROS) have the potential to interact with many cellular components, causing significant damage to membranes and other cellular structures [1]. There is a rising interest in many vegetables and fruits due to the production of natural antioxidants (especially phenolic compounds) aimed at scavenging ROS. This relationship between diet and health has led to intensive research in bioactive compounds in foods [2]. Plants have been used as an important drug source for thousands of years. Even today, the World Health Organization estimates that up to 80 per cent of people still rely mainly on traditional remedies such as herbs for their medicines [3]. Medicinal plants are widely used in everyday life as part of folk medicinal remedies in Turkey. Turkey's flora is remarkable for its diversity and it is a rich source of medicinal plants [4]. Linden, which is frequently seen in our forests in the Marmara, Black Sea, Aegean and North Anatolian regions, is the common name of the tree species forming the *Tilia* genus from the family of the Tiliaceae. *Tilia flos* is used since antiquity in traditional medicine in case of migraine, hysteria, feverish colds, hypertension associated with arteriosclerosis [5]. Herbal teas containing *Tilia flos* are on the European and Turkey market mainly for the relief of common cold. Several studies have shown that the plant contains many phenolic compounds such as flavonoids and phenolic acid derivatives [4]. In this work, extracts of fruits of *Tilia cordata* obtained with infusion (IE) and ultrasound-assisted extraction (UAE) techniques were initially screened for their total phenolic contents (TPCs) and total antioxidant capacities (TACs) via Folin-Ciocalteu and CUPRAC methods, respectively. IE and UAE were carried out with ultrapure water and methanol/water solution (70/30, v/v), respectively. TPCs of the extracts obtained with IE and UAE were found as 58.86 ± 21.51 and 111.84 ± 13.99 mg gallic acid equivalent (GAE) / g sample, respectively. Furthermore, TACs of the extracts obtained with IE and UAE were calculated as 82.99 ± 13.13 and 197.52 ± 12.69 mg trolox equivalent (TE) / g sample, respectively. Subsequently, 31 phenolic compounds in the same extracts were scanned by liquid chromatography-electrospray tandem mass spectrometry (LC-ESI-MS/MS) method. Among phenolics, 24 compounds were quantitatively determined with protocatechuic acid as the dominant one ($1723.1-2183.5 \mu\text{g g}^{-1}$). Contents of phenolic compounds in the extracts varied from 0.17 to $2183.5 \mu\text{g g}^{-1}$. Also the other dominant species in the extracts, (+)-catechin, (-)-epicatechin and gallic acid were determined as $720.3-1737.9 \mu\text{g g}^{-1}$, $352.3-1091.7 \mu\text{g g}^{-1}$ and $356.9-584.0 \mu\text{g g}^{-1}$, respectively. In all cases, the extracts obtained with UAE were found to be richer in terms of the phenolic compounds and showed higher antioxidant capacity. Results showed that fruits of *Tilia cordata* grown in Turkey were rich in phenolic

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constituents. Therefore, the industrial products of the plant can significantly contribute to the country's economy. Additionally, the traditional hot water infusion is considered to be a comparatively effective (approximately 50% yield as compared to the UAE technique) method for the extraction of phenolic compounds. References [1] S. Goreta, V. Bučević-Popović, M. Pavela-Vrančić, and S. Perica, J. Plant Nutr. Soil Sci., 170(3), 398–403, 2007. [2] N. Talhaoui, A. M. Gómez-Caravaca, L. León, R. De la Rosa, A. Segura-Carretero, and A. Fernández-Gutiérrez, LWT - Food Sci. Technol., 58(1), 28–34, 2014. [3] L. Tripathi and J. N. Tripathi, Trop. J. Pharm. Res., 2(2), 243–253, 2005. [4] S. Demiray, M. E. Pintado, and P. M. L. Castro, World Acad. Sci. Eng. Technol., 54., 312–317, 2009. [5] J. Barnes, L. A. Anderson, and Phillipson J D, Herbal medicines, 3rd ed. London/Chicago: Pharmaceutical Press, 2007.

KEYWORDS

Tilia cordata, phenolic compounds, antioxidant capacity, LC-ESI-MS/MS

Poster Session 5

Submission ID: 675

**COMPARISON OF ESSENTIAL OIL COMPOSITIONS OF FRESH AND
DRIED PLANT OF ENDEMIC NEPETA PILINUX P.H. DAVIS AND
NEPETA ISAURICA BOISS ET HELDR. APUD BENTHAM IN
TURKEY**

YAVUZ BAĐCI¹, YÜKSEL KAN¹, SÜLEYMAN DOĐU², AYŐE SADIYE ÇELİK¹

ABSTRACT

In this study, essential oil (EO) compositions of the dried and fresh aerial parts of *Nepeta pilinux* and *Nepeta isaurica* collected from Mersin and Konya was investigated. EO was distilled by using Clevenger type apparatus for 3 h and the chemical compositions were detected in GC-MS. While, the oil yields of the the collected *Nepeta pilinux* and *Nepeta isaurica* was determined to be 0,1 ml-0,4 ml and 0,1 ml-0,3 ml in fresh and dried aerial parts, respectively. Drying of the material also increased the oil yield in the collected *Nepeta pilinux* and *Nepeta isaurica*. While there were 42 and 60 and 36 and 27 of EO components were observed in the fresh and dried parts of the collected *Nepeta pilinux* and *Nepeta isaurica*. Besides EO yields, in this research the differences with respect to composition and components were determined between the fresh and dried plants. On the other hand, in this study, it was determined that the EO compositions varied with respect to be fresh or dry of the plant parts. It was observed that germacrene D, caryophyllene oxide, alpha terpineol, 1,8-cineole and linalool were the major EO contents. The aim of the study to compare of differences between the EO compounds and compositions varied according to be the plant fresh and dry of collected plants in nature.

KEYWORDS

Nepeta pilinux, Nepeta isaurica, essential oil composition, oil yield

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Poster Session 5

Submission ID: 676

**DETERMINATION OF ANTIFUNGAL EFFECT OF THYME AND
BLACK CUMIN AGAINST ASPERGILLUS NIGER AND PENCILLIUM
SPP. DETERMINATION OF ANTIFUNGAL EFFECT OF THYME AND
BLACK CUMIN AGAINST ASPERGILLUS NIGER AND PENCILLIUM
SPP.**

BÜŞRA GÖNCÜ¹, MUTLU BUKET AKIN¹, ASLI ÇELİKEL¹

ABSTRACT

In this study, antifungal effects of thyme (*Thymus vulgaris* L.) and black cumin (*Nigella sativa*) against *Aspergillus niger* and *Pencillium* spp. have been investigated. For this purpose, thyme and black cumin plants has been used by extracted. Antimicrobial activities of spice extracts were evaluated according to "Agar Disk Diffusion Method". In this method, disc is placed on medium. Instead of the disc, calix or well can also be used. Antimicrobial agent is added into calix or wells. Activity of antimicrobial agent is measured by the resultant zone diameter of the target microorganism. The size of the resulting zone diameter depends on the effectiveness of the antimicrobial agent and its ability to be easily diffused. In study PDA has been used as a medium. *Aspergillus niger*, *Pencillium* spp., thyme and cumin extracts were added into wells, which were opened in medium. Samples were incubated at 25°C for 5-7 days and antifungal effect was determined by measuring the zones occurred around the wells According to results, it was determined that thyme and black cumin had antifungal effect against *Aspergillus niger* and *Pencillium* spp..

KEYWORDS

Thyme, black cumin, antifungal effect, disc diffusion method.

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Poster Session 5

Submission ID: 677

INVESTIGATION OF CONSUMER BEHAVIOURS IN MEDICINAL AND AROMATIC PLANTS: CASE OF KAHRAMANMARAS PROVINCE

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ABSTRACT

Medicinal and aromatic plants were used with the purpose prevent illness and heal, survive healthy life. Demand of medicinal and aromatic plants increase in world markets day by day. Medicinal plants usage was increased especially with emerging side effects of synthetic and chemical medicines. In this research it was aimed that, investigation of consumer behaviors in medicinal and aromatic plants in Kahramanmaraş Province. A survey was conducted with 385 households to determined by proportional sampling method during January-February 2017. According to results 63,1% of respondents were woman and average age was 37,48. It was found that, more than half of the consumers (53%) have information about medicinal and aromatic plants. When we looked at the frequently used medicinal and aromatic plants, red pepper (89,1%), mint (80,3%), thyme (51,2%) basil (47%), sumac (31,7%) were take part in consumption. Consumers buy 28,5 kg medicinal and aromatic plants annually and 47% of them prefer herbalists. It was determined that, 28,3% of consumers looked color as quality characteristics when buying medicinal and aromatic plants. Relatives, kith and kin have influence on using of medicinal and aromatic plants.

KEYWORDS

Medicinal and aromatic plants, consumer preferences, Kahramanmaras

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Poster Session 5

Submission ID: 678

COMPARISON OF ESSENTIAL OIL COMPOSITIONS OF FRESH AND DRIED PLANT OF ENDEMIC SCUTELLARIA ORIENTALIS L. SUBSP. PECTINATA EDMONDSON IN TURKEY

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ABSTRACT

In this study, essential oil (EO) compositions of the dried and fresh aerial parts of *Scutellaria orientalis* subsp. *pectinata* collected from Konya was investigated. EO was distilled by using Clevenger type apparatus for 3 h and the chemical compositions were detected in GC-MS. While, the oil yields of the the collected *Scutellaria orientalis* subsp. *pectinata* was determined to be tr and 0,2 ml in fresh and dried aerial parts, respectively. Drying of the material also increased the oil yield in the collected *Scutellaria orientalis* subsp. *pectinata* While there were 14 and 28 of EO components were observed in the fresh and dried parts of the collected *Scutellaria orientalis* subsp. *pectinata*. Besides EO yields, in this research the differences with respect to composition and components were determined between the fresh and dried plants. On the other hand, in this study, it was determined that the EO compositions varied with respect to be fresh or dry of the plant parts. It was observed that germacrene D, nerolidol, alpha cadinol and spathulenol were the major EO contents. The aim of the study to compare of differences between the EO compounds and compositions varied according to be the plant fresh and dry of collected plants in nature.

KEYWORDS

Scutellaria orientalis subsp. *pectinata*, essential oil composition, oil yield, germacrene D

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Poster Session 5

Submission ID: 680

FUNCTIONAL PROPERTIES AND HEALTH EFFECTS OF CAROB BEAN

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ABSTRACT

Carob bean (*Cerotonia siliqua* L.) is a fruit that has high nutritional value and health benefit. It has an important economic potential. Most of the pods contain sugar but it didn't cause tor ise blood sugar. Pods are used for the production of syrup and crystallized sucrose. Carob bean syrup contains D-pinitol as a bioactive compound. Carob bean is rich in fiber. Gallic acid in carob bean has a strong antioxidant property and ensures that health is also influenced significantly. Carob seeds are 10% of the total fruit weight. Gum in the seeds is used in various food industries such as ice cream, yoghurt, pudding, cheese, candies, drinks, ketchup, mayonnaise, tomato paste and baked goods. In addition, carob bean is also important in pharmaceutical and cosmetic products. Carob has antiallergic, antimicrobial, antiviral, antihelminthic, anticancerogenic, antioxidant and immunostimulant effects. It has also been reported that it improves digestion, lowers cholesterol, and is useful against tooth problems.

KEYWORDS

Carob bean, functional properties, health effects

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Poster Session 5

Submission ID: 682

FUNCTIONAL PROPERTIES OF GREEN TEA

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ABSTRACT

Tea is produced from the bud and leaves of the plant of *Camellia sinensis*. It is classified as green, oolong or black tea depending on the manufacturing process. About 20-22% of tea produced and consumed is in the form of green tea. It can be used as drink and medicine. Green tea contains enzymes, polyphenols, alkaloids, nitrogen compounds, carbohydrates, pigments, vitamins, organic acids and minerals. Polyphenols make up about 20-40% of green tea. Approximately 60-80% of polyphenols are catechins. Main catechins in green tea are epigallocatechin gallate, epigallocatechin, epicatechin and epicatechin gallate. The main flavonols are quercetin, kemferol and myristate, which are in the form of glycosides. It contains gallic acid, chlorogenic acid, neochlorogenic acid and p-coumaric acid as phenolic acids. 50% of the aminoacids in tea are found as in the form of theanine. Green tea has functional properties due to these components. It has been shown that green tea with a significant antioxidant effect has different effects such as antimicrobial, antiinflammatory, antimutagenic, anticarcinogenic, antiallergic, hypocholesterolemic, antiviral, antidiabetic and antiaging. Green tea has an antioxidant effect especially in improvement of the shelf life of foodstuffs such as vegetable oils and animal fats.

KEYWORDS

Green tea, functional properties, tea composition

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Poster Session 5

Submission ID: 683

DETERMINING SOCIO-ECONOMIC FACTORS IN SUMAC AND WILD PISTACHIO PRODUCTS PICKING: CASE OF KAHRAMANMARAS PROVINCE (TURKEY)

MÜCAHİT PAKSOY¹, FATMATÜL ZEHRA YILDIZ¹, MERVE AKSU¹

ABSTRACT

Great part of medicinal and aromatic plants present market after collecting in Turkey. Sumac and wild pistachio take part in these plants and mostly consumed. Aim of this research is to determine socio-economic factors effective in sumac and wild pistachio products picking and put on market. For this purpose survey was conducted separately with 88 sumac and wild pistachio products pickers determined by proportional sampling in Kahramanmaraş province during October-December 2016 period. According to results, 61.4 % of sumac pickers were woman and average age was 40.73. Duration of sumac picker experience obtained as 16.18 years. Sumac pickers per household found 2.34 people as average. Beside 53.4 % of wild pistachio pickers were man and average age was 42.62. Duration of wild pistachio picker experience obtained as 13.52 years. Sumac picked in July and August averagely 2.56 days. Average picked sumac was obtained as 134 kg and average annual income determined 470 TL. Collectors obtain averagely 448.79 TL annual income from wild pistachio products. Besides, it was determined that, collectors picked up 15.48 kg terebinth and 33.48 kg pistachio shoot annually. Contribution of income was determined important reason for preference of sumac and wild pistachio products picking. Results showed that pickers were make sumac and wild pistachio products picking business as side income.

KEYWORDS

Sumac, Wild Pistachio, Picking, Socio-economic factors, Kahramanmaraş

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Poster Session 5

Submission ID: 684

POLYPHENOLS AND FLAVONOIDS CONTENTS AND THE ANTIOXIDANT CAPACITY OF BILBERRIES.

TUBA ALBAYRAK¹, CEMAL KASNAK¹, RECEP PALAMUTOĐLU¹

ABSTRACT

Bilberry (*Vaccinium myrtillus*) or bear grape is a kind of grape fruit adorned with temperate climates from the family Ericaceae. Especially in Turkey, the Black Sea region grows in shrub form in high forested regions. The consumption of bilberries, which are rich in phenolic compounds and flavonoids, is important for the elimination of free radicals that damage tissues in the body. But it is not possible to find the fruit of this fruit every season. For this reason, it is necessary to go to dried bilberries. Especially in snacks, consumption of dried blueberries is recommended to calm hunger. The aim of this study is to reveal the phytochemical potential of this fruit in order to increase the consumption of blueberries. From this point of view, a series of analyzes were carried out in dry packed blueberries. The results obtained are as follows: Color L: 25.93, a: 16.25, b: 5.40, acidity as citric acid 0.41%, dry matter 89.85%, phenolic substance 1,413 mg / g catechin equivalent, flavonoid 2,527 mg / g catechin equivalent, antioxidant power 61.34%, DPPH 49,23 mg / 100 g trolox equivalent, ABTS 327,95 mg / 100 g trolox equivalent.

KEYWORDS

Bilberry, Antioxidant, DPPH, ABTS, Polyphenol

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Poster Session 5

Submission ID: 685

NEW TREND IN CELIAC PATIENT'S NUTRITION: UTILIZATION OF ENDOPEPTIDASE

SALIHA DINC¹, MERYEM KARA¹, HATICE BERNA POÇAN¹

ABSTRACT

Celiac disease occurs in people who cannot digest gluten protein, found especially in wheat, rye, oat and barley. In gliadin, one of the components of gluten, glutamine and proline rich peptide sequences cause gluten toxicity. Genetic and environmental factors increase in the number of celiac patients. The only treatment for those suffering from celiac disease is to follow a gluten-free diet for life. However, plants such as ginger rhizome, ginseng and black cumin are utilized in celiac patient's therapy as immune system improver. Plant and microorganism proteases have curative effect by cleaving peptides derived gliadin. Black cumin proteases degrade gliadin of T. aestivum and T.durum. Aspergillus niger has an industrial utilization in the production of citric acid and gluconic acid. Recently, it has been determined that, endopeptidase produced by Aspergillus niger, specific to proline, cleavage these peptides. Aspergillus niger endopeptidase is active under stomach conditions of low pH and resistant to pepsin. New trend in celiac patient's therapy is cleavage of the peptides derived from gluten by oral uptake of proline specific endopeptidase in gastrointestinal track. It is commercially available and when taken before meal it can digest hidden gluten. Moreover, in literature, there is a patent about the inclusion of this endopeptidase to food formulations. This topic, novel in our country, may expand new horizon for celiac patients and producers to prepare functional food/ nutraceuticals.

KEYWORDS

Celiac, gluten, ginger, black cumin, endopeptidase.

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Poster Session 5

Submission ID: 687

THE USE OF ROSEMARY (*ROSMARIUNUS SP.*) AND THYME (*THYMUS SP.*) ESSENTIAL OILS IN EDIBLE COATING OF MEATBALL

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ABSTRACT

Meatball is a traditional meat product produced from minced meat and different spices such as cumin, black pepper, garlic and onion. There are number of studies on extending the shelf life of meatball in the literature. However, the use of chemical antimicrobial agents is not allowed by legislations in Turkey. In this context, the studies are focused on the use of natural additives for preservation of raw meatball. Edible coatings have been used in food sector to enhance the overall quality of the products, especially for improving the resistance against deterioration. In the present study, edible coatings including 0.25, 0.50, 0.75 and 1.00 % rosemary and thyme essential oils were used to coat meatball samples and microbiological and color changes were compared with control group that was coated with edible coating without essential oil addition. Analysis were done after 5 days storage at +4°C. The results showed that total mesophilic aerobic bacteria (TMAB) count of sample containing 1.00% rosemary essential oil was 4.11 log cfu/g where that of control sample was 4.25 log cfu/g. Thyme essential oil was also effective on microbial count where TMAB count of the sample containing 1.00% thyme essential oil was 4.22 log cfu/g and that of control sample was 4.25 log cfu/g. Additionally, the results clarify that the more essential oil addition resulted a significant decrease in TMAB count ($P < 0.05$). The color value of meatball samples was also measured at the end of the 5 days storage period at +4°C. The results confirmed that the L (lightness) value was lower in the sample containing 1.00% essential oil and the a (redness) value of that was the highest ($P < 0.05$) for both sample sets containing thyme and rosemary essential oil. In conclusion, the findings showed that the use of rosemary and thyme essential oils in edible coatings can positively affect some quality properties of raw meatballs.

KEYWORDS

Thyme, rosemary, essential oil, coating, meatball

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Poster Session 5

Submission ID: 688

4-HYDROXYCOUMARINE FUNCTIONALIZED CYCLOTRIPHOSPHAZENES: SYNTHESIS AND CHARACTERIZATION

GÖNÜL YENİLMEZ ÇİFTÇİ¹, YAKUP EKER¹, ELİF ŞENKUYTU¹

ABSTRACT

Cyclotriphosphazenes are a member of class of cyclophosphazenes and they are generally prepared by nucleophilic displacement of reactive Cl atoms of hexachlorocyclotriphosphazene, N₃P₃Cl₆ (1), with different mono, di, tri and tetrafunctional, and organometallic reagents [1]. During the past two decades nucleophilic substitution reactions at phosphorus atoms of phosphazene have been extensively explored leading to the enormous variety of materials with interesting properties, such as biomedical materials, anticancer and antimicrobial agents [2]. Coumarins are area group of compounds that play important role an food constituents, antioxidants, and fluorescent sensors. A number of coumarol derivatives and their metal complexes have been synthesized and tested for their antifungal, insecticidal, antibacterial, antiallergic, anticoagulant, and pharmacological properties [3]. 4-Hydroxycoumarin is an important component in coumarins family and natural products with biological activities including anticoagulant and anti- HIV activities [4]. In the current study, all these compounds were synthesized and fully characterized by MALDI-TOF mass spectrometry, ¹H, ¹³C, ³¹P NMR spectroscopies and elemental analysis. The investigation of the reaction of these compounds with different groups for biological activity works will continue in our laboratories. Acknowledgements: The authors thank to the Gebze Technical University Scientific Research Project for financial support (Project No: BAP-2015-A-07). [1] M. Gleria, R. De Jaeger, *Applicative Aspects of Cyclophosphazenes*, Nova Science Publishers, New York, 2004. [2] (a) Porwollik-Czomperlik, M. Siwy, D. Şek, B. Kaczmarczyk, A. Nasulewicz, I. Jaroszewicz, M. Pelczynska, A. Opolski, *Anticancer Res.* 27 (2007) 1553-1558. (b) T. Yıldırım, K. Bilgin, G. Yenilmez Çiftçi, E. Tanrıverdi Eçik, E. Şenkuytu, Y. Uludağ,

KEYWORDS

coumarin, cyclophosphazene

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Poster Session 5

Submission ID: 689

STRUCTURAL PROPERTIES OF CYCLOTETRAPHOSPHAZENES INCLUDING THIAZOLE OR THIADIAZOLE RINGS

GÖNÜL YENİLMEZ ÇİFTÇİ¹, ESRA TANRIVERDİ EÇİK¹, ELİF ŞENKUYTU¹

ABSTRACT

Phosphorous-nitrogen double bond containing compounds are called as phosphazene which are an important inorganic group. Generally, linear, cyclic and polyphosphazenes are the three well known types [1]. Cyclophosphazenes and their derivatives have been of considerable interest for a number of years, partly because of their versatile chemistry and partly because it is possible to use them to design materials such as antimicrobial agents, organic light emitting diodes (OLEDs), anticancer agents, flame retardant agent, liquid crystals, fluorescent chemosensor [2]. Small-ring heterocycles including nitrogen and sulfur have been of considerable interest for a number of years on account of their synthetic diversity and therapeutic relevance. Among the wide range of heterocycles such as thiazole core is present in many biologically relevant molecules [3]. All these compounds are fully characterized by elemental analysis, FT-IR, mass (MS), ¹H and ³¹P NMR spectroscopies. The investigation of the reaction of these compounds with different groups for biological activity works will continue in our laboratories. Acknowledgements: The authors thank to the Gebze Technical University Scientific Research Project for financial support (Project No: BAP-2014-A-02). [1] W.C. Allen, Chem. Rev. 91 (1991) 119-135. [2] (a) A.Uslu, S. Yeşilot. Coord. Chem. Rev. 291 (2015) 28–67. (b) T. Yıldırım, K. Bilgin, G.Yenilmez Çiftçi, E. Tanrıverdi Eçik, E.Şenkuytu, Y.Uludağ, L.Tomak, A. Kılıç. Eur. J. Med. Chem. 52 (2012) 213-220. (c) E.Şenkuytu, E. Tanrıverdi Eçik. Spectrochim. Acta, Part A 173 (2017) 863-870. [3] (a) A. Zablotskaya, I. Segal, A.Geronikaki, T.Eremkina, S.Belyakov, M. Petrova, I.Shestakova, L.Zvejniece, V. Nikolajeva. Eur. J. Med. Chem. 70 (2013) 846-856. (b) Q. Huang, J. Mao, B. Wan, Y.Wang, R.Brun, S.G. Franzblau, A. P. Kozikowski. J. Med. Chem. 52 (2009) 6757-6767.

KEYWORDS

Thiazole, Thiadiazole, Cyclophosphazenes

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Poster Session 5

Submission ID: 692

AWARENESS OF MEDICIAN AND AROMATIC PLANTS BY PHYSICAL THERAPY AND REHABILITATION STUDENTS: THE MODEL OF ABANT İZZET BAYSAL UNIVERSITY

ECE ACAR¹, AYŞE NERİMAN NARİN², ÖZLEM ÖZER², MAHMUT BEŞLİ², TUBA ZOROĞLU¹

ABSTRACT

Introduction: Medical and aromatic plants have an important place in physiotherapy and rehabilitation especially during therapeutic massage applications. Aromatic oils are preferred as an inclusion body for manuel therapies, such as friction massage on the purpose of slackened a scar tissue or conventionel massage for muscle relaxation. Medicinal and aromatic plants, in addition, are used when relaxation treatments are required. Today, with the being become populer alternative and supportive therapies, the demand for medicinal and aromatic plants is increased. Objective: The aim of the study is to determine how much knowledge physiotherapy students have about medical and aromatic plants, that have been getting training for a long time and intensively about manual therapy techniques. Methods: The study was carried out by Abant İzzet Baysal University Kemal Demir Physical Therapy and Rehabilitation Department with the first, second, third and fourth grade students. A questionnaire was used to determine the situation of recognizing medicinal and aromatic plants and the usage of these plants. The 10 medicinal and aromatic plants which was the subject of the questionnaire are selected randomly from 84 medicinal and aromatic plants that commonly used in Turkey. Ten multiple-choice questions were related to the usage of the medicinal and aromatic plants were presented at the questionnaire The questionnaire was distributed to the students who were attending classes at different grades at the same time and after filling the form, they were collected. Since the possibility of discussing the questions among themselves was considered, the data collection process was not repeated another day Results: 193 students (women 59,06% -men 40,94%) age 21,25 ±3,01 was attended the study. 27,5% of the the students are at the first grade, 35,8% in the second grade, 26,9% at the third grade and 9,8% at the 4th grade. Five of the ten medicinal and aromatic plants which their effects are well known by the students are aniseed (78.2%), fennel (75.1%), lavender (72.5%), rosemary (70.5%) and turmeric (69,9%) plants. Two herbs that least known by the students are quassie Amara (3.6%) and olibanum (4.1%) plants. The correct response rates for the medicinal effect of the mentioned five herbs, which are indicated to be known by the students for their effects are anise (66,9%), senna (56,3%), fennel (44,8%), rosemary (70,5%) and turmeric (34,1%) plants. 53.1% of the students stated that they use medicinal and aromatic plants rarely and 74.1% of them use the plants to protect themselves from diseases. Only 18.7% of the students stated that they use medicinal and aromatic plants for massage. 79.2% of the students indicated that they have learned from internet what know about aromatic plants. Students with at least one book on medicinal and aromatic plants are 28% of the all participants. Discussion: Physiotherapy students do not have enough knowledge about medical and aromatic plants. Students, however, indicated that they know the effects

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of the herbs but they did not answer the questions correctly. So that, this result indicated us that, the students do not have scientific knowledge about medician plants and oils. Indeed, this is confirmed by the fact that a large majority of the participants stated that they learned information from the internet and the low proportion of those who possess at least one book about medical and aromatic plants. Especially when the proportion of those who use medicinal and aromatic plants for massage applications is low, it will cause to be low usage after graduation. They will not be able to provide enough information to the individuals who consult them. Lectures on the potential benefits and risks and the usage of medicinal plants and oils should be incorporated to the medical curricula.

KEYWORDS

Physiotherapy and Rehabilitation, Student, Manual therapy, Medical and Aromatic plant

Poster Session 5

Submission ID: 693

POISONOUS PLANTS FOR ANIMALS KEPT IN HOUSE

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ABSTRACT

In this proceeding, it was dealt with plants that have toxic effect for animals kept mostly in house. In this context, the poisonous effects of more than 30 plants including Allium, Galerina, Common Laburnum, Jasmine spp., Cuckoopint and Narcissus from poisonous plants present in natural environments, and parks and gardens, as well as grown mostly in homes in our country were discussed. The plant species leading to poisoning for both dogs and cats, as well as leading to poisoning only dogs and only cats were presented in Tables by aligning separately. Their adverse effects in different organ and tissues and their clinical signs occurring in the result that they are eaten by dogs and cats were explained. Concise knowledge was given on the required measures for preventing poisoning of animals kept in home with these plants in also our country, as in world countries.

KEYWORDS

Pet animals, poisonous plants

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Poster Session 5

Submission ID: 694

AWARENESS OF AROMATIC OILS BY FAMILIES OF INDIVIDUALS WITH SPECIAL NEEDS: THE MODEL OF KARABUK CITY

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ABSTRACT

Introduction: The majority of individuals with special needs constitute individuals who are diagnosed with a diseases that have limited or no treatment options such as, cerebral palsy, autism, down syndrome, muscle disorders. In these diseases, for instance, spasticity, respiratory problems, joint limitations and pain complications, usually caused by the disease, should be handled. Considering that the treatment processes of individuals with special needs last for a long time or even for a lifetime, families are expected to be in search of new and alternative treatments. For this purpose, the use of aromatic oils by families is often seen among alternative treatment methods. Its be needed that presenting this situation based scientifically that we frequently observe it. **Objective:** The primary aim of the study is to demonstrate the usage of aromatic oils in the families of individuals with special needs. This preliminary study, in addition, will be the first research that can reveal the awareness of aromatic oils by the families in our country. Furthermore it is aimed to raise awareness among the health personnel who provide individuals with special needs with health service. **Methods:** The study was conducted with families of individuals with special needs who received treatment rapidly by special education and rehabilitation center at Karabuk in Turkey. A questionnaire was applied to identify participants' demographic information and usage of aromatic oils. It was also questioned through this form , that consists of 15 questions, which aromatic oils was preferred by families for spasticity, respiratory problem, pain and sleep problems which are common problems in individuals with special needs. **Results:** 38 parents (34 females (89.5%), 4 males (10.5%)) with a mean age of 39, 11 ± 10, 03 were attended in the study. 26.3% of individuals with special needs have cerebral palsy, 10.5% muscle disease, 15.8% autism, 15.8% down syndrome and 31.6% have other diagnoses (not diagnosed, premature birth, epilepsy) . 73.7% of participants have used aromatic oils (5.3% always use aromatic oils, 36.8% occasional, 31.6% rarely). 68.4% of participants stated that preferred massage method and 5.3% of participants stated that preferred steam / inhalation method. Bath, room perfume, hot / cold compress applications are not used by participants. 41.2% of the participants stated that they use aromatic oil without consult a health care provider. They stated that they most preferred olive oil (68,4%) for spasticity, lavender oil (10,5%) for respiration, anise (31,6%) for sleep problem and rosemary (26,3%) for pain. 47.4% of the participants stated that they do not know which aromatic oil should be preferred for respiratory, sleep and pain problems. Participants have had information about aromatic oils on television (31.6%), internet (26.3%) and from their friends (26.3%). **Discussion:** Despite the high rate of usage of aromatic oils in the families, they know only two methods of application that suggests a lack of information about aromatic oils. The vast majority of families use aromatic oils without consulting any healthcare staff, which may be due to the fact that families

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suppose that healthcare providers don't have adequate knowledge about this issue. Unconscious use of aromatic oils in individuals with special needs who are dealing with chronic conditions can lead to greater problems. It should be questioned all special needs individuals and their parents whether have applied additional treatments. Training can be organized about not using the aromatic oils without consulting the health personnel. In this way it can be provide an environment for families could have questions. This research, which carries a preliminary study, is planned to be carried out again by increasing the number of participants.

KEYWORDS

Individuals with special needs, aromatic oils, special education and rehabilitation

Poster Session 5

Submission ID: 695

THE USE OF ESSENTIAL OILS FROM THYME (THYMUS SP.) AND ROSEMARY (ROSMARINUS SP.) FOR THE PREVENTION OF MOLD GROWTH IN TOMATO PASTE

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ABSTRACT

Tomato is a seasonal fruit and it is generally processed to tomato paste or sauce to extend the shelf life. Dry matter content of tomato paste is about 28-32 % and it is naturally acidic food product, and these properties protect it from bacterial deterioration. However, tomato paste is suitable medium for growth of molds, especially in aerobic conditions. It is not allowed to use chemical antimicrobial agents in tomato paste production that is why natural antimicrobials are of interest to scientific studies in recent years. The aim of the present study was to investigate the effects of essential oils from rosemary and thyme on the mold growth in tomato paste during the storage at different temperatures. The essential oils of rosemary and thyme were added to the tomato paste samples (28 °Bx) at the levels of 0.25, 0.50, 0.75 and 1.00 % and mixed with laboratory homogenizer. Spore solution of *Aspergillus foetidus* containing 8×10⁵ cfu/ml was inoculated at a level of 1% on the samples. One set of samples was stored at +4°C and the other set was stored at room temperature (25°C). The analyses were done at the day on which the mold colonies could be seen by naked eye (day 5 for 25°C storage and day 15 for +4°C storage). The results showed that essential oils have preventive effect on the growth of mold, especially at a level of 1.00%. Mold counts for the control group without essential oil addition was 4.21 log cfu/g at the end of the storage period while that of the sample containing 1.00% thyme oil was 3.91 log cfu/g. Similar results were found for rosemary essential oil such as the mold count decreased to 3.94 log cfu/g at the end of the storage period. The findings showed that the addition of essential oils to tomato paste is significantly effective (P < 0.05) on the prevention of mold growth during storage.

KEYWORDS

Tomato paste, thyme, rosemary, essential oil, mold

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Poster Session 5

Submission ID: 696

DISCRIMINATION OF COLD-PRESSED OILS USING RAMAN SPECTROSCOPY

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ABSTRACT

Numbers of cold pressed oil are commercially produced and sold in Turkish food and medical market. Among those the oils of black cumin and almond are the well-known examples of publicized dietary supplements. However, availability of cold pressed oil is limited due to its high price and so it is an attractive target for fraudulent activities. In this study, we investigate the authenticity of the cold pressed oils sold in Turkish food and medical market using Raman spectroscopy combined with principal component analysis (PCA). For this purpose, cold-pressed oils of black cumin and sweet almond were produced in laboratory conditions and compared with the samples collected from Turkish market. The equipment used for Raman analysis was DeltaNu Examiner Raman Microscopy system with 785 nm laser source and a CCD detector. The spectrum obtained was in the range of 200-2000 cm⁻¹ at a resolution of 2 cm⁻¹. Validation of the study was done using fatty acid methyl esters by GC. PCA was applied to evaluate the Raman data where the GC results were subjected to ANOVA. Eleven commercial samples of almond oil and 8 commercial samples of black cumin oil were compared with the oils produced in laboratory. While both almond and cumin oils were found to be rich in linoleic acid (C18:2n6) and oleic acid (C18:1) according to GC results, they could be classified using chemometric applied to Raman spectrum. The signal obtained at 1300 cm⁻¹ showed higher intensity for almond oil where the signal at 1021 cm⁻¹ was stronger for cumin oil. The first one was associated with twisting of -CH₂ and the second one, probably, related with bending of -CH. Briefly, it can be concluded that the use of Raman spectroscopy in authentication of cold-pressed oils is possible.

KEYWORDS

Raman spectroscopy, cold-pressed oil, cumin, almond

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Poster Session 5

Submission ID: 697

OYSTER MUSHROOM (PLEUROTUS OSTREATUS) CULTIVATION AROUND ANAMUR (MERSIN)

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ABSTRACT

Oyster mushroom cultivation around Anamur (Mersin) city Oyster mushroom cultivation around Anamur (Mersin) city Pleurotus ostreatus (oyster-poplar mushroom) is the second popular cultivated mushroom all over the World, but in our country it's not so known. To negative effects on mushroom consumption is, mushroom species especially in nature poisonous effects on human body and health. In Turkey, cultivated mushrooms' past is so recent. For the first time in 1960, it was cultivated at Ankara Faculty of Agriculture. Then in 1970 it was increased and 'mushrooming department' has been established at 'Yalova Atatürk Garden Cultivation Research Institute' connected with Ministry of Agriculture. After Agaricus genus, Pleurotus genus is becoming more common in the world and our country. In Turkey The Mediterranean Region is the first region about this cultivation. In this study, The Mediterranean Region was searched about oyster mushroom cultivation. 110 meters two area was prepared; one 13 tons of straw (640 straw sack) and another; 200 poplar billets, mycelia growth were examined with Sylvan and K17 kind mycelias with White- yellow colours. Product yields were compared with different ecological requests. Anamur's mushroom cultivation – marketing was searched about climate conditions, heat temperature, light. In this study oyster mushroom's mycelia's duration of the growth, harvest time, yield time were searched around the area. For this soilless agriculture even a house's damp ground floor is suitable. For benefits of country economy, this cultivation –marketing is so important and people's protein requirement. In the conclusion; K17 mycelia kind has grown quicker than another poplar mushroom sylvan mycelia (in the room2). Cultivation has been at 40 days, straw substrate has been at 20-25 days. In the first days temperature should be 20-25 C, dampness should be %80-90. After mycelia pins have existed temperature must be reduced otherwise mold will be in the straw. Fogging machine should be worked after pin existings. In this study some negative results were detected like; less cultivation incentive, between the agriculturists there is not enough unity, marketing casing time, good quality at mushroom mycelia, high costs of mushroom setting companies, molding, reeling, drying, oxygen insufficiency, carbon dioxide increasing, handle growing. In the Mediterranean Region in Korkuteli (Antalya), mushroom cultivating is common but in Anamur although Anamur Forest Management's incentive meetings, it hasn't become common enough. In total 1 big, 2 small total 3 mushroom cultivation place were detected. Oyster mushroom's benefits for the human health, it's cultivation must be common.

KEYWORDS

Mediterranean Region, oyster mushroom, mushroom cultivation

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Poster Session 5

Submission ID: 699

HERBAL TEAS OF LAMIACEAE CONSUMED IN ANATOLIA: A SYSTEMATICAL LIST FROM THE EDIBLE PLANTS DATABASE OF TURKEY (TUGBIV 2.0)

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ABSTRACT

Tea is the most widely consumed beverage in the world after water. Although tea is usually prepared from *Camellia sinensis* (L.) Kuntze., a great variety of plants are used for making “tea” in Anatolia. As being in the intersection for three different phytogeographical zones which provides a wide diversity of plants, Turkey has been a unique area. Besides 11.707 taxa with high endemism ratio (about one third) which brings speciality, rich history of Anatolian culture dating back to 11.000 BC leads a huge potential for ethnobotanical uses. This biodiversity can also be observed in Lamiaceae family. Their rich flavor content make them suitable and attractive for making tea. Recording the ethnobotanical usage and creating an inventory of plants are necessary due to fast-disappearance of traditional knowledge with increasing urbanization. The importance of databases as modern and remotely accessible devices for the conservation of traditional heritage will keep on due to continuously updateable and improvable structure with new functions. Since 1999 our study group has been working on the project for the formation of “Ethnobotanical Database of Turkey”. It was prepared by an extensive scanning through all scientific sources, in particular the ethnobotanical studies, which have been revealed up to today. “The Edible Plants Database of Turkey (TUGBIV 2.0)” has been accomplished as a part this project. From this database, herbal teas of Lamiaceae which are consumed in Anatolia is presented. A systematic list showing the plants scientific names according to APG III system, vernacular names, localities, methods of use was given for herbal teas of Lamiaceae. It is determined that more than 100 taxa of Lamiaceae have been used as herbal tea in Turkey. This study is presented with the aim of sharing the scientific data related to floral richness and ethnobotanical heritage.

KEYWORDS

Herbal tea, Lamiaceae, database, edible plant, flora of Turkey, ethnobotany

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Poster Session 5

Submission ID: 700

BENEFITS OF WOLF BERRY TO HUMAN HEALTH

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ABSTRACT

When medicinal plants are mentioned, they cover a wide field in terms of their active ingredients. Natural compounds obtained from plants have been used in the treatment of various diseases for centuries. From the ancient times to the modern ones, plants have been utilized in medicine, chemistry and biology fields in order to treat human diseases. When we look at historical texts about plants, flowers, leaves, barks, seeds, oils or roots, it is seen that these texts can be backtracked centuries from Sumerians to ancient Egyptians and Medieval Europe. Natural products obtained from medicinal plants are usually important for human health and their trade volume has been increasing day by day. It is expressed that the annual medicinal and aromatic plant trade on the world is about 100 billion dollars. One of the plants in medicinal and aromatic plants is wolf berry . Wolf berry taxonomically belongs to Solanales order Solanaceae family Lycium species and Lycium barbarum, L. chinense and L. ruthenicum genus. The plant known as wolf berry in whole world spreads from Himalayas to Western China, Mongolia and Tibet and it has three species that are commonly grown and consumed in China. Lycium genus including approximately 80 species spreads to the tropical and sub-tropical regions of the world. In the oldest book called as Shen Nong Ben Cao Jing, which gives information about China's traditional 365 medicinal and agricultural plants it is mentioned that wolf berry was used medically in about 200 B.C. and its fruits and leaves are highly beneficial and it has no side effects. Chinese people have been consuming wolf berry widespread for centuries, believing that it is a life-sustaining effect. For many thousands of years as well as being a good nutritional source wolf berry fruits have also been used as herbal medicine with their lots of features such as anti-pyretic, anti-inflammatory, liver protection, anti-osteoporosis, anti-fatigue and anti-aging, and blood glucose balancing. Importance of wolf berries for human health will increase day by day with the conducted studies.

KEYWORDS

Medicinal plant, Wolf berries, Healty

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Poster Session 5

Submission ID: 702

THE POTENCY OF USES AS FOOD ADDITIVE FROM HAWTHORN SPECIES (CRATAEGUS SPP.) IN TURKEY

ASUMAN KAN¹

ABSTRACT

Turkey's flora has a total of 31 hawthorn species belonging to Rosaceae family, including almost all medicinal and functional plants. Hawthorn species are used in many different purposes by Turkish populations, such as fruit, tea, jam, as well as pharmaceuticals and landscaping plants. Phytochemical investigations of these hawthorn plants which grow naturally in Turkey have revealed many interesting bioactive compounds. The parts of hawthorn plant contain rich compounds as phenolic (procyanidins, flavon glycosides) sugar, sugar alcohols, vitamin C, protein, organic acids and minerals (Ca, P, K, Mg and Fe) for use as a food additive. Part of the hawthorn plant species such as leaf, flowers and fruit, has been used in conventional and traditionaly medicine. In recent years, It has been recorded a lot of papers on howthorn products in the world. But until today, hawthorn species have been not enough investigated for the uses of food additives in Turkey. In this presentation, Characteristics of functional food additives potency with the hawthorn species from natural flora of Turkey will be evaluated.

KEYWORDS

Crataegus, Hawthorn, Medicinal Plants, Natural Food Additive, Phenolic Compounds

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Poster Session 5

Submission ID: 706

THE EFFECT OF ACUTE AND CHRONIC ADMINISTRATION OF ELLAGIC ACID ON ANTIOXIDANT PARAMETERS IN RATS

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ABSTRACT

Ellagic acid (EA), which is a natural polyphenolic compound (2,3,7,8-tetrahydroxy-chromene, C₁₄H₆O₈) is commonly found in grape-type fruits, pomegranate, hazelnut and some other medical plants. Ellagic acid is a molecule with a molecular weight of 302.197 g/mol, a density of 1.67 g/cm³ and a melting point of 350 °C. Aim of this study was to investigate the effects of acute and chronic administration of EA, which has been shown analgesic, antidepressant, antioxidant and anticancer effects, on superoxide dismutase (SOD), catalase (CAT) and glutathione peroxidase (GPx) levels in rats. In this study 49 adult male Wistar rats were used. Rats were divided 7 different groups which were control group, acute groups as 10, 50 and 100 mg/kg doses of EA, and chronic groups as 10, 50 and 100 mg/kg doses of EA. All of the substances were administered intraperitoneally. When applying substances throughout 21 days to the chronic study group, to the acute study group was administered 2 hours before the blood samples were taken. Rats were anesthetized with 1.25 g/kg dose urethane intraperitoneally after the administration of EA. In order to indicate the effects of EA on the antioxidant mechanism, levels of superoxide dismutase, catalase and glutathione peroxidase were determined in serum by ELISA method. Kruskal-Wallis test were used for statistical comparisons of groups in terms of SOD, CAT and GPx values, and homogeneous subgroups multiple comparison method were used for determining different groups. The levels of SOD obtained from both chronic and acute groups were determined to be significantly lower than the control group (p<0.05). In addition, SOD values obtained from 10 and 50 mg/kg of chronic groups were seen to be lower than the acute groups (p<0,05). When groups were examined in terms of CAT, the levels of CAT obtained from both chronic and acute groups were found statistically lower than the control group (p<0,05). The CAT values obtained from the chronic groups were detected to be significantly higher than the acute groups (P<0.05). The GPx values obtained in chronic groups were found to be significantly lower than the control and acute groups (P<0,01). Consequently, this study showed that ellagic acid reduces SOD, CAT and GPx levels in both acute and chronic groups.

KEYWORDS

Ellagic Acid, Superoxide dismutase, Catalase, Glutathione peroxidase

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Poster Session 5

Submission ID: 708

POLYPHENOLIC COMPOSITION AND ANTIOXIDANT POTENTIAL OF ORIGANUM (L.)

ABDÜLMELİK ARAS¹, ERCAN BURSAL¹, MUZAFFER SİLİNSİN¹, MUHAMMED NURİ BİNGÖL¹

ABSTRACT

In recent decades various plants has received considerable attention due to they are important sources of many antioxidant and cancer chemopreventive agents. Origanum is used as a stimulant, sudorific, emmenagogue and galactagogue and also useful in asthma, hysteria, paralysis and antibacterial activity. Origanum genus are extensively used among the people as diuretic, sedative, antiseptic, sweater and also in the treatment of gastrointestinal diseases, constipation and a spicy additive for food instead of thyme and rich in essential oils and bitter substances. This research was aimed to investigate the active compounds with antioxidant properties from Origanum L. by using different in vitro methods (DPPH radical scavenging , FRAP and CUPRAC reducing methods).

KEYWORDS

Origanum, antioxidant, radical scavenging

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Poster Session 5

Submission ID: 709

DETERMINATION OF ANTIOXIDANT ACTIVITIES OF INULA GRAVEOLENS (L.) DESF.

MUZAFFER SILİNSİN¹, ERCAN BURSAL¹

ABSTRACT

In this research, antioxidant potential of ethanol and water extracts of the *Inula graveolens* (L.) Desf. leaves were measured by in vitro DPPH, FRAP and CUPRAC techniques. Several *Inula* spp. are used as traditional herbal medicines to treat many diseases, including bronchitis, diabetes and intestinal ulcers. Therefore the genus *Inula* comprises several species of reputed medicinal value. Phenolic compounds are the alternative therapeutic agents for the prevention of many diseases as well as being used for their treatment. In this study our main goal was to determine the antioxidant activities of ethanol and water extracts of leaves of *Inula graveolens*.

KEYWORDS

Inula graveolens, antioxidant, radical scavenging

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Poster Session 5

Submission ID: 710

**DETERMINATION OF ANTIOXIDANT ACTIVITIES OF ACORNS
AND LEAVES OF OAK (QUERCUS ROBUR SUBSP.
PEDUNCULIFLORA) AND "GEZO" MOLASSES.**

REMZİ BOĐA¹, ERCAN BURSAL²

ABSTRACT

A traditional farmer product of homemade oak molasses, acorns and leaves of oak (*Quercus robur* subsp. *pedunculiflora*) are the main materials of this study. The leaves of oak tree have been extracted in water and this extracts have been evaporated by farmers. Colloidal precipitants have been widely used as dietary molasses that also have very effective antiseptic functions at alternative medicine for ages in some region of East and Southeastern Anotolia. Present study aimed to evaluate the antioxidant activities of ethanol and water extracts of acorn, leaves and oak molasses named "gezo molasses" that obtained from the leaves of oak trees (*Quercus robur* subsp. *pedunculiflora*).

KEYWORDS

pedunculiflora, antioxidant, radical scavenging

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Poster Session 5

Submission ID: 711

THE INFLUENCE OF HARVESTING PERIOD AND CUTTING HOUR ON YIELD AND QUALITY IN THYME (*THYMUS VULGARIS* L.) IN ÇUKUROVA CONDITIONS

CEREN DENİZ YILDIRIM¹, MUHAMMET ENES AKDOĞAN¹, TUNCAY ÇALIŞKAN¹, HASAN MARAL², EBRU
KAFKAS³, SALIHA KIRICI¹

ABSTRACT

This research was conducted in 2016 at the Research Area of Department of Field Crops, Faculty of Agriculture, Çukurova University, Adana for the influence of harvesting period and cutting hour on yield and quality in *Thymus vulgaris* L. Field trial was arranged in randomized complete block design, with three replications. Thyme seeds were sown on December 17, 2015 in the green house. Seedlings were transferred to field at March 31, 2016. The plants were harvested three times at one month interval (first: August 22, second: September, 23 and third: October 21, 2016). Cutting hours were 9:00 am, 12:30 am and 16:00 pm. In the study, plant height (22.7 – 32,8 cm), drug herbage yield (39 - 156 kg da⁻¹) and essential oil content (1.54- 1.88%) were determined. The highest essential oil content was obtained as a mean 1.88 % from the first harvest at 16:00 pm cutting. The lowest value was obtained from second harvest at 9:00 am cutting time.

KEYWORDS

*Thyme; Thymus vulgaris*L., Harvesting Period, Essential Oil

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Poster Session 5

Submission ID: 714

THE BIOLOGICAL ACTIVITIES OF EUPHORBIA ALEPPICA AND E. ERIOPHORA SPECIES

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ABSTRACT

Euphorbia species are commonly used in Turkish folk medicine for the treatment of rheumatism, swelling as well as a wart remover. However, inflammation and diarrhoea are the two potential side effects that might occur during the treatment . The genus Euphorbia is the largest in the spurge family, comprising about 1100 species in the World . Most of the representative Euphorbia species are characterized by the occurrence of highly irritant latex . Euphorbia species are named as "Sütleğen" and "Xaşıl" . The genus Euphorbia is the source of a large number of biologically active compounds. An increasing attention has been paid to Euphorbia diterpenes because of their diverse structures and therapeutical importance . Root and aerial parts (stem, leave, flower and seed) of E. aleppica and E. Eriophora were collected from Diyarbakır in flowering period. β -Carotene method, ABTS cation radical decolorisation method, cupric reducing antioxidant capacity assay and DPPH free radical scavenging activity were carried out to indicate their antioxidant activity. Additionally, the methanol extract these Euphorbia species were tested for anticholinesterase (Acetyl- and butyrylcholinesterase enzymes) activities. The methanol extracts of E. aleppica and E. eriophora showed good antioxidant and weak butyrylcholinesterase activities.

KEYWORDS

E. aleppica, E. eriophora, antioxidant, anticholinesterase

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Poster Session 5

Submission ID: 715

THE NUTRITIONAL AND FUNCTIONAL PROPERTIES OF PHYSIOLOGICALLY MATURE AND IMMATURE WHEAT

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ABSTRACT

Wheat, which is in the first place in agricultural production in the world has important place in human nutrition. Its grain can be ground into flour and semolina which are the basic ingredients of bread, pasta, noodle, biscuit, cake and other bakery products. Wheat based products are the major energy supplier of individuals throughout the world. Also whole wheat products are an excellent source of dietary fibres, minerals, vitamins and bioactive phytochemicals that include carotenoids, tocopherols, lignans and phenolic acids. These antioxidative components may prevent life important molecules such as DNA and enzymes from oxidative damages. The unique phytochemicals content of cereal based foods produced from whole wheat flour complement those in fruits and vegetables when consumed together. Therefore whole wheat products have additional health benefits beyond basic nutrition. Whole wheat products are associated with various types of diseases such as obesity, cardiovascular disease, cancer, diabetes, and other chronic diseases. These health benefits are attributed to the bioactive factors in wheat grain such as dietary fibers and phytochemicals. While the wheat is in immature form, it has some additional nutritional and functional advantages compared to physiologically mature wheat. For that reason, the interest to immature wheat has been increasing in recent years. Maturation of wheats affects micro and macromolecular components related to nutrition and health. Immature wheat has a high content of dietary fiber, essential amino acid-lysine, minerals (P, K, Ca and Cu), fructooligosaccharides (FOS) and simple sugars. FOS, non-digestible fructose polymers, occur naturally in many plants, including wheat and stimulate the growth of bifidobacteria in human colon, rebalance of metabolic activities and strengthen the immune system of humans. Therefore, FOS are evaluated as "prebiotic". Immature wheat contains more polyphenols and flavonoids and has higher antioxidant capacity than mature wheat. Also, immature wheat contains considerable amount of vitamin C especially at early stage of kernel development. Considering nutritional and functional characteristics, immature wheat is a innovative food ingredient and can be added various cereal products as a natural source of FOS and other bioactive components. In recent years, the health concerns of consumers have increased with the increased of diseases. For that reason, there is a rising interest to functional foods which are foods that contain not only traditional nutrients but also provide other compounds beneficial to health. Immature wheat flour at early stage of maturity is an important functional ingredient and can be added to various cereal products to increase the nutritional and functional status of foods.

KEYWORDS

Wheat, immature, functional, nutritional

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Poster Session 5

Submission ID: 716

CHEMICAL PROFILE OF SALVIA BLEPHAROCHLAENA ETHANOL EXTRACT BY LC-MS/MS

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ABSTRACT

Salvia L. is one of the largest and the most important aromatic and medicinal genus of the Lamiaceae family which exists approximately 900 species widespread throughout the world. Salvia L. genus is represented with about 98 species in Turkey and half of them is endemic (1). Salvia species are commonly used in traditional medicine for treatment of more than sixty diseases such as headache, cough, colds, stomachache, antipyretic, anti-inflammatory (2). Salvia species possess high amount of rosmarinic acid which has antioxidative, anti-inflammatory, antimutagenic, antimicrobial, antibacterial, antiviral effects (3). Root and aerial parts (stem, leaf, flower and seed) of *S. blepharochlaena* were collected from Kayseri in flowering period. A gram of powdered plant material was macerated three times with methanol (each part with 10 mL) at 25 °C for 24 hours. After filtration, the solvent was evaporated to get the crude extract. Phenolic components of the methanol extract were quantified by LC-MS/MS. LC-MS/MS analysis of the phenolic compounds was performed by using a Nexera model Shimadzu UHPLC coupled to a tandem MS instrument. In the current study, twenty-four phenolic compounds (flavonoids, flavonoid glycosides, phenolic acids, phenolic aldehyde, coumarin) and three non-phenolic organic acids which are widespread in plant materials were qualified and quantified in *S. blepharochlaena*. Among 27 compounds, LC-MS/MS study showed that rosmarinic acid, gallic acid, caffeic acid, protocatechuic acid, fumaric acid and malic acid were found to be the more abundant compounds in *S. blepharochlaena*. In addition, the amount of gallic acid, caffeic acid, protocatechuic acid, fumaric acid and malic acid were found to be high in stem, and rosmarinic acid in flower extracts.

KEYWORDS

Salvia blepharochlaena, Phenolic Content, LC-MS/MS

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Poster Session 5

Submission ID: 717

TOTAL PHENOLIC-FLAVONOID CONTENTS, ANTIOXIDANT AND ANTICHOLINESTERASE ACTIVITIES OF SALVIA BLEPHAROCHLAENA

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ABSTRACT

Different *Salvia L.* species are reported to show many biological activities and medicinal properties, such as antimicrobial, antioxidant, antibacterial, anti-inflammatory, antitumoral, anxiolytic, antidiabetic, anti-inflammatory, antifungal, antiplasmodial, hypoglycaemic and anticarcinogenic effects (1,2). *Salvia* species are used as herbal tea due to their antiseptic, stimulant, diuretic and wound healing properties in Turkey (3). The aim of this study was to determine total phenolic and flavonoid content, antioxidant (DPPH free radical scavenging activity, β -carotene bleaching assay, CUPPRAC, ABTS cation radical scavenging activity) and anticholinesterase (acetyl- and butyrylcholinesterase enzymes inhibition) activities of the extracts obtained from various parts of (roots, leaves, stems, flowers and mixed) *S. blepharochlaena*. Total phenolic and flavonoid contents in crude extracts were determined by expressing as pyrocatechol and quercetin equivalents, respectively. Among the studied extracts, the root extract was found to be the richest in terms of both total phenolic and flavonoid contents. The anticholinesterase potential of the extracts was indicated by Ellman method (Ellman 1961). It was determined that none of the extracts showed acetylcholinesterase activity but they exhibited moderate butyrylcholinesterase activity. All of the antioxidant tests which were used in this study, especially ABTS cation radical scavenging test system, the ethanol extracts of *S. blepharochlaena* showed high antioxidant activity in all parts of plant.

KEYWORDS

Salvia blepharochlaena, Antioxidant, Anticholinesterase, Total Phenolic-Flavonoid, ABTS

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Poster Session 5

Submission ID: 718

**SEED CHARACTERISTICS AND CUTTING PROPAGATION OF
ALDER BUCKTHORN (FRANGULA DODONEI ARD. SUBSP.
DODONEI) WITH MEDICINAL AND AROMATIC IMPORTANCE**

NEBAHAT YILDIRIM¹, ALI BAYRAKTAR¹, FAHRETTİN ATAR¹

ABSTRACT

Alder buckthorn (*Frangula dodonei* Ard. subsp. *dodonei*) is widespread in the whole of Europe and Western Siberia, except for the northernmost regions where temperature conditions have reached the extremes. The most common place in Turkey is the Black Sea region, and especially the northeastern part of this region. In locations outside this area, it has a more local distribution. Alder buckthorn is a deciduous slow growing woody plant species, belonging to Rhamnaceae family. And it can also grow up to 4-5 m. Fruits (in the pharmaceutical industry) and barks of this species is mainly used as a medicinal and aromatic plant. This species is located in the leafy forest zone as individual, cluster and locally in groups in its natural distribution areas. These areas are subject to agricultural activities in particular and it faces with the threat of annihilation. A basis related to in-situ and ex-situ protection will be formed with studies to be made on seed characteristics and propagation methods of the species. In the scope of this study, seed and fruit characteristics of alder buckthorn taken from the natural distribution areas were investigated. In addition, effect on rooting of different hormone applications in cutting propagation tried to determine. As a result of the study, average seed length, average seed width, seed fullness and 1000 seed weight was found as 5.27 mm, 4.29 mm, 79% and 21.76 gr, respectively. Numbers of seeds in the fruit were determined, and it was found that 30% of these fruits were with 2 seeds, the rest of these fruits (70%) were with 3 seeds. A low rooting success was obtained from cutting propagation.

KEYWORDS

Alder buckthorn, Non-wood, Seed, Fruit, Cutting propagation.

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Poster Session 5

Submission ID: 720

PRODUCTION TECHNIQUES OF SOME WOODY MEDICINAL AND AROMATIC PLANTS NATURALLY FOUND IN EASTERN BLACK SEA REGION

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ABSTRACT

Plants, that are the most important element of forest ecosystems providing vital benefits for living things, are as old as human history. And they fulfill countless benefits and various functions. Forests, one of the habitats of plants, are our most important natural resources with their wood and non-wood economic values, ecological and social benefits. The Eastern Black Sea Region has an asset that can be considered rich in terms of non-wood forest products, and it is home to numerous herbaceous and woody plant species. These species are used for a variety of purposes, primarily medical and aromatic. Lately, consciousness of large masses of people related to usage areas of medicinal and aromatic plants increases the importance of plants. Plants are used as medicines in the prevention and treatment of diseases, and in nutrition as nutritional supplements, herbal tea, taste, flavor. In addition to their use in perfumery and cosmetics, they also have a wide range of uses in different branches of the industry. However, due to unconscious harvests of some plants, these plants are faced with separation and extinction from the ecosystem. Medical and aromatic plants need to be met from natural sources, determination of the inventory of these species in order to ensure participation to its national economy, being made in accordance with the techniques of harvesting and using methods and also knowing production methods and making production to ensure its continuity. In this study, production techniques of some woody species (35 plant species) used as medicinal and aromatic plants from the natural species in The Eastern Black Sea Region were revealed. Accordingly, it was determined that it should be made production with seed+cutting of 51.43%, with seed+grafting+cutting of 22.86%, with seed+tissue culture of 8.57%, with seed+cutting+grafting of 5.71%, with seed of 5.71%, with cutting of 2.86% and with grafting+seed of 2.86% of the species.

KEYWORDS

Eastern Black Sea Region, Medical and aromatic plants, Production techniques.

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Poster Session 5

Submission ID: 722

**THE EFFECT OF DIFFERENT PLANTING DENSITIES ON
ESSENTIAL OIL COMPONENTS OF DADAŞKÖY TARRAGON
ECOTYPE (ARTEMISIA DRACUNCULUS L.)**

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ABSTRACT

In this study, the effect of different planting densities on essential oil contents of Dadaşköy tarragon ecotype (*Artemisia dracunculus* L.) was determined. In the study there were three row and three intra-row spacing (40, 50, 60 cm and 30, 40, 50 cm). The study was established as "Split Plot" arrangement in "Randomized Blocks" experimental design with three replications and repeated two years. Methyl chavicol was found to be predominant essential oil in 11 essential oils detected in the Dadaşköy tarragon ecotype. All components except for methyl chavicol were larger quantity in the first experiment year than the second year. Similarly, the first cuttings gave larger quantity of all components except for methyl chavicol than the later cuttings in both years. Essential oil components ratio was significantly different ($p > 0.01$) in regard to planting density. Major constituents of the essential oil investigated were bicyclogermacrene (1.9%) and β -sesquiphellondrene (0.8%) in 40x50 cm planting density, methyl chavicol (76.4%), methyl eugenol (7.2%) and α -zingiberene (1.5%) in 50x40 cm planting density, bornyl acetate (0.4%) in 50x50 cm planting density, bicyclogermacrene (1.0%) β -sesquiphellondrene (0.6%), spathulenol (6.8%) and α -acorenil (2.1%) in 60x40 cm planting density, germacrene (2.5%), β -Cubebene (1.1%) and Jasmolin (0.1%) in 60x50 cm planting density, respectively. It can be concluded from the study that planting densities had significant effect on essential oil components.

KEYWORDS

Tarragon (Artemisia dracunculus L.), planting density, essential oil components

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⁴GAZİANTEP ÜNİVERSİTESİ ARABAN MESLEK YÜKSEKOKULU BİTKİSEL VE HAYVANSAL ÜRETİM BÖLÜMÜ, GAZİANTEP

Poster Session 5

Submission ID: 723

EFFECTS OF DIFFERENT OSMOTIC PRESSURES AND SALT CONCENTRATIONS ON ANTIOXIDANT ACTIVITY IN HULLED EINKORN AND BREAD WHEATS

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ABSTRACT

Effects of Different Osmotic Pressures and Salt Concentrations on Antioxidant Activity in Hulled Einkorn and Bread Wheats Farklı Osmotik Basınç ve Tuz Konsantrasyonlarının Siyez ve Ekmeklik Buğdayların Antioksidan Aktivitesi Üzerine Etkileri Fatma PEHLİVAN KARAKAŞ^{1,2}, Nusret Zencirci², Bihter Gökçe Bozat² 1Abant İzzet Baysal University, Department of Field Crops, Faculty of Agriculture and Natural Sciences, Bolu, Turkey 2Abant İzzet Baysal University, Department of Biology, Faculty of Science and Art, Bolu, Turkey Email: fatmapehlivankarakas@gmail.com Abstract Climatic changes worsen the production of wheat, an important stable crop and improve its some healthy quality characteristics. This study was conducted to determine the effects of drought (different osmotic pressure) and salinity stress on antioxidant activity [total phenolic content, total flavonoid content and 2,2-diphenyl-1-picrylhydrazyl (DPPH) free radical scavenger activity] of 2 hulled einkorn (*Triticum monococcum* spp. *monococcum*; AA; 2n=14) populations (Pop-1 and Pop-2) and 4 bread wheat (*Triticum aestivum* L.; AABBDD; 2n=42) cultivars (cv. Gerek-79, İkizce, Demir-2000 ve Gün-91) grown in Turkey. Three different salt concentrations [0.0 (distilled water), 50, and 100 mM sodium chloride (NaCl)] and 3 different osmotic pressures (0.0 MPa., -0.5 MPa. and -1.0MPa), which were created by polyethylene glycol (PEG-600) were used on the seed germination process. The seed material of "Gerek-79" was provided by Anatolia Agricultural Research Institute, Eskişehir. "İkizce", "Demir-2000" and "Gün-91" were kindly provided by Central Research Institute for Agricultural Research, Ankara. "Population-1" (Haccağız Village, Seben/Bolu) and "Population-2" (Kavaklı Yazı Village, Seben/Bolu) were kindly provided by Bolu Quality and Feed Industry Corporation. Totally 6 different wheat genotypes were counted (100 pieces of seeds) and put into beaker (250 ml) separately. Seeds were surface-sterilized in 150 ml of 5% sodium hypochlorite (NaClO) for 15 min and thoroughly rinsed 4-5 times in distilled water. Ten sterilized seeds are placed between the sterile filter papers placed in the petri plates of 10 ml distilled water for control, 10 ml -0.0 MPa., -0.5 MPa. or -1.0 MPa. PEG 600 for drought stress, and 10 ml of 50 mM ve 100 mM NaCl for salt stress were put on petri plates. The pH of each concentration was adjusted to pH 5.8 and germinated at 22 ± 2 °C in a dark growth room and, then, transferred into a enlightened room. Five replicate petri dishes were prepared for each group (5 petri × 10 seeds). Paraffin wrapped around the petri dishes to prevent the solution from evaporating. All petri dishes were kept at 22 ± 2 °C in the dark room for 4 days in darkness and in a growth room with a 16 h photoperiod following 6 days. After 10 days from sowing, antioxidant activities of seedlings were measured under control (distilled water), drought (-0.5 MPa. PEG 600), and salt stress (50 mM NaCl). Seedlings were liquid nitrogen dried and powdered in a porcelain mortar. One g of powdered plant material was transferred to a glass

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test tube containing 10 ml of 80% methanol (MeOH) for 18 h at 35 °C in an agitated hot water bath for extraction. Then, the test tubes were centrifuged at 5000 rpm for 10 min. The supernatant was filtrated by 0.45 µm pore size Whatman syringe filter. Antioxidant activities of these extracts were assessed using selected bioassays; radical scavenging activity (DPPH), total phenolic content (Folin-Ciocalteu method) and total flavonoid content (aluminum chloride colorimetric method). Statistically significant differences for antioxidant activities of wheats were recorded ($p < 0.05$). The highest total phenolic content (31.23 ± 1.81 mg GAE/g) and total flavonoid (84.00 ± 6.01 mg QE/g) contents were in Gerek-79 and Demir-2000 under salt stress, respectively. When free radical scavenging antioxidant activities were compared, Demir-2000 had the lowest IC₅₀ values (13.98 ± 0.25 mg/L) under salt stress among all entries. The highest antioxidant activity of Demir-2000 under salt stress demonstrated that antioxidant defense system of that was more effective than other available wheat cultivars. Keywords: Antioxidant activity, total fenolic content, drought stress, salt stress, Demir-2000

KEYWORDS

Antioxidant activity, total fenolic content, drought stress, salt stress, Demir-2000

Poster Session 5

Submission ID: 724

EFFECT OF SALT AND PH STRESS ON BIOACTIVE METABOLITE PRODUCTION IN GEITLERINEMA CAROTINOSUM

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ABSTRACT

Cyanobacterial metabolites are natural products that have an important features in pharmaceutical and medicinal industries. In this study, the presence of the secondary metabolite norharmane in the indole structure was determined in *Geitlerinema carotinosum* isolated from Tokat Yeşilirmak River and its production in salt stress and pH stress was investigated. In salt stress, cyanobacterium was cultured for two weeks by adding NaCl to BG11 medium in erlenmeyers of 0.5, 1.0, 3.0, 5.0 M. pH conditions were executed at 5 and 9. Norharmane amount was determined by HPLC using C18 reverse phase column at a temperature of 40 °C and a flow rate of 1 ml/min. The amount of norharman metabolite ($\mu\text{g/g}$) was calculated according to the Gauss method by drawing a calibration curve over the absorbance value of the standard 247 nm wavelength. According to the analysis results, metabolite production was 0.612, 1.299, 0.011 at 0.5 M, 1.0 M, 3.0 M respectively. At 5 M, there was no norharmane production. The norharmane production is higher at pH 5 (1.293 $\mu\text{g/g}$) than that of the pH 9 (0.448 $\mu\text{g/g}$).

KEYWORDS

Geitlerinema carotinosum, norharman, HPLC, salt, pH

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Poster Session 5

Submission ID: 726

EFFECTS OF PHYTOESTROGEN SUPPLEMENTATION ON OBESITY AND TYPE II DIABETES

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ABSTRACT

Obesity and type II diabetes is one of the increasing health issue all over the world. In addition to eating habits, living style, age, sex and social economic conditions are also effective for these diseases to occur. Diet is one of the important factor for preventing these diseases. Phytoestrogen is effective against obesity and diabetes, according to the studies made. Phytoestrogens act like estrogen hormone with binding estrogen receptors. They decrease the activity of the lipase of lipoprotein which regulates the lipid intake from the adipocytes and inhibit the lipogenesis. Due to their estrogenic activities, they regulate the lipid and carbohydrates homeostasis. OBJECTIVE: The aim of this study is to investigate, phytoestrogen supplementation's effects on serum lipid levels and body composition which are obesity parameters and glycemic control and insulin levels which are diabetes parameter. METHOD: By literature research, a review on the phytoestrogen supplementation's effects on obesity and diabetes is made. RESULTS: At the studies made, phytoestrogen supplementation for over weighted and obese persons have positive effects on, body weight, waist circumference, body fat weight, body weight without fat, blood lipids, leptin levels, adiponectin levels, C-reactive protein (CRP), fasting glucose, fasting insulin levels, insulin resistance, insulin sensitiveness and blood pressure. Phytoestrogen supplementation on people with type II diabetes shows that, phytoestrogen has positive effects on fasting glucose, fasting insulin, insulin resistance, insulin sensitiveness, blood lipid levels, HbA1c, homocysteine, leptin, adiponectin, CRP levels and blood pressure. Suitable supplementation amount shows variety for each study, therefore it is not clear. CONCLUSION: With the changing life conditions, obesity and diabetes incidence has shown an increase at the populations. In order to prevent these diseases, diet has an important role. Phytoestrogen supplementation decreases body weight, body fat weight (FM), blood lipids, leptin levels, fasting glucose, insulin levels, CRP and HbA1c, and increases body weight without fat (FFM), insulin sensitivity and adiponectin. Therefore it is thought that, it can help to prevent obesity and diabetes.

KEYWORDS

Phytoestrogen, diet, obesity, diabetes

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Poster Session 5

Submission ID: 727

DETERMINATION OF FATTY ACID COMPOSITION BY GC-MS IN THE SEEDS OF PALIURUS SPINA CHRISTI MILLER

ELİFE KAYA¹, GÖKHAN CEYHAN¹, PERİHAN AKBAŞ²

ABSTRACT

In this study, *Paliurus spina christi* Miller plant was collected from the 10th km of the roads of Kahramanmaraş Kazma vineyard. *Paliurus spina christi* Miller is a member of Rhamnaceae family, the plant can be grown in most parts of Turkey, deciduous in winter, the flowers are yellow, the fruits are circle; flat, winged, is a seed plant. It is seen as a thorny hedge of two to three meters in height, which grows in almost all parts of Anatolia. *Paliurus spina christi* Miller with various medicinal uses among the people, it is important in terms of contained substances. Studies have shown that the fruit of plant has been used for antiinflammatory, treatment of rheumatoid arthritis, as a diuretic and tonic in traditional medicine for many years. In this study, *Paliurus spina-christi* Miller plant seeds were extracted, later it's oil rate and fatty acid composition were determined using GC-MS instrument. In order to perform fatty acid analysis, first fatty acid methyl esters were formed. Then, gas chromatography method was employed using a FID detector. Seed oil rate was found to be (%17.15). *Paliurus spina christi* Miller plant in the seed were detected fatty acid total of 27 components. The most important of these components were Oleic acid (%44.965), Linoleic acid (%39.868), Palmitic acid (%7.538) and Elaidic acid (%3).

KEYWORDS

Paliurus spina christi Miller, Fatty acid, GC-MS

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Poster Session 5

Submission ID: 728

INVESTIGATION OF PHENOLIC CONSTITUENTS IN SOME SALVIA L. (LAMIACEAE) SPECIES BY RP-HPLC-DAD

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ABSTRACT

The genus *Salvia* with about 900 species, is one of the most widespread members of the Lamiaceae family (Karatoprak et al. 2016). *Salvia* L. (Lamiaceae) species are used for culinary and therapeutic purposes. They possess hypoglycemic, spasmolytic, stomachic, estrogenic choleric, antioxidant, antiproliferative, anti-inflammatory and gastroprotective properties (Gird et al. 2014). The aim was to investigate the phenolic contents of *Salvia divaricata*, *Salvia euphratica*, *Salvia hypargeia* collected from Erzincan, Turkey. Phenolic constituents were analyzed by using RP-HPLC-DAD (reverse phase-high performance liquid chromatography with a diode array detector). These analyses were achieved on Thermo Scientific Dionex Ultimate™ 3000 system (Thermo Scientific, Bremen, Germany). Chromatographic separation was carried out on a Thermo Scientific™ Hypersil™ ODS C18 HPLC (250 mm × 4.6 mm × 5 µm) column (Thermo Scientific, USA) at temperature 30°C using a mobile phase, consisting of 2 % (v/v) acetic acid in water (A), 70% (v/v) acetonitrile in water (B) at a flow rate 1.2 mL/min, under gradient elution conditions. The gradient used was as follows: zero-time condition was 5% B and it was increased to 60% B in 26 minutes. The eluted 10 standard phenolic acids: gallic, protocatechuic, p-hydroxybenzoic, chlorogenic, vanillic, caffeic, syringic, p-coumaric, rosmarinic, benzoic, and two flavonoids: rutin, quercetin were monitored by comparison at 280 and 315 nm. In the three samples, analyzed phenolics were found to be total ranging from 40.358-65.988 mg phenolic/g extract. Gallic acid was not detected in all samples, but other phenolics were found with different quantitative amounts. Especially rosmarinic acid was the major with 32.005-51.534 mg phenolic/g extract. According to the amount of analyzed standards, *S. hypargeia* was the strongest. Also, it was evaluated by nearly same potential for other species. These results were the evidence that in vivo metabolic system could be regenerated by consuming of these plants.

KEYWORDS

Phenolic, HPLC, Salvia L., Rosmarinic Acid

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Poster Session 5

Submission ID: 729

DETERMINATION OF PHENOLIC COMPOUNDS IN FOUR ENDEMIC TANACETUM L. (ASTERACEAE) SPECIES BY RP-HPLC-DAD

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ABSTRACT

Tanacetum is genus of about 160 species of flowering plants in the Asterea family, generally consumed as tea (Stojkovic et al., 2014). The benefits of its consumption may extend throughout the body and also known to show some bioactive properties as antitumor, anti-inflammatory, antioxidant, antimicrobial. Phenolic compounds are majorly responsible for these activities (Lahlou et al., 2008). This study was designed to determine the phenolic constituents within four endemic plants of Tanacetum genus (Tanacetum heterotomum, Tanacetum eginense, Tanacetum alyssifolium, Tanacetum argenteum) collected by using RP-HPLC-DAD (reverse phase-high performance liquid chromatography with a diode array detector) from Erzincan, Turkey. LC analyses were performed on Thermo Scientific Dionex Ultimate™ 3000 system (Thermo Scientific, Bremen, Germany). Chromatographic separation was carried out on a Thermo Scientific™ Hypersil™ ODS C18 HPLC (250 mm × 4.6 mm x 5 µm) column (Thermo Scientific, USA) at temperature 30°C using a mobile phase, consisting of 2 % (v/v) acetic acid in water (A), 70% (v/v) acetonitrile in water (B) at a flow rate 1.2 mL/min, under gradient elution conditions. The gradient used was as follows: zero-time condition was 5% B and it was increased to 60% B in 26 minutes. The eluted 10 standard phenolic acids: gallic, protocatechuic, p-hydroxybenzoic, chlorogenic, vanillic, caffeic, syringic, p-coumaric, rosmarinic, benzoic, and two flavonoids: rutin, quercetin were monitored by comparison at 280 and 315 nm. In the four samples, analyzed phenolic concentrations were found to be total ranging from 13.411-20.323 mg phenolic/g extract. When comparing initial situation of dry samples, the range results could be seen as 0.190-0.872 mg phenolic/g dry sample. Protocatechuic acid, p-hydroxybenzoic acid, chlorogenic acid, caffeic acid, syringic acid, p-coumaric acid, rosmarinic acid and quercetin were detected in all samples with different quantitative amounts. According to the analyzed standards, quercetin was the major phenolic especially in T. argenteum with 10.239 mg phenolic/g extract.

KEYWORDS

Tanacetum L., RP-HPLC-UV, Phenolic Acid, Flavonoid

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Poster Session 5

Submission ID: 730

PROSTATE CANCER AND PHYTOESTROGEN

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ABSTRACT

Prostate cancer has the second place for the male person's death reasons related with the cancer category. Genetic structure, diet and environmental factors influences the prostate cancer risks. Diets rich with isoflavone, decreases the risk of prostate cancer. Phytoestrogens which are chemicals made from herbs, can repression, enzymes like aromatase which is at steroid metabolism and 17-hydroxy steroid dehydrogenase and other anti-carcinogenic effects could help prevent prostate cancer. In addition to phytoestrogens estrogenic properties, it has antioxidant properties related with its isoflavone polyphenolic structure. Isoflavones have effect on free radicals directly or effects with antioxidant enzymes and prevent oxidative DNA damage. **OBJECTIVE:** In this study, the effects of phytoestrogens on prostate cancer is investigated through literature research. **METHOD:** Recent studies have been investigated, and effects of phytoestrogen intake on prostate cancer risks and phytoestrogen intake's effects on cancer patients. **RESULTS:** On healthy persons, phytoestrogen intake as supplementation has a positive effect on preventing prostate cancer risks. On the people who once prostate cancer, uses phytoestrogen after the treatment and prevent the prostate cancer to occur again. On some studies it is shown that, patients with prostate cancer, phytoestrogen supplementation has a chemical prevention on the cancer to grow. On the other hand, some studies show that, phytoestrogen has no effect on prostate cancer. **CONCLUSION:** Prostate cancer is of the important health issue on the male persons. In a nut shell, in order to prevent prostate cancer, to slow down the prostate cancer and prevent the cancer to occur again after the treatment, phytoestrogens have an important role. Effects of phytoestrogen intake on prostate cancer should be investigated more for more clear results.

KEYWORDS

Phytoestrogen, diet, prostate cancer

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Poster Session 5

Submission ID: 731

THE USAGE OF FLAXSEED FLOUR IN THE PRODUCTION OF BISCUIT AND THE IDENTIFICATION OF SOME CHARACTERISTICS

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ABSTRACT

In recent years, consumers begin to consider the food not only as a way of essential nourishment but also as important substances that has use full effects on health. The flaxseed, that is rich in terms of a-linolenic acid and protein of good quality, is the natural resource of phyto chemicals such as flavonoid, lignan and phenolic acids. Moreover, the flaxseed contains some fatty acids like omega -3 and omega- 6 and by means of these acids, it is effectively used in preventing some illnesses such as cancer and cardiovascular disease. In general, the flaxseed is classified as functional food, bioactive food and endocrine active food. In this study, it was aimed that the biscuits which commonly consumed in daily life, would gain the functional properties of flax flour by substitution of it at certain rates (control, 10%, 20%, 40%). As the amount of supplement increases, some changes are observed: decrease in specific volume rates, decrease in 'L' colour rates (lightness-darkness), rise of 'a' (red) rate, decrease of 'b' (yellow) rate. In texture analysis, the biscuit with flaxseed flour of 40% is the most stiff one. Even though we have obtained insignificant results in sensory analysis, panelist evaluation and all parameters in terms of statistical; when other results are taken into consideration it is concluded that the flaxseed flour can be used with the percentage of 20 in the formulation of biscuit.

KEYWORDS

Biscuit, Omega 3-6, Flaxflour, Lignan, Functional food.

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Poster Session 5

Submission ID: 733

THE EFFECTS OF SOME ESSENTIAL OILS ON RICE WEEVIL (SITOPHILUS ORYZAE L. COLEOPTERA: CURCULIONIDAE)

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ABSTRACT

Rice weevil (*Sitophilus oryzae* L. Coleoptera: Curculionidae), considered to be one of the most dangerous insects in stored product pests, is a pest commonly seen worldwide. The amount of insect damage in stored grains is around 10-40% in countries where modern storage techniques are applied. Different control methods against stored product pests have been implemented, including the use of certain essential oils and successful results were achieved. In this study, fumigant and repellent effects of commercially available essential oils of mint (*Mentha piperita*), thyme (*Thymus vulgaris*), laurel (*Laurel nobilis*), rosemary (*Rosmarinus officinalis*), myrtle (*Myrtus communis*) and lavender (*Lavandula angustifolia*) on adult *S. oryzae* were investigated. Accordingly, 100, 150 and 200 µl/l doses of six different essential oils were used. To determine the fumigant effects in the study, 10 g rice were placed in plastic tubes (100 ml) with filter paper impregnated with essential oil on their caps and 10 rice weevils were placed in each tube. For the determination of repellent effects, 1 kg plastic containers (25x15x10 cm) were used. Accordingly, 10 g rice coated with 200 µl/l essential oil was placed on one side of each container while the same amount of uncoated rice was placed on the other side. Then 10 rice weevils were placed in the middle of the container. In both effect trials, containers were placed in incubators at 22 ± 2 °C and 60-70% humidity. The trials were carried out in a completely randomized design with four replicates. The results revealed that there were significant differences in terms of the effects and doses of the essential oils used on rice weevils (P<0.05). All essential oils used against rice weevils had the highest fumigant effect at 200 µl/l dose and at the 72th hour. It was also found that the most effective essential oils were mint (97.5%) and laurel (95.0%). They were followed by rosemary (87.5%), myrtle (85.0%), thyme (85.0%) and lavender (72.5%) essential oils. In the repellent effect studies, 100% repellent effect was observed in lavender, laurel and rosemary at the dose of 200 µl/l at 48 hours while 90% repellent effect was observed in myrtle and thyme. Mint showed 25% repellent effect and, on the contrary to other essential oils, its attractant effect was more evident. In conclusion, all of the essential oils used in the study showed a fumigant effect over 70% and they can be used in the control against *S. oryzae*. It was determined that other essential oils have repellent effects except for mint essential oil.

KEYWORDS

Sitophilus oryzae, essential oil, repellent, attractant.

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Poster Session 5

Submission ID: 734

GLUTEN-FREE DIETS AND USE OF QUINOA

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ABSTRACT

Grain based nutrition has an important place in human life. Many types of cereals are presented for consumption by subjecting them to different technological processes in different formulations. However, there are some diseases that affect the quality of life in individuals by impairing the equilibrium of absorption in the digestive system with the slightest contamination. One of them is celiac. The sensitivity of the intestinal mucosa to the gluten protein found in cereals is the basis of the disease. Therefore, it is necessary to remove grains from the diet of such individuals that causes allergies such as wheat, barley and rye which have the lower fraction of gluten protein prolamin and gliadin fraction. For this reason gluten-free rice, soy, amarant and buckwheat is widely used in the production of these kind of foods. Quinoa is also rich in essential amino acids that do not contain gluten and have high protein and fiber content. The quinoa made into flour is used in gluten-free bread and macaroni, used in rice as seeds and salad by germination and also used in baby foods composition.

KEYWORDS

Celiac, Quinoa, Cereal, Nutrition

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Poster Session 5

Submission ID: 735

RESVERATROL, A POLYPHENOLIC COMPOUND FOUND IN GRAPES, INHIBITS THE VIABILITY OF PANCREATIC INS-1B INSULINOMA CELLS

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ABSTRACT

Pancreas is an endocrine organ behind the stomach. The most important of its functions is to synthesize the hormone insulin which controls the level of sugar in the bloodstream. When blood sugar is too low, the pancreas stops producing insulin. When an insulinoma occurs in the pancreas, it continues to produce insulin even if blood sugar is very low. This can cause severe hypoglycemia. Hypoglycemia is a dangerous condition that causes blurred vision, dizziness and loss of consciousness. It can also be life-threatening. Pancreatic cancer (PCa), the fourth most common cause of cancer-related deaths, is 6 months shorter in survival and has a 5-year survival rate of <6%. The most important feature of pancreatic cancer is short duration of survival and treatment resistance. The poor prognosis of PCA is related to lymph node and liver metastases and peritoneal spread. Resveratrol, found in many different plants and fruits especially grapes, is a natural phytoalexin. Resveratrol is especially found in red grapes, peanuts and pineapple in high concentrations. Over the past few years, many reports have shown resveratrol as a cancer-inhibiting agent. For this reason, resveratrol has attracted much attention. In different studies, resveratrol has been shown to inhibit cancer, and it has been shown that this compound has the ability to inhibit all phases of carcinogenesis: initiation, promotion and progression. Moreover, resveratrol has been shown to induce growth inhibition, cell cycle arrest, apoptosis and changes in biomarker expression in various human cancer cell lines. In this study, the effect of a polyphenolic compound, resveratrol, on the survival of pancreatic cancer cells was aimed. Rat insulinoma INS1-beta cell line was used for his purpose. After reaching the appropriate number of cells culture operations by cell culture, resveratrol (80 µM, 48h) application have been made. After incubations analyses were done for detecting the viability of the cells. We observed that resveratrol significantly decreased ($p<0.05$) cell viability through the 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT). Furthermore, with the comet test, it was found that DNA strand breaks in insulinoma cells are increased by resveratrol, although not statistically significant. Based on these data, it can be said that resveratrol may be used as a potential anti-cancer agent in the treatment of pancreatic cancer.

KEYWORDS

Resveratrol, pancreas cancer, INS1-β cell, viability

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Poster Session 5

Submission ID: 736

**DETERMINATION OF ANTIMICROBIAL ACTIVITY, TOTAL
PHENOLIC CONTENT AND ANTIOXIDANT ACTIVITY OF
METHANOL EXTRACTS OF NARCISSUS SPECIES COLLECTED
FROM İZMİR KARABURUN**

YASEMIN SUNUCU KARAFAKIOGLU¹, ELIF KORCAN², İBRAHİM BULDUK³, RUKİYE KAYHAN²

ABSTRACT

In today's developed and developing countries, diseases and deaths due to infection are increasing day by day. According to the research conducted in the United States, in 1981, while deaths due to infection were in the 5th rank, while in 1992 it reached the 3rd rank with an increase of 58%. This situation necessitated the development of new strategies in the prevention and treatment of infectious diseases. The search for new antimicrobial and antioxidant substances from natural sources is at the forefront of these strategies. There are 1100 species of Amaryllidaceae. Their most common species is Narcissus genus. It is grown in Karaburun and Mordođan in Aegean Region in Turkey. Narcissus sp. collected from İzmir Karaburun was used in this study. Its bulbs was extracted with methanol in ultrasonic water bath. Antimicrobial effect was investigated by disc diffusion method. In the result of the study, it was determined that E.coli fecalis ATCC 51289, Bacillus subtilus and E. coli 33219 from the strains tested in the bulbs shell methanol extract, and its internal bulbs methanol extract showed antimicrobial activity against E. faecalis ATCC 51289 and Bacillus subtilus. Total amount of phenolic substances were determined in the bulbs and shell of Narcissus sp. as 0,5208 and 0,0828 mgGAE/g sample, respectively. "Scavenging" radical capacity of samples was determined using DPPH radical according to the method of Hatano et al. The results are in the shells; 0,1666 mg/g; in the bulbs; 0,1557 mg/g. Furthermore, it has been determined that the bulbs methanol extract has more antimicrobial activity than the root methanol extracts. When the total amount of phenolic substances is taken into account, it is observed that the plants taken from the bulb are higher than those taken from the crust. DPPH method, one of antioxidant activity determination methods, also found that our shell samples had higher antioxidant activity compared to onion samples.

KEYWORDS

Narcissus, Antimicrobial, Extraction, Amount of phenolic substance, DPPH method

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Poster Session 5

Submission ID: 737

DETERMINATION OF UTILIZATION POSSIBILITIES FROM CISTUS (CISTUS L.) SPECIES SHOWN NATURAL DISTRIBUTION IN ANTALYA REGION

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ABSTRACT

Cistaceae (Ladengiller) family, which is evaluated in non-wood forest products, is represented by 8 species and 175 types distributed in the temperate regions of the Northern Hemisphere and especially in the Mediterranean climate. As an important medicinal and aromatic plant, Cistus (Cistus L.) is spreading as 21 types around the World and 5 types in Turkey (C. creticus L., C. parviflorus Lam., C. laurifolius L., C. salviifolius L., C. monspeliensis L.). Cistus creticus and Cistus salviifolius species are spread in the province of Antalya. In pharmacological studies to investigate the effects of the cistus strain on human health; Antifungal, anti-inflammatory, antiulcer, antiviral, antioxidant, cytotoxic, wound healing, vasodilator, antispasmodic, hypotensive activity, blood circulation regulating and analgesic effects depending on the group of substances contained in the various extracts of the plant. Therefore, cistus can be determined as a medical aromatic plant. In recent years, it has been observed that the production of drugs, especially against infectious diseases, has begun by the active ingredients obtained from Cistus species. In Antalya, located in the Western Mediterranean Region, which is quite rich in terms of non-wood forest products, cistus plant species have a wide spread. It has been observed that it is the pioneering species that grows after the fire of forest, preferring dry and rocky soils as the growing environment. Within the scope of this study, Cistus L. species, which is also known as Laden and Karagan, which are spreading in parts of Antalya province, are specified and it is aimed to introduce the potential utilization amount and usage areas in Antalya region.

KEYWORDS

Cistus, Rock-rose, Medicinal and aromatic plant, Utilization possibilities, Antalya region.

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Poster Session 5

Submission ID: 738

THE EFFECTS OF LYCIUM BARBARUM (GOJI BERRY) POLYSACCHARIDES ON ANTIOXIDANT ENZYMES IN OVARIECTOMIZED RATS

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ABSTRACT

The Effects of Lycium barbarum (Goji berry) Polysaccharides on Antioxidant Enzymes in Ovariectomized Rats Lycium barbarum (Kurt üzümü) Polisakkaritlerinin Ovarektomili Sıçanlarda Antioksidan Enzimler Üzerine Olan Etkileri Fatma PEHLİVAN KARAKAŞ^{1,2}, Hamit COŞKUN³, Hayriye ORALLAR⁴, Bihter Gökçe BOZAT¹ 1Abant İzzet Baysal University, Department of Biology, Faculty of Science and Art, Bolu, Turkey 2Abant İzzet Baysal University, Department of Field Crops, Faculty of Agriculture and Natural Sciences, Bolu, Turkey 3Abant İzzet Baysal University, Department of Psychology, Faculty of Science and Art, Bolu, Turkey 4Abant İzzet Baysal University, Department of Poultry Breeding, Faculty of Agriculture and Natural Sciences, Bolu, Turkey Email: fatmapehlivanarakas@gmail.com Abstract Ovariectomy has been used to clarify insufficiency of estrogen hormone and its metabolic results to rodents during menopause transition. A decrease in ovarian hormones results in increasing production of reactive oxygen radicals and thus increased oxidative stress induces tissue or cell damages. During the menopause, reduction in estrogen hormone level is associated with elevated oxidative stress, which occurs due to an instability between production and elimination of reactive oxygen species (ROS) via the antioxidant defense system. In previous studies, goji berry was one of the powerful antioxidants. The goji berry (Lycium barbarum Linnaeus) is also known as, wolfberry, super fruit, and has many beneficial effects for human because of these dietary constituents such as flavonoids, phenolics, vitamins and caretonoids. L. barbarum have also their major components, which are polysaccharides. The L. barbarum polysaccharides (LBPs) are a complex mixture of highly branched polysaccharides and proteoglycans. Several animal studies indicate that LBP has in ocular neuroprotective, antioxidant, immunomodulatory, hepatic protective and antitumor effects in animals. The antioxidant activities of LBPs are mainly connected to the amelioration of the activities of antioxidant enzymes, such as superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GPX) but it also could diminish their malondialdehyde (MDA) content. Because the antioxidant effects of goji berry, we investigate the effects of the Lycium barbarum L. polysaccharides (LBP) on antioxidant enzymes activities of ovariectomized female rats. Two weeks after ovariectomy operations, rats were divided into treatment groups: distile water (3 mL/kg, oral gavage, per day), low dose of LBP (20 mg/kg, 3 mL/kg, oral gavage, per day), high dose of LBP (200 mg/kg, 3 mL/kg, oral gavage, per day), 17 beta estradiol (1 mg/kg, 3 mL/kg, oral gavage, per day), each treatment groups were divided two operation groups: sham (pseudo ovariectomized rat) and overiectomized (ovx) rat groups. The treatments were applied for 30 consecutive days and then serum of all rats were collected. Biochemical (SOD, CAT, GPX and MDA) analysis of the samples were performed by Elisa. The findings of biochemical study showed that serum of the high dose of

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LBP administrated rats showed highest level of SOD, lowest level of MDA. 17- β estradiol administrated groups showed lowest GPX and CAT serum levels. In conclusion, high dose of LBP treatments increases antioxidant enzymes activities in ovariectomized female rats. Keywords: Goji berry, Antioxidant enzymes, SOD, CAT, GPX, MDA Acknowledgement: This work was supported by grants from the Abant Izzet Baysal University Research Foundation (Project No: 2016.10.07.956).

KEYWORDS

Goji berry, Antioxidant enzymes, SOD, CAT, GPX, MDA

Poster Session 5

Submission ID: 739

THE EFFECT OF CAFFEIC ACID PHENETHYL ESTER (CAPE), AN ACTIVE COMPONENT ISOLATED FROM HONEYBEE PROPOLIS, ON INDUCING APOPTOSIS IN PANCREATIC INSULINOMA INS1-B CELLS

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ABSTRACT

Caffeic acid phenethyl ester (CAPE), an active component of propolis, has many biological and pharmacological properties such as antitumoral, antiinflammatory, antineoplastic and antioxidant activities. CAPE has a higher hydrophobicity and potent inhibitory potency against xanthine oxidase (XO) and inhibits enzymatic activity by binding to the molybdoprotein region of the active site. Since XO has the action of both purine and pyrimidine bases to metabolize, by this inhibition mechanism. CAPE can stop the nucleotide turnover recovery pathway, which shows anticancer activity in all cell types. It is recommended to use it in the treatment of gout and hyperuricemia due to XO inhibitory effect. The aim of this study was to investigate the mechanism of CAPE-induced apoptosis in rat pancreatic insulinoma cells INS1- β . For this aim, the levels of p53 and CAS-12 mRNA expressions in pancreatic insulinoma cells analysed by real time quantitative polymerase chain reaction (QRT-PCR), and the level of insülin both in cell lysate and medium were analysed by ELISA technique, and also DNA fragmentation analyse was done via comet assay. It was found that CAPE induced characteristic DNA fragmentation and mRNA expression levels of caspase-12 and p53. Addition to these results, CAPE reduced the levels of insülin both in cell lysate and medium. These results suggest that CAPE is a potent apoptosis-inducing agent; its action is accompanied by up-regulation of Cas-12 and p53 in pancreatic insulinoma INS1- β cells. In view of the above-mentioned mechanisms and findings in our laboratory and those of others in literature, we suggest that CAPE possess anti cancer and apoptosis inducing activities. If it is going to be used as an anti-cancer agent, further investigations of the potential toxicities of CAPE are needed.

KEYWORDS

Caffeic acid phenethyl ester, propolis, apoptosis, pancreatic insulinoma cell

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Poster Session 5

Submission ID: 740

DETERMINATION OF TOTAL PHENOLIC AND ANTIMICROBIAL ACTIVITY IN ERODIUM LACINIATUM (COV.) WILLD COLLECTED FROM THE ADANA

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ABSTRACT

Considering the number of Erodium species registered in Turkey, there are a total of 30 taxa with 25 species and subspecies, and 16 units of these taxa are endemic. Literature surveys revealed that there is no report regarding The Phenolic Compound analyses and antimicrobial activity information of this species. In this study, total phenolic content and antimicrobial activity of Erodium laciniatum (Cov.) Willd were studied. The total amount of phenolic substance in the extracts was determined according to Folin Ciocalteu method. The agar disc diffusion method was used to determination of antimicrobial activities of the plant extract. The plant extracts exhibited antibacterial activity against the bacteria tested as concentration dependent. The extracts, however, did not show any antifungal activity. It was found that the methanol extract of Erodium laciniatum possess antimicrobial activity against Escherichia coli ATCC35218, Klebsiella pneumoniae ATCC700603, Bacillus subtilis, Staphylococcus aureus ATCC25923 and Enterococcus faecalis . ATCC 51299. Total phenolic content of the methanol extract of Erodium laciniatum was determined as 63,64mg / 1 gr.

KEYWORDS

Erodium Laciniatum, Antimicrobial, Extraction, Amount of phenolic substance

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Poster Session 5

Submission ID: 741

EVALUATION OF YIELD AND SOME FOOD INGREDIENTS OF OAT(AVENA SATIVA SPP.) VARIETIES GROWN IN KONYA REGION

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ABSTRACT

Oats are a good source of dietary fiber, essential amino acids, fatty acids, minerals and antioxidants, especially beta glucan in human nutrition. In order for the oats to take more place in human nutrition, it is important that more efficient and quality oat varieties are brought to the industry. In this study, 11 winter oat genotypes(Çekota, Faikbey, Seydişehir, Fetih, Haskara, Kahraman, Kırklar, Sarı, Sebat, Yeniçeri ve Şems) were used. Genotypes were examined in terms of yield and 8 different quality traits. Average values of examined traits were as;Yield 336.8 kg/da, Thousand kernel weight 30.6 g, hectoliter weight 43.3 kg, protein content 14.4%, oil content 5.1% , cellulose 13.0%, ADF 16.5 % , NDF 31.4 % . The changes in nutritional habits in the world and the increase in obesity have started to be effective in our country in recent years. The importance of adequate and balanced nutrition is increasing day by day. Because of the content of beta glucan and other digestible dietary fiber in the oat, diet and breakfast products are increasingly used. Demand is increasing with the increasing use of oats. The breeding work should be continued and new varieties should be presented to the market for the development of oat varieties with this traits and the traits desired by the industrialists. Breeding studies for the development of oat varieties should be continued and new varieties should be presented to the market with the characteristics desired by the industrialists.

KEYWORDS

Oat, protein, cellulose, oil, beta glucan

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Poster Session 5

Submission ID: 742

EVALUATION OF LANDRACE WHEAT GENOTYPES IN TERMS OF BISCUIT QUALITY QUALITIES

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ABSTRACT

This study was carried out to determine chemical properties and mixograph quality parameters of suitable genotypes in terms of biscuit quality of the landrace population within the scope of 214O051 Tubitak project with 200 genotypes and 5 standard varieties according to augmented trial design in the center location of Konya in Bahri Dağdaş International Agricultural Research Institute.; Obtained parameters in the study changed between; Protein content 10.79-13.57%, Zeleny sedimentation value 11.82-65.82 ml, hardness value (SKC) 11.59-86.70, solvent water retention capacity 43.99-82.69%, mixograph parameters (development time 0.92-4.13 min, peak height 49.68-95.90, softening degree 6.18-32.80, peak width 2.05-13.33%, peak area 31.25-148.6 Nm and total area 240.40-512.60 Nm. As a result of the statistical analyzes significant differences were found between the varieties.

KEYWORDS

Landrace bread wheat, quality, mixograph

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Poster Session 5

Submission ID: 743

INVESTIGATION OF UTILIZATION OF ROSEHIP POWDER IN THE MANUFACTURING OF SUCUK

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ABSTRACT

The effects of lyophilized rosehip powder addition on the physicochemical and microbiological properties of fermented sucuk were investigated. Experimental sucuks were manufactured with added 5, 10, 15, 20 and 25% lyophilized rosehip powder and the control group did not contain rosehip powder. Changes in pH, moisture, protein, fat, ash, color parameters (L^* , a^* , b^*), oxidation level and microbiological properties of the sucuks were determined during fermentation and storage period. The results indicated that TBARS values gradually increased during fermentation and storage period in all treatment groups ($p < 0.05$). However, addition of more than 15% rosehip powder decreased TBARS values compared to control group ($p < 0.05$) during fermentation and storage period. pH values of sucuks were decreased with addition of rosehip and control group had highest pH values at the end of fermentation ($p < 0.05$). The addition of rosehip showed non-significant effects on moisture, protein, fat and ash levels in batters. Similar to TBARS values, addition of more than 15% rosehip powder increased L^* and a^* values compared to control group sucuk ($P < 0.05$). Total viable aerobic counts and lactic acid bacteria count for control groups had higher than other groups after fermentation period ($P < 0.05$). The use of β -glucan affected lactic acid bacteria counts and fermentation process in positive manner ($p < 0.05$). And, the addition of rosehip did not affect yeast, mold and coliform counts during fermentation. The results indicated that the use of rosehip powder in sucuk manufacture had no negative effects on quality parameters of sucuk.

KEYWORDS

Rosehip, fermented sucuk, quality characteristic

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Poster Session 5

Submission ID: 745

THE KNOWLEDGE AND ATTITUDES OF NURSING STUDENTS TOWARDS MEDICAL AND AROMATIC PLANTS

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ABSTRACT

Medical and aromatic plants are often used with the aim of maintaining health. The use of these plants is influenced by the knowledge level and attitudes of the nurses to the plants. So, the knowledge level and attitudes of nursing students who will practice nursing profession in later years are important. The study was conducted to determine the knowledge and attitudes of nursing students towards medical and aromatic plants. The research was carried out with the participation of 212 students who have been educated in the department of Nursing in Health Sciences Faculty in Karadeniz Technical University. The data were gathered using data collection form designed by researchers. The data collection form consists of two parts. In the first part, there are questions that examine the sociodemographic characteristics of participants such as age, gender, marital status and the place of living with their family. In the second part, there are questions that examine the information of participants to medical and aromatic plants. For the assessment of the data, means, percentages and chi-square test were used. Average age of students participating in the survey was 20.43 ± 1.51 . 63% of attendees were studying in the second grade, 84% were female, 99.1% were single and 50% lived in the city center with their family. Of participants, 22.6% had information about medical and aromatic plants and it was found that 68.8% of these students obtained information by internet and television. It was found that there was no difference between the obtain information status of male students and female students ($p > 0.05$). 70.8% of participants stated that the lessons related to medical and aromatic plants should be in nursing curriculum. Also, 69.3% of students stated that it is necessary that these plants should be used in nursing practices. It was determined that the knowledge level of big part of students (63.7%) was insufficient. Medical and aromatic plants most commonly heard by the participants were linden (100%), mint (100%), cummin (99.1%), rosehip (99.1%) and dill (99.1%). Medical and aromatic plants were described as beneficial by 89.6% of participants. Of the students, 86.3% stated that medical and aromatic plants moved the natural healing power of the body and 84.4% stated that these plants effected psychology of human positively. It was determined that 84.4% of the students who participated in study had benefited from medical and aromatic plants and that they most frequently referred to these plants when they were sick. The most used plants were linden (97.2%), mint (88.8%) and rosehip (71.5%). Nursing students stated that their knowledge level about medical and aromatic plants were insufficient. Also big part of students said that lessons related to plants should be integrated in nursing curriculum. This shows that the attitudes of students towards medical and aromatic plants were positive and they wanted to improve themselves in this field. By placing the lessons related to medical and aromatic plants in nursing curriculum, it is possible to increase the knowledge level related to topic of the students.

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KEYWORDS

aromatic, nursing, student, medical, attitude

Poster Session 5

Submission ID: 746

**STUDIES ON THE SCOLIIDAE (INSECTA: HYMENOPTERA)
SPECIES FED ON MEDICAL AND AROMATIC PLANTS IN TURKEY**

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ABSTRACT

The wasp species belonging to the family Scoliidae (Insecta: Hymenoptera) are known as many parasitoids of agriculture and forest pests ,at the same timeas pollinators of numerous flowering plants. In this study, medical and aromatic plants, which are visited by 18 scoliid species, have been given. These are *Vitex agnus-castus* L., *Rubus canescens* DC., *Echinops orientalis* Trautv., *Lythrum salicaria* L., *Mentha* sp., *Echium plantagineum* L., *Carduus nutans* L., *Teucrium polium* L., *Eryngium billardieri* Delar., *Notobasis syriaca* L., *Capparis ovata* Desf., *Origanum* sp., *Onopordum turcicum* Danin., *Centaurea solstitialis* L., *Coridothymus capitatus* L., *Opopanax hispidus* (Friv.), *Anchusa* sp., *Cardopatum corymbosum* L. Among them, *Vitex agnus-castus* L. is the most preferred plant with 18 species by the scoliid wasps. 12 wasp species were collected from *Rubus canescens* and eight species were collected from both *Lythrum salicaria* and *Mentha* sp.

KEYWORDS

medical and aromatic plants, flower, Scoliidae, Hymenopetra, Turkey.

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Poster Session 5

Submission ID: 747

AN INVESTIGATION ON THE USAGE OF TURMERIC AND GINGER POWDERS IN BISCUIT PRODUCTION

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ABSTRACT

Biscuit is a popular bakery product consumed all over the world. The popularity of biscuit mainly resulting from its low cost, ready-to eat feature, abundant variety and long shelf life. In recent years, there is an increase in chronic diseases. Due to the health concerns of consumers, there has been a rising trend to foods which have specific features that improve health. Because of its important place in diets biscuit can be supplemented with various components of high nutritional and functional properties. Turmeric (*Curcuma longa*) is a member Zingiberaceae family and it is extensively grown in Asian countries. The parts of plant are traditionally used to enhance the food quality, flavor and antioxidant properties. Turmeric is one of the most investigated medicinal plants. Curcuminoids and essential oils which are major bioactive ingredients of turmeric show different bioactivities in in vitro and in vivo bioassays. Ginger (*Zingiber officinale* Roscoe) belong to the family Zingiberaceae and it has been cultivated in many tropical and subtropical countries. Some polyphenol compounds obtained from ginger roots have a high antioxidant capacity and antiinflammatory effect. For centuries, it has been used an important ingredient as a spice in various industries of food, beverage, and fragrance. In this study, turmeric and ginger powder were used at 0%, 4% and 8% in biscuit formulation. The effect of turmeric and ginger powders on the physical and sensory properties of biscuit were investigated. The usage of turmeric and ginger powder in biscuit formulation decreased ($p<0.05$) the lightness (L^*) values of samples. The highest redness (a^*) and yellowness (b^*) values were obtained in biscuits containing 4% ginger and 8% turmeric, respectively. The diameter, thicknees and spread ratio of biscuit samples were ranged between 57-60 mm, 9.4-9.8 mm and 5.94-6.38, respectively. Usage of ginger effected the sensory properties of biscuit samples especially taste-odor. Characteristic taste of ginger decreased the score of biscuit samples even at 4% replacement ratio. The biscuits prepared with turmeric gained taste-odor, texture, crispness scores closed to control samples even at high usage ratios. According to the overall acceptability rating, it was concluded that biscuit could be produced with satisfactory results by the addition of turmeric powder up to 8% and ginger powder should be used in biscuit formulation at lower ratios.

KEYWORDS

Biscuit, turmeric, ginger, physical, sensory

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Poster Session 5

Submission ID: 751

EFFECTS OF DIFFERENT GREENHOUSE MEDIA, ROOTING MEDIA AND HORMONES ON PROPAGATION BY CUTTING OF EUROPEAN YEW (TAXUS BACCATA L.)

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ABSTRACT

According to the surveys of World Health Organization (WHO), the number of medicinal plants used for medical purposes is around 20.000. These plants are also used for adding taste, odor and color to food since the ancient times. European yew (*Taxus baccata* L.), belonging to Taxaceae family, grows in North and Central Europe, Mediterranean countries, Azores, Turkey and Caucasus. The species has a wide range of uses as medical and aromatic. One of the most important features of European yew is Taxol, which is used in cancer treatments. In addition, its bark and foliage are also utilized in medical fields. It is necessary to have sufficient material for usage in medicine of this species having a great importance in terms of medical and aromatic uses. In this study, the effects of different greenhouse media (Sera-1 media with air temperature of 20°C, rooting table temperature of 20°C and Sera-2 media without temperature adjustment), rooting media (perlite and peat) and hormones (IBA 1000 ppm, IBA 5000 ppm, NAA 1000 ppm and NAA 5000 ppm) were investigated on propagation by cutting of European yew. At the end of the study, the highest rooting percentage occurred as 76,67% in NAA 1000 ppm treatment in perlite rooting media of Sera-1 media. The highest callus percentage was observed as 96.67% in NAA 5000 ppm treatment in peat rooting media of Sera-2 media. The longest root length was determined as 4,60 cm in IBA 1000 ppm in perlite rooting media of Sera-2 media. The highest number of roots was found as 3.30 roots in NAA 1000 ppm treatment in perlite rooting media of Sera-1 media.

KEYWORDS

Taxus baccata, Cutting propagation, Greenhouse media, Rooting media, Hormone

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Poster Session 5

Submission ID: 752

HERBAL MEDICINES FOR OSTEOARTHRITIS THERAPY

MUSA ACAR¹

ABSTRACT

Osteoarthritis (OA) is a complex multifactorial disease of whole joint. Pathological loss of cartilage reflects the imbalance between catabolic and anabolic mechanism of cartilage remodeling, which is influenced by oxidative and inflammatory changes in the surrounding tissues especially synovium and subchondral bone. Osteoarthritis is a major cause of disability throughout the world, it causes pain due to inflamed knee joints, which involves progressive degeneration of articular cartilage, synovitis, formation of osteophyte, increased fibrillation due to increased denaturation and loss of collagen fibers. Despite the increased incidence of OA in recent years, therapies are still symptomatic, pain control, functional improvement and quality of life. The most common symptom of OA is pain in the affected joint. Therapeutic interventions conventionally employed for OA include the use of physiotherapy and antidepressant therapies, patient education and weight control. In addition, drug therapy includes non-opioid analgesics such as paracetamol, non-steroidal anti-inflammatory drugs (NSAIDs), topical analgesics, opioid analgesics and intra-articular steroid injection. Such treatments may prove ineffective in some patients and NSAIDs often have serious adverse effects. Gastrointestinal complications are frequently reported. Patients suffering from musculoskeletal problems are likely to be users of herbal treatments. It is therefore important to determine the effectiveness and safety of herbal medicines in the treatment of OA. There is promising evidence of the effect of some herbal preparations on the treatment of osteoarthritis. In addition, herbal preparations have been found to reduce the use of non-steroidal anti-inflammatory drugs. Understanding the therapeutic properties of metabolic plant herbs and the usage of these plants in modern medicine, have positive thoughts of many people, to treatment with medicinal and aromatic plants. Nowadays, in some countries doctors can prescribe herbal medicines instead of synthetic medicines. Herbal medicines have a long tradition in the treatment of osteoarthritis. Herbal medicinal products are used in a variety of forms for the treatment of osteoarthritis (OA) worldwide. Although their mechanisms of action have not yet been elucidated in full detail, interactions with mediators of inflammation and cartilage destruction provide a rationale for using them to treat OA complaints. One of these plants *Hijikia fusiforme* (brown seaweed) which is widely distributed in Japan, Korea, and China. As well as many similar plants in the literature.

KEYWORDS

Osteoarthritis, herbal, therapy

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Poster Session 5

Submission ID: 754

SEED CHARACTERISTICS, GERMINATION AND USAGE AREAS OF EPHEDRA FOEMINEA FORSSK.

İBRAHİM TURNA¹, ALİ BAYRAKTAR²

ABSTRACT

There has been a global trend for the revival of interest in the traditional system of medicine during the past several decades. Turkey with a huge variety of flora (type of plants grown in a region or a country) reserves lots of medical and aromatic plants within its structure. Ephedra foeminea Forssk., belonging to Ephedraceae family, is a woody plant that can be used on the medical field. It is possible to benefit from fruits, shoots and roots of this species. In addition, usage areas and demand of the species are increasing. While it is necessary to make use of contribution to the country economy of this plant, under threat in the IUCN Red List (LC), in terms of medicinal and aromatic, it is necessary to have knowledge about seed technology and nursery technique to ensure sustainability. In this study, seed characteristics and germination ability of the species were investigated. As a result of the study, average seed length, average seed width, seed fullness and 1000 seed weight of Ephedra foeminea Forssk. was found as 7,07 mm, 3,41 mm, 100% and 41,1 gr, respectively. In the scope of this study, different pre-treatments (cold water, 1000 ppm and 5000 ppm gibberilic acid (GA3) pre-treatment for 18 hours and control) were applied in the germination of seeds of this species. Thus, germination percentage and germination speed were determined. The fastest germination was determined as 85% in GA3 1000 ppm pre-treatment in the measurements made at the end of day 7.

KEYWORDS

Ephedra foeminea, Seed, Germination, Usage Areas

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Poster Session 6

Submission ID: 759

NATURAL DYE PLANTS USED IN İBRALA REGION (KARAMAN)

TURAN AKDAĖ¹, SÜLEYMAN DOĖU², MUHİTTİN DİNÇ³

ABSTRACT

For a country, the most important wealth among natural wealth is flora. The plants has indispensable roles in the preservation of the ecological stability of the geography, as much as in human life. It is known that plants are used in different forms in Anatolia, which is one of the few places in the world in terms of plant abundance. The dyes obtained from different parts of plants have been used for centuries in Turkey. Karaman is a region where traditional handicrafts are made in Central Anatolia and natural dye plants are used for carpet weaving. As a result of the research, İbrala region where carpet weaving is still continuing within the provincial districts of Karaman, it has been found that 14 taxa growing naturally in İbrala region were used as dye plants. It has been determined that red color was obtained from *Rubia tinctorum* L., yellow color was obtained from *Salvia absconditiflora* Greuter & Burdet, *Rhamnus tinctoria* L., *Antehemis tinctoria* L, *Hypericum perforatum* L., *Hypericum scabrum* L. and *Berberis crataegina* DC. and brown color was obtained from *Juglans regia* L. as tetir. According to the study, it has been determined how the intermediate colors can be obtained from primary colors and how these plants were preparing for usage.

KEYWORDS

Dye plants, Karaman, Turkey

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Poster Session 6

Submission ID: 761

MEDICINAL PLANTS SOLD IN SEYDİŞEHİR (KONYA) HERBALISTS

SÜLEYMAN DOĞU¹, TURAN AKDAĞ², MUHİTTİN DİNÇ¹

ABSTRACT

The treatment methods progressed by people based on their experiences and the characteristics of the plants which used in these methods have been transferred to next generations. The use of medical plants in our country is widely used in the treatment of many diseases. Several important subjects should be considered about these plants under name of their cultivation, harvest, sale and consumption which people used as folk medicine. In our country, medicinal plants are generally collected carelessly, sold by people who do not have enough knowledge about its usage and consumed unconsciously. As a result of this study carried out within the year of 2016, 37 plants which sold for healing purposes for the diseases and used parts of these plants were determined in Seydisehir herbalists.

KEYWORDS

Seydisehir, Herbalist, Medicinal plant

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Poster Session 6

Submission ID: 762

THE DETERMINATION OF TRACE METAL CONTENT OF DIFFERENT PARTS OF SAME EUPHORBIA

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ABSTRACT

Euphorbia is one of the largest genus which belongs to the Euphorbiaceae family, and represented by 105 species in Turkey. Euphorbia species are named as ‘Sütleđen’ and ‘Xaşıl’. Euphorbia species are commonly used in Turkish folk medicine for the treatment of rheumatism, swelling as well as a wart remover. However, inflammation and diarrhoea are the two potential side effects that might occur during the treatment. It’s known that plant’s root parts are accumulate trace metal elements more than plant’s other parts. Additionally some Euphorbia species show accumulating few metals effect was known in literature. In this study, different parts of E. seguieriana subs seguieriana, E. fistulosa and E. eriophora species (seed, root, stem, leaves, flower and also mixed parts separately) were dried and then homogenized. Homogenized plant samples were digested by microwave oven. Heavy metal contents of prepared samples were observed by ICP-MS instrument. Generally some toxic metal element (lead, cadmium and arsenic) levels was found high in Euphorbia species which has been studied by us. Specially some species has more highly concentrations for a kind of metal element. In species of E. eriophora, E. fistulosa and E. seguieriana higher levels of metals were found specially as chromium, lead, cadmium and arsenic respectively. As result when we made a literature review, we observed that the researched Euphorbia species were having a potencial of being biomonitor. Depending on our results, different parts of the studied species were observed to contain different amounts of trace metals.

KEYWORDS

Euphorbia species, Euphorbia eriophora, Heavy metal, ICP-MS

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Poster Session 6

Submission ID: 763

CHEMICAL PROFILE BY LC-MS/MS THE METHANOL EXTRACT OF TWO EUPHORBIA SPECIES

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ABSTRACT

The family Euphorbiaceae is widely distributed in temperate regions of the world. Within the family Euphorbiaceae, the sixth largest flowering genus Euphorbia L., with well over 1000 species, is subdivided into many subgenera and sections, a number of which have been treated as distinct genera. Plants belonging to Euphorbia spp. have been the subject of many investigations for their biologically active components. Their biological activities, including skin irritant, tumor promotion, and pro-inflammatory properties are attributed to the presence of specific classes of macro- and polycyclic diterpenes. Some species of Euphorbia have been used for the treatment of skin diseases, gonorrhea, migraine, intestinal parasites, and warts, and as anti-inflammatory agents in folk medicine. A literature survey of the genus showed that many of its constituents are highly bioactive in phytochemical analysis. Many different parts of the Euphorbia species like roots, seeds, latex, stem, stembarks, leaves and whole plants have been studied. Moreover, it is found that the plants in the Euphorbiaceae family are well known for the chemical diversity of the isoprenoid constituents. The major constituents of the genus are diterpenoids. Many biological activities of the constituents of the Euphorbia species have been reported for a decade. Root and aerial parts (stem, root, branch, leaf, flower and mixed) of *E. eriophora* and *E. aleppica* were collected from Diyarbakır in flowering period. Powdered form of the parts plant material was weighed (1 g) and macerated three times with methanol (10 mL each) at 25 °C for 24 hours. After filtration, the solvent was evaporated to get the crude extracts. Phenolic components in the methanol extract was quantified by LC-MS/MS. LC-MS/MS analysis of the phenolic compounds was performed by using a Nexera model Shimadzu UHPLC coupled to a tandem MS instrument. In the current study, twenty-four phenolic compounds (flavonoids, flavonoid glycosides, phenolic acids, phenolic aldehyde, coumarin) and three non-phenolic organic acids which are widespread in plant materials were qualified and quantified in *E. eriophora* and *E. aleppica*. Among 27 compounds, malic acid, p-cumaric acid, quinic acid and tannic acid were found to be the more abundant compound in *E. eriophora* and *E. aleppica*.

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KEYWORDS

E. eriophora, E. aleppica, LC-MS/MS, Phenolic content

Poster Session 6

Submission ID: 764

THE USING OF THE RURAL MELON SEED POWDER (KULTİK) İN PRODUCTION OF BİSCUIT

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ABSTRACT

The melon known as Kultik, is famous due to its sharper smell, besides the fruits, the seed is widely produced and consumed locally with in the Tunceli and Elazığ regions. Rural melon seed protein powder is a good source of dietary fiber and mineral resources. In this research obtaining higher functionality biscuits by importing the mentioned feature of the rural melon seed powder was aimed. For this purpose; Samples of kernal seeds were obtained by grinding in the stone mill. In different applications (roasted and unroasted) and in proportions (0, 10, 20 and 40%), biscuit production was carried out by replacing the cultural core powders with biscuit flours. The properties of the biscuits produced Which are characterized by hardness, volume, weight, specific volume, color (L, a and b), physical (blistering and spreading), chemical (ash, protein) and sensory (taste, color, smell, appearance and general taste) have been researched. While 20% and 40% roasted melon seed powder showed the lowest L value, a values were increased at a value. a negative effect on the swelling, spreading rate and hardness of melon seed powder hasn't been observed. In sensory analysis, biscuit panalists made with roasted melon dust with 40% added aroma, brittleness, color, flavor and overall liking received the lowest value; Control and biscuits made with 10% added unroasted melon dust received the highest value. In sensory analysis, biscuits made with 20% added unroasted melon powder showed the best mouth disintegration feature. It has been determined that the melon seed powder has adifferent effect on the biscuit flavor used roasted and unroasted. Finally, the application rate of 10% melon seed powder application is concluded to be a usable ratio.

KEYWORDS

Melon kernel, Biscuit, Sensory property, Swelling ratio

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Poster Session 6

Submission ID: 766

THERAPEUTIC POTENTIALS AND USAGE OF TRITERPENE SAPONINS FROM QUINOA

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ABSTRACT

The aim of this review is to report pharmacological, phytochemical and nutritional aspects of quinoa seeds that have been wide range of usage, such as in foods, cosmetics, medicines and botanical supplements. Saponin in quinoa has been used as a many plant drug content and folk medicines for many centuries for treatment of diseases. In addition to role in plant defense system, saponins possess various biological and pharmacological properties, including hemolytic, cytotoxic, immune modulatory, anti-inflammatory, and antitumor impact. Furthermore, cosmetic and beverage industry benefits from surfactant properties of saponins. It also used as a bubbling factor for different aims along with in fire-extinction. The most noticeable feature of saponins is membrane permeabilization. These compounds have more effects on the enzyme activity, transport, redox related functions, organelle integrity and other signal transduction and cellular processes, for example, interfere with the cells by activating programmed cell death. Saponins are found in food crops and taken as a human diet which shows different effects on human health i.e., reducing blood cholesterol levels. Quinoa seeds are also naturally gluten free and has high nutrient profile which are increases the attention has been given to these plants. Therefore, quinoa (*Chenopodium quinoa* Willd.), an Amaranthaceae plant of Andean region, recently became important for the researchers.

KEYWORDS

Quinoa, Functional food, Anticancer, Triterpenoids, Pharmacological properties, Gluten

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Poster Session 6

Submission ID: 767

ALLELOPATHIC EFFECTS OF FLOWER EXTRACT OF OLEANDER (NERIUM OLEANDER) ON THE GERMINATION OF SEED AND SEEDLING GROWTH OF LOLIUM MULTIFLORUM

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ABSTRACT

Allelopathy is described as the effects of plant chemical secretions on the near-by plants or microorganisms. Allelopathic substances are normally leaching into the soil as phytotoxic substances which are soluble in the water from cultivated and wild plants parts such as root, stem, leaf, rhizome, flower, fruit, seed, cloth and feather. In this study, the allelopathic effect of flower extract of oleander plant was investigated. The experiment was laid out in completely randomized design (CRD) with three replications and treatments in climate cabin in the Kahramanmaraş Sutcu Imam University, Faculty of Agriculture, Department of Field Crops Laboratory during January 2017. Fresh plants flower of Nerium oleander were collected, dried and ground. Then the powder was soaked in tap water. Twenty five seeds of nigella were placed in petri dishes separately and different concentrations of extracts were applied according to the requirements. A control treatment (0 g/liter) was also included for comparison. In the study, ryegrass seeds were germinated in the extracts of nerium flower that two different colour (red and white) and different concentrations (0, 10, 20 and 40 mg/liter). The allelopathic effect of nerium flower extracts on the germination and seedling growth of ryegrass were determined. In the study, while the highest germination rate (93%) were obtained from the application of red flower extract of nerium, the highest vigor index (846.24) and seedling length (18.43) were obtained from the application of white flower extract of nerium. The results showed that with increasing the red flower extract concentration of Nerium oleander, a significant decrease was noted in the germination percentage (47%), while seedling growth was decreased. According to the results of the research, with increasing red and white flower extract concentrations significant decrease was noted in the germination and seedling growth of ryegrass.

KEYWORDS

Allelopathy, Nigella sativa, Lolium multiflorum and Extract, Germination

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Poster Session 6

Submission ID: 768

ALLELOPATHIC EFFECTS OF FLOWER EXTRACT OF OLEANDER (NERIUM OLEANDER) ON THE GERMINATION OF SEED AND SEEDLING GROWTH OF NIGELLA SATIVA

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ABSTRACT

Allelopathy is described as the effects of plant chemical secretions on the near-by plants or microorganisms. Allelopathic substances are normally leaching into the soil as phytotoxic substances which are soluble in the water from cultivated and wild plants parts such as root, stem, leaf, rhizome, flower, fruit, seed, cloth and feather. In this study, the allelopathic effect of flower extract of oleander plant was investigated. The experiment was laid out in completely randomized design (CRD) with three replications and treatments in climate cabin in the Kahramanmaraş Sutcu Imam University, Faculty of Agriculture, Department of Field Crops Laboratory during January 2017. Fresh plants flower of Nerium oleander were collected, dried and ground. Then the powder was soaked in tap water. Twenty five seeds of nigella were placed in petri dishes separately and different concentrations of extracts were applied according to the requirements. A control treatment (0 g/liter) was also included for comparison. In the study, nigella seeds were germinated in the extracts of Nerium flower that two different colour (red and white) and different concentrations (0, 10, 20 and 40 mg/liter). The allelopathic effect of Nerium flower extracts on the germination and seedling growth of nigella were determined. In the study the highest germination rate (88%), vigor index (436.44) and seedling length (9.38) were obtained from the application of red flower extract of Nerium. The results showed that with increasing the red flower extract concentration of Nerium oleander, while a significant decrease was noted in the germination percentage (28%), seedling growth was limited. According to the results of the research, with increasing flower extract concentration significant decrease was noted in the germination and seedling growth of nigella in all application.

KEYWORDS

Allelopathy, Nigella sativa, Nerium oleander and Extract, Germination

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Poster Session 6

Submission ID: 769

THE EFFECT OF PRIMING AND VERMICOMPOST COMBINATION ON SEEDLING EMERGENCE IN DILL (*ANETHUM GRAVEOLENS* L.) SEEDS

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ABSTRACT

This work was conducted to test the effect of priming and vermicompost combination on seedling emergence and seedling size in dill seeds. Seeds were primed by keeping them on top paper for 17 hours at 20°C, and dried at room temperature over 24 hours. Vermicompost was provided by Polatlı/Ankara Aybasol Company. After priming, seeds were sown in peat moss and either 100 % vermiculite or combined with vermiculite and vermicompost mixture of 95+5%, 90+10% and 80+20% was spread over sowing medium. Control seeds were not treated and 100 % vermiculite was spread. Seedling emergence percentages were calculated over 21 days at 22°C in a climatically controlled room. Seedling fresh and dry weight, as well as root fresh and dry weight were calculated after 21 days. The seedling emergence percentage in control seeds increased from 52% to 75% after priming. The treatment subjected to addition of 5 % vermicompost to the the peat moss had the highest emergence percentage of 90%. Even though significantly higher ($p<0.05$) than control 10% and 20% of vermicompost addition to vermiculite resulted to a decline in emergence as compared to 5%. The highest seedling fresh and dry weight were recorded as 82.9 mg/plant and 6.1 mg/plant, when 5% vermicompost was added to the vermiculite. Similarly root fresh and dry weight were found to be superior; 38.3 and 1.69 mg/plant at 5% addition of vermicompost. Preliminary result indicated that priming and subsequent vermicompost addition to vermiculite spread can increase the efficiency of the priming treatment in dill seeds.

KEYWORDS

Seedling fresh weight, root size, hydropriming, transplant size, seed treatment

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Poster Session 6

Submission ID: 770

**THE EFFECT OF TEMPERATURE DIFFERENCES ON SEED
GERMINATION AND GERMINATION RATE IN DILL (ANETHUM
GRAVEOLENS L.)**

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ABSTRACT

Temperature is main criterion that affect germination percentage and rate. This work was conducted to test how germination is affected by temperature variations in dill seeds. Four seed lots (Gönen 010) produced by different companies were tested (four replicate of 50 seeds per lot) at 15, 20, 25, 30 and 35°C over 21 days. The highest seed germination percentages were obtained from seeds kept at 20°C; as 97, 91, 72 and 61% from four lots. At 30°C only lot 1 and lot 2 germinated, with 41 and 7%, respectively. None of the seeds lots germinated at 35°C. Normal seedling percentages gradually declined as germination temperature increased. The fastest germination was observed at 20°C with 4.5 and 8.7 days between lots. Results indicated that the optimum seed germination temperature for dill seeds are 15 and 20°C.

KEYWORDS

Mean germination time, normal seedling percentage, germination temperature, optimum germination, high temperature

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Poster Session 6

Submission ID: 771

BIOACTIVE TERPENIC ACIDS: THEIR PROPERTIES, NATURAL SOURCES AND EFFECTS ON HEALTH

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ABSTRACT

Triterpenic acids, which may as free acids or aglycones of triterpenoid saponins, are found in many plants. For centuries, these components have been used as medicines in the folk medicine due to their hepatoprotective, anti-diabetic and anti-inflammatory properties. The triterpenic acids are phytochemicals which are formed against bacteria, fungi and plant pathogens by plants. Among the triterpenic acids, the most common in plant kingdoms are oleanolic, betulinic, ursolic and maslinic acid. They are especially found in the waxy layers of the fruits. In this review, the triterpenic acids, which are common in nature, and their bioactive properties are discussed.

KEYWORDS

Triterpenic acid, oleanolic acid, betulinic acid, ursolic acid, maslinic acid

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Poster Session 6

Submission ID: 772

URSOLIC AND OLEANOLIC ACID CONTENTS IN WILD VARIETIES OF SOME FRUITS

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ABSTRACT

The fruits grown as wild are important in terms of public economy and nutrition. These fruits contain significant amounts of bioactive compounds. Ursolic acid and oleanolic acid, which are bioactive components, are pentacyclic triterpenoid compounds. This study was conducted to determine the content of ursolic and oleanolic acid in the wild fruits naturally grown in Turkey. In this study, the white and black myrtle (*Myrtus communis* L.), blackthorn (*Prunus spinosa* L.), barberry (*Berberis vulgaris* L.), plum (*Prunus domestica* L.), cherry laurel (*Laurocerasus officinalis* L.), burnet rose (*Rosa pimpinellifolia* L.), cornelian cherry (*Cornus mas* L.) and Caucasian whortleberry (*Vaccinium arctostaphylos* L.) fruits were analyzed. The ursolic acid and the oleanolic acid analyzes were performed by HPLC-DAD. The highest oleanolic acid (183.51 ± 60.46 mg kg⁻¹) and ursolic acid (158.78 ± 25.04 mg kg⁻¹) were found in burnet rose, while the lowest oleanolic acid (6.83 ± 2.96 mg kg⁻¹) and ursolic acid (7.73 ± 2.62 mg kg⁻¹) contents were determined in Caucasian whortleberry fruit. There were no any presence of ursolic acid in cornelian cherry and Karaca plum fruits.

KEYWORDS

Wild fruit, ursolic acid, oleanolic acid, triterpenic acid

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Poster Session 6

Submission ID: 773

ALBEDO OF CITRUS FRUIT AND ITS EFFECT ON HEALTH

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ABSTRACT

Depending on our nutrition style, new methods are required which will make food healthier. One of these methods is using fibers which are functional properties of nutrition as a food ingredient while reducing fat content. In this aspect, citrus albedo plays an important role. Albedo forms the white parts of citrus and has a soft form since the large amounts of pectin and hesperidin content existent in the cell gaps. Albedo contains large amounts of dietary fiber and fibres plays a great role on providing stable form for structural and textural properties of food by means of binding fat and water features of fibers. Moreover, it forms the basic components of low-calorie-products. Texture, density and sensory properties of final product can be modified by using fibers. Dietary fibers built in citrus albedos show some positive effects on colon cancer, obesity, diabetes and cardiovascular diseases.

KEYWORDS

citrus, albedo, dietary fiber

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Poster Session 6

Submission ID: 774

MELITOPALYNOLOGIC ANALYSIS OF THE HONEY SAMPLES COLLECTED FROM AZERBAIJAN GANJA GAZAKH REGION

DUYGU NUR ÇOBANOĞLU¹, KADRIYE SORKUN¹

ABSTRACT

In this study, it was aimed to evaluate the botanical sources of the honeys that were collected from Azerbaijan Ganja Gazakh Region with melitopalynological analysis. For this purpose, 23 honey samples were collected from 8 different administrative regions (rayon) of Azerbaijan Ganja Gazakh Economic Region during the honey harvest period in 2014. The pollen contents, total number of pollen (TPN-10) and starch content of 10 g honey were examined by melitopalynological analyses. As a result of these analysis, 34 different plant families, 42 plant genera and 4 species were determined and it was determined that 7 honey samples were monofloral and 16 honey samples were multifloral.

KEYWORDS

Honey, melitopalynological, Ganja, Gazakh, Azerbaijan

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Poster Session 6

Submission ID: 775

DETERMINATION OF BIOACTIVE PROPERTIES AND BIOAVAILABILITY OF LAUROCERASUS OFFICINALIS ROEMER LEAVES

OSMAN SAĐDIÇ¹, KÜBRA ÖZKAN¹

ABSTRACT

Since the days of mankind's existence, plants have been used for therapeutic purposes. It is reported that many doctors have been interested in medical plants and have been used for treatment in many diseases since the Mesopotamian civilization B.C. in 3000. Due to different climatic conditions, various medical and aromatic plants are growing in every region of today's Turkey and it is among the richest countries in the world. However, medical and aromatic plants in Turkey are not evaluated sufficiently and economic income can not be obtained. Therefore, it is important to carry out various researches in order to determine plant diversity, usage areas and how they are called as regional. The vast majority of phenolic compounds such as phenolic acids, flavonoids and tannins present in medical plants exhibit free radical scavenging properties. Thus they carry antioxidant properties. *Laurocerasus officinalis* Roemer one of these medical and aromatic plants. The area of spread of the plant is the eastern regions of the Black Sea, Caucasus, Taurus, North and East Marmara. It is generally the fruit of temperate climate regions. In this regard, this plant is grown in the coastal zone of the Black Sea region. It is also known as *Prunus laurocerasus*, laz cherry. To better understand the benefits of these medicinal plants on human health, the consequences of human metabolism and the bioavailability values must be known. In this study, extracts were obtained from *Laurocerasus officinalis* Roemer leaves the effects of in vitro digestion and bioavailability values were determined on the bioactive components of the leaves of the *Laurocerasus officinalis* Roemer. Total phenolic substance, total flavonoid and antioxidant capacities of post gastric (PG), IN (with small intestinal absorbers) and OUT (without small intestine absorbers) samples obtained as gastric and intestinal digestion in vitro were measured. As a result of the study, the total amount of phenolic substance in raw sample is 17,62 mg GAE/g while in boiled sample it is 0,83 mg GAE /g. The total amount of flavonoids in the raw sample is 11.61 mg CAE /g while in the case of boiled sample is 0.47 mg CAE /g. Antioxidant capacity is measured by DPPH and CUPRAC methods. Accordingly, total antioxidant capacity measured by DPPH method is 41.11 mg TEAC / g and 0.77 mg TEAC /g in raw and boiled samples, respectively. Total antioxidant capacity measured by the CUPRAC method is 67,05 mg TEAC /g and 1,63 mg TEAC /g in raw and boiled samples, respectively. As a result of digestion, the amounts of bioactive components decreased in the stomach and intestinal environment. The bioavailability values for the phenolic compounds in the raw and boiled starter samples were 3.86-11.66% for the total flavonoid substance, respectively, while the bioavailability values for the antioxidant capacity were 10.58-19.48% (by the DPPH method), 6.50-50.3% (by the CUPRAC method). Although the boiling process causes loss of bioactive component amounts, it also causes an increase in bioavailability values.

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KEYWORDS

Laurocerasus officinalis Roemer , Bioactivity, Bioavailability

Poster Session 6

Submission ID: 777

THE EFFECTS OF SECONDARY METABOLITES ON THE ANIMAL HEALTH IN RANGELAND AND PASTURE PLANTS IN MEDITERRANEAN ECOLOGICAL CONDITIONS

EMRE KARA¹, MUSTAFA SÜRME¹

ABSTRACT

Grazed areas including rangelands and pastures cover approximately 51% of the Earth's continental surface. The plant species which are in these areas which form a wide biodiversity with living and non-living organisms, stand out with both as a forage source and medical use. In this natural habitat, plants are surrounded by a large number of potential enemies. Since plants are not able to escape from these enemies (herbivores and pathogenes), plants produce substances which are not functional for growing and develop but protect plants against external factors as defence mechanisms. These substances are called secondary metabolites. These substances which are seen differently from the primer metabolites, possess characteristics specific to each plant species. Secondary metabolites of plant origin can be divided into three main groups as terpens, phenolic compounds and nitrogenous compounds. Terpenes have negative effects on many mammals and insects, because they are toxic. The lignin, a phenolic compound, is located in the plant cell wall and has a particularly digestibility – lowering effect. In addition, flavanoids, which are again phenolic compounds, are thought to be produced against harmful effects of UV rays and pathogen invasion. Tannins, another phenolic compounds, are generally toxic. When plants which have tannins are grazed by herbivorous, they significantly reduce chances of growth and survival of animals. Finally, the alkaloids which are in the nitrogenous secondary products, are seen in a very wide area. These metabolites, especially in invasive plants that are heavily exposed to heavy grazing rangelands and pastures, affect the nervous system in livestock and can cause paralysis and even sudden deaths. These three secondary metabolite groups are also commonly found in plants that are not properly managed in the meadow and pasture areas of the Mediterranean climate zone and can cause economic damage by affecting animal health and quality of animal products, especially in areas where animal production are seen. However, these economic losses are not only due to the plant species but can change with the influence of environmental factors. Moreover, not every livestock is affected by the same damage, the damage threshold varies according to the livestock species. This situation affects the livestock sector and natural vegetation, which already have problems. If the rangelands and pastures we call quality and natural forage sources, are not properly managed, the grazing and other factors may lead to the increase of the plant species which affect of reducing the animal production and may cause the deterioration of the natural vegetation cover. In this study, many rangeland and pasture plants which are located in the Mediterranean climate zone and have different secondary metabolites have been examined and the positive and toxic effects on livestock health have been discussed. In addition, the proper management systems in the rangeland and pasture areas where these species are seen have been described and accordingly, possible changes in both animal production and natural vegetation have been mentioned

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if there is not properly managed. With rangeland and pasture improvement studies to be carried out in accordance with the information described here, both increase in animal production can be achieved and plants in these areas can contribute to the economy in terms of both medical and chemical substance possibilities.

KEYWORDS

rangeland, secondary metabolites, toxic plants, animal health

Poster Session 6

Submission ID: 778

THE INVESTIGATION OF CYTOTOXIC ACTIVITIES OF DIFFERENT EXTRACTS FROM *ACHILLEA VERMICULARIS* AERIAL PARTS

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ABSTRACT

The genus *Achillea* L. (Asteraceae), with about 115 species, is widely distributed in Europe, Asia and northern Africa and is naturalised in other parts of the world. Species of the genus *Achillea* are widely used for numerous pharmacological properties, such as antimicrobial, anti-inflammatory, antiallergic, and antioxidant activities (1). Turkey is one of the main centers of diversity for the genus *Achillea*. *Achillea* species are important in Turkish folk medicine for matters such as stomachache, hemorrhoids and inflammation (2). The *A. vermicularis* Trin. naturally grows in east Anatolia at an altitude between 1200 and 3500 m. In flora records this plant is reported to occur in Southeast Asia including Caucasia. Some researchers have reported the major constituent in the oil of the plant as camphor, 1,8-cineole, borneol, camphene, germacrene D and piperitone. Also, vermicularon A, vermicularon B, achilleanone, vermiculone, vermicularone, germacranolides, guaianolides and flavonoids compounds were isolated from *A. vermicularis* (3). Cytotoxic effects on cancer cells of n-hexane, chloroform, ethyl acetate, ethanol and ethanol-water (1:1,v/v) extracts the from *Achillea vermicularis* aerial parts is not known and there is no literature about this topic. Therefore, the aim of the present study are to evaluate cytotoxic activities of different extracts from *A.vermicularis* aerial parts. Cytotoxicity of differant extracts from *A. vermicularis* was evaluated and screened against human MCF-7 (breast), HeLa (cervical), PC-3 (prostate), A549 (lung), HT-29 (colon), Hep3B (liver) cancer cell lines and normal NIH/3T3 cell lines. The reduction of viability of cells in 50-200 µg/mL concentration of different extracts was evaluated using MTT assay. According to study,the chloroform extract (100 µg/mL) showed strong activity and selectivity against HeLa and HT-29 cell lines. References 1.Dastjerdi LS, Mazoji A, Comparative chemical composition of the essential oils of Iranian *Achillea oxyodonta* from different ecological regions, urnal of Applied Pharmaceutical Science, 5 (05), 106-109, 2015. 2.Demirci F, Demirci B, Gürbüz İ, Yeşilada E & Başer KHC, Turkish J Biol, (2009) 3 3129-136. 3.Polatoglu K, Karakoc ÖC, Görenc N, Phytotoxic, DPPH scavenging, insecticidal activities and essential oil composition of *Achillea vermicularis*, *A. teretifolia* and proposed chemotypes of *A. biebersteinii* (Asteraceae), Industrial Crops and Products 51, 35–45.2013

KEYWORDS

Achillea vermicularis, cytotoxic, MTT

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Poster Session 6

Submission ID: 779

COMPARATIVE EVALUATION CYTOTOXIC ACTIVITIES OF DIFFERENT EXTRACTS FROM ENDEMIC ACHILLEA LYCAONICA

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ABSTRACT

The genus *Achillea* of the family Compositae (Asteraceae) comprises 42 species and 47 taxa in Turkey, of which 23 taxa are endemic, the *Achillea* genus are used in wound healing, abdominal pain, stomachache, symptomatic relief of colds, ulcer, and diarrhea. The *Achillea* genus contains phenolic compounds (terpenoids and flavonoids) responsible for biological activity (1,2). *Achillea lycaonica* Boiss. et Heldr. is a member of the genus *Achillea* L. belongs to family Asteraceae and is endemic to Turkey (3). Cytotoxic effects on cancer cells of n-hexane, chloroform, ethyl acetate, ethanol and ethanol-water (1:1,v/v) extracts the from *Achillea lycaonica* (endemic) aerial parts is not known and there is no literature about this topic. Therefore, the aim of the present study are to evaluate cytotoxic activities of different extracts from *A. lycaonica* aerial parts. Cytotoxicity of n-hexane, chloroform, ethyl acetate, ethanol and ethanol-water (1:1,v/v) was evaluated and screened against human MCF-7 (breast), HeLa (cervical), PC-3 (prostate), A549 (lung), HT-29 (colon) cancer cell lines and normal NIH/3T3 cell lines. The reduction of viability of cells in 50-200 µg/mL concentration of different extracts was evaluated using MTT assay. According to study, the chloroform extract showed strong activity against HeLa, HT-29 and MCF-7 cell lines. References 1.Baser-Can KH., Demirci B., et al., Composition and antimicrobial activity of the essential oil of *Achillea multifida*, *Planta Med.* 68: 941-943, 2002. 2.Turkmenoglu, FP. Agar, OT. Akaydin, G. Hayran, M. and Demirci, B. 2015. Characterization of volatile compounds of eleven *Achillea* species from Turkey and biological activities of essential oil and methanol extract of *A. hamzaoglui* Arabacı & Budak. *Molecules.* 20: 1432-11458. 3.Agar, OT. Dikmen, M. Ozturk, N. Yilmaz, MA. Temel, H. and Turkmenoglu, FP. 2015. Comparative studies on phenolic composition, antioxidant, wound healing and cytotoxic activities of selected *Achillea* L. species growing in Turkey. *Molecules* 20(10): 17976-18000.

KEYWORDS

Achillea lycaonica, cytotoxic, MTT

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Poster Session 6

Submission ID: 780

THE BIOLOGICAL ACTIVITIES AND CHEMICAL PROFILE OF ETHANOL EXTRACT OF ALLIUM AKAKA

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ABSTRACT

In Turkey, traditionally consumed *Allium* genus like kormen, rock garlic, savage onion, savage garlic, dog onion and shepherd garlic are also used as food or used in treating aim. In this research, total phenolic and flavonoid content, antioxidant and anticholinesterase activities of extracts obtained from various parts of *Allium akaka* were compared. *S. suffruticosa*, which was collected from east Turkey (Hakkari) in May 2015 and characterized by Mehmet Fırat (Yüzüncü Yıl University, Faculty of Education, Department of Biology, TR-65080 Van.). Voucher specimens were deposited in the Herbarium of Van Yuzuncu Yil University, Faculty of Science (VANF 164090). β -Carotene method, ABTS cation radical decolorisation method, cupric reducing antioxidant capacity assays and DPPH free radical scavenging activity were carried out to indicate the antioxidant activity. The anticholinesterase potential of the extracts were indicated by Ellman method. The amounts of total phenolic and flavonoid components in crude extracts were determined by expressing as pyrocatechol and quercetin equivalents, respectively. The powdered plants (stems, leaves, flowers, roots and mixed parts) were extracted three times with ethanol (50 mL each) at room temperature for 24 h. Afterwards, the extracts obtained were combined, filtered and evaporated under low pressure. Dry filtrates were reconstituted in ethanol at a concentration of 250 mg L⁻¹ and filtered through the 0.2 μ m PTFE filter prior to LC-MS/MS analysis. The antioxidant and cytotoxic activities of *A. akaka* were determined medium values, generally. The LC-MS/MS studied showed that *A. akaka* was including high amount p-coumaric acid, kaemperol and apigenin.

KEYWORDS

Allium akaka, Cytotoxic, Antioksidant, Anticholinesterase, Total Phenolic-Flavonoid

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Poster Session 6

Submission ID: 782

THE FATTY ACID ANALYSIS OF SOME SALVIA SPECIES BY GC-MS AND CHEMOMETRIC APPROACH

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ABSTRACT

The genus *Salvia* L. (Lamiaceae) is represented more than 900 species on the world and about 98 species in Turkey. Fifty-three of them are endemic. These plants have trichomes and aromatic qualities, due to containing of various essential oils used in perfumery and medicine. Medicinal plants are biologically active materials traditionally used in the treatment of a variety of diseases since ancient times. The most used common chemometric analyses techniques are Principal Component Analysis (PCA) and Hierarchical Cluster (HCA) Analysis. PCA technique search for answers about the type of relationships between samples and the issues interaction between variables. Hierarchical Cluster (HCA) technique, however, provides information on the classification (characterization) of examples. These both techniques reveal the unrevealed relationships and allow to predict the results that cannot be considered so ordinary . In our study, Principle Component Analysis (PCA) and Hierarchical Clustering Analysis (HCA) were performed with 7 fatty acid components of 10 samples collected at different times. As a result of the PCA analysis with 10 samples and 7 fatty acid components, the first three principal components explained the variance as 94.2%, 1st principle component as 46.4% and 2nd. principle component as 28.3% (Fig. 1). Statistical calculations were performed using Minitab 16.2.1 statistical software (MINITAB Inc. 2010). *Salvia* species collected at different times in the study were evaluated with 7 fatty acid components. Acknowledgements: The research was funded by grant : KBAG 114Z801 from TUBITAK, The Scientific and Technological Research Council of Turkey.

KEYWORDS

Salvia, Fatty Acid, PCA

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Poster Session 6

Submission ID: 784

THE AROMATIC-MEDICINAL PLANT TAXA OF PURE SCOTS PINE STANDS IN SÜRMENE - CAMBURNU (TRABZON)

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ABSTRACT

Forests are not the ecosystems that they only produce wood raw materials. They are rich in medicinal and aromatic plants and produce many other goods and services. In forest ecosystems, to regulate the usage of these goods and services taking into consideration conservation and utilization equilibrium is extremely important. In order to ensure sustainable utilization of forest ecosystems, first of all, it is necessary to identify the natural components in these ecosystems. In this study, medicinal-aromatic plants of natural pure Scots pine (*Pinus sylvestris* L.) stands, which are delicate ecosystems, were investigated in the years 2014-2015. This tree species has special ecological conditions in Sürmene-Çamburnu (Trabzon) mostly because of its distribution descending down to the sea-side. In the present study, 81 (77%) of 105 vascular plant taxa were found to have medicinal-aromatic potential. From medicinal and aromatic purpose of view, available parts of these taxa are explained in detail. In addition, recommendations have been made about regulation of utilization in such kind of sensitive ecosystems.

KEYWORDS

Scots pine, medicinal-aromatic plant, flora.

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Poster Session 6

Submission ID: 785

GEOPHYTES OF PURE SCOTS PINE FOREST IN ALPU (ESKIŞEHİR- TURKEY) REGION

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ABSTRACT

In this study, geophytes of pure stands of Scots Pine forests, which are important from non-wood forest products point of view, were investigated in Alpu (Eskişehir-Turkey) region. Research area was divided into three altitude levels such as 1200-1400 m, 1400-1600 m and 1600-1800 m. Total of 33 relevés were studied for the present study. As a result of the study, 29 geophytes were identified. Vegetative and / or generative parts of these taxa which have been used as non-wood forest products are explained in detail. Furthermore, the usage purpose of each taxon and their potentials are explained. In addition, with comprehensive phytosociological studies in the field, cover-abundance and sociability (or gregariousness) values of each geophyte plants were determined according to Braun-Blanquet approach. In particular, considering CITES regulations, the possibilities of benefiting from these plants within the conservation and utilization equilibrium were discussed in detail.

KEYWORDS

Geophyte plant, non-wood plant product, Eskisehir.

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Poster Session 6

Submission ID: 786

EVALUATION OF TOTAL PHENOLIC CONTENT AND FREE RADICAL SCAVENGING ACTIVITY OF SOME HERBAL TEA PREPARED BY DECOCTION AND INFUSION

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ABSTRACT

Herbal tea is preferred by consumers since it contains several bioactive constituents, especially phenolic compounds and antioxidants providing beneficial health effects. These compounds are claimed to be antistress, anti-inflammatory, stimulant, blood purifier, energizer, antidepressant, antidiabetic, antiviral, diuretic, antihypertensive and memory enhancer. This study was conducted to investigate antioxidant activity and phenolic compounds of 7 different herbal tea including fennel (*Foeniculum vulgare*), sage (*Salvia officinalis*), daisy (*Flos chamomillae*), echinacea (*Echinacea purpurea* L.), lemon balm (*Melissa officinalis*), linden (*Tilia platyphyllos* L.), rosehip (*Rosa canina* L.). The ready to use tea bags were prepared by infusion (85 °C for 5 min) and decoction (100 °C for 5 min) process and their total phenolic contents (TPC) and antioxidant activity were compared with methanol extracts. Total phenolic contents of herbal tea were analyzed by Folin–Ciocalteu's procedure. The TPC of herbal tea samples was reported as mg of Gallic acid equivalents (mg GAE/L) of tea samples. Antioxidant activities of herbal tea were evaluated by the effect of extracts on DPPH (2,2-diphenyl-1-picrylhydrazyl) radical scavenging assays. Antioxidant activity was expressed as percentage of inhibition in relation to control. The herbal tea of lemon balm and Echinacea had the highest phenolic content among the investigated tea as 1182 and 1102 mg GAE/L respectively. In contrast with the general advice to prepare herbal tea by infusion, the total phenolic content of the herbal tea prepared by decoction were determined as higher. Similarly the antioxidant capacity also changed with both infusion and decoction processes. Consequently, it was understood that some herbal tea should be prepared by decoction instead of infusion method.

KEYWORDS

herbal tea, total phenolic content, antioxidant activity, infusion, decoction

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Poster Session 6

Submission ID: 788

ANTIOXIDANT PROPERTIES, AND PHENOLIC COMPOUNDS OF SAPONARIA L. DETERMINED BY LC/MS-MS

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ABSTRACT

Saponaria taxa contains saponin and has been used for medicinal purposes in the past and today. The aim of this study was to evaluate the antioxidant activity and phenolic composition of Saponaria L. Antioxidant activity of Saponaria L. was measured by the 2,2-diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging effect, the ferric reducing antioxidant power (FRAP), and Cupric reducing antioxidant power assays using ethanol and water extract of the sample. Phenolic composition of ethanolic extract of Saponaria L. was studied with liquid chromatography coupled to tandem mass spectrometry (MS/MS). The identification of the phenols were made based on retention time, tandem MS spectras of authentic standards. The result showed that although ethanol extract has slightly better activity compared to water extract, both extracts of the sample have low antioxidant activities compared to standard antioxidant including BHA, BHT and ascorbic acid as shown with DPPH, FRAP and CUPRAC assays. LC–MS/MS analysis of ethanolic extract indicated that there are 14 detectable phenolic compounds in Saponaria L. and rutin is primary phenolic compound found. The present study is the first such detailed report on chemical composition and antioxidant activity of Saponaria L.

KEYWORDS

Saponaria L, CUPRAC, FRAP, DPPH, LC/MS/MS and phenolics

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Poster Session 6

Submission ID: 789

ANTIOXIDANT PROPERTIES OF ALLIUM SCORODOPRASUM L. SUBSP. ROTUNDUM L. STEARN FLOWERS

BAHTINUR TAŞCI¹, İLKAY KOCA¹

ABSTRACT

Allium scorodoprasum L. subsp. *rotundum* L. STEARN plant is a perennial, aromatic plant with bulbs, which is grown in different parts of the world. The plant has an important place in folk medicine due to its medical properties. In our country, its leaves and bulbs are consumed as cooked or raw. As well as being used as flavoring in Van herby cheese, it is also used in meals such as pilav and börek in many places. Besides its leaves and bulbs, its flowers are eaten as salad in some countries. The objective of this study is to find out the antioxidant properties of the flowers of *Allium scorodoprasum* L. subsp. *rotundum* L. STEARN plant, which is grown naturally in our country. For this purpose, the flowers of the plant, which is grown in 5 different locations of the city of Tokat, were picked. Dry matter, color, pH, ascorbic matter, total phenolic matter, total anthocyanin, ascorbic acid and antioxidant activity (DPPH free-radical scavenger effect and iron reducing power-FRAP) analyses were conducted in the flowers. In addition, the presence of organosulphur compounds was also researched with FT-IR (Fourier Transform Infrared spectroscopy). Ascorbic acid was found with high performance liquid chromatography (HPLC), total phenolic matter was found with Folin-Ciocalteu method, total anthocyanin was found with pH differential method and antioxidant activity analyses were found colorimetrically. The results of the study showed that the ascorbic acid content of the flowers differed between 504.83 and 783.79 mg/kg, total phenolic matter amount differed between 11.54 and 13.79 mg/g, total anthocyanin content differed between 4.50 and 34.47 mg/100g, DPPH free-radical scavenger effect differed between 47.23 and 54.86 µmol Troloks equivalent (TE)/g and FRAP differed between 430.88 and 545.66 mM TE/g. In addition, when the IR bands of the flowers were analyzed, allicin and alliin were found in all samples. It was recorded that the flowers of *Allium scorodoprasum* L. subsp. *rotundum* L. STEARN plant included high natural antioxidant compounds and it was concluded that the consumption of these flowers in different ways such as salad and tea could be useful in terms of health.

KEYWORDS

Allium, antioxidant, aromatic plant

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Poster Session 6

Submission ID: 790

PLANTS USED AS PAINKILLER IN FOLK MEDICINE IN TURKEY IV - TOOTHACHE

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ABSTRACT

Due to the geography in which Turkey is located, it has a rich flora and many plants used by public for the treatment of various diseases. The usage of these medicinal plants has been transferred from generation to generation. Ethnobotanical studies carried out by traditional methods of treatment are recorded and this information is aimed to contribute to the development of the drug. This study, which is fourth article of series about painkiller plants, contains the plants used against toothache. In this survey, was prepared by screening of ethnobotanical researches, 52 taxa were traditionally used in toothache treatment in Turkey. Information about scientific and local names, families, used parts and usage patterns of these plants are given. According to the research result, the most common families are Lamiaceae, Asteraceae, Solanaceae, Euphorbiaceae and Rosaceae. The species commonly used in different regions of Turkey are *Cornus mas* L., *Dianthus zonatus* Fenzl var. *zonatus* and *Hyocyanus niger* L. Reasons of the usage of plants for toothache treatment are that they contain analgesic and anti-inflammatory compounds. Plants are usually used externally. In addition, decoction and infusion are prepared and used internally.

KEYWORDS

Toothache, Medicinal plants, Traditional treatment, Turkey

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Poster Session 6

Submission ID: 793

ESSENTIAL OIL COMPOSITION OF TWO SALVIA SPECIES FROM ANATOLIA

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ABSTRACT

The genus *Salvia* comprises 700 herbs and shrubs, growing in the temperate and warmer zone of the World. Some species of genus *Salvia* are used as medicinal aromatic and ornamental plants. *Salvia multicaulis* and *S. hypergia* are an evergreen shrub growing to 0.3 m × 0.25 m, native to south-west Asia, particular eastern, central and southern Turkey. Essential oil samples were obtained by a Clevenger apparatus from the whole parts of plants which were crumbled into small pieces and soaked in distilled water for 3 h. Then, these samples were dried over anhydrous Na₂SO₄ and stored at +4°C for a sufficient period of time. In the next step, the essential oil samples were diluted using CH₂Cl₂ (1:3 volume/volume) prior to GC/FID and GC/MS analyses. Essential oil of analysis of *Salvia multicaulis* and *S. hypergia* were analyzed with GC-MS/FID. α - Pirene, Eucalyptol, (+)-2-Bomanone and Caryophyllene were determined as the main compounds of *S. multicaulis*. *S. hypergia* was found to be rich in monoterpenes, but quite different than *S. multicaulis* in the means of chemical composition. β -elemene, Caryophyllene, Germaciene D and Viridifloral were found to be the main compounds of *S. hypergia*. This species was found to be particularly rich in Germacrene D.

KEYWORDS

Salvia multicaulis, *Salvia hypergia*, Essential Oil

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Poster Session 6

Submission ID: 794

PHYTOBIOTICS: A NATURAL, SAFE AND MULTIPLE ACTIONS FEED ADDITIVES FOR ANIMAL FOOD PRODUCTION

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ABSTRACT

Phytobiotics which are plant origin products are natural bioactive (secondary) plant compounds such as essential oils, oleoresins and flavonoids, which are derived from various aromatic-medicinal plants and spices as well as fruits constitute. Phytobiotic term is used to identify secondary compounds obtained from these plants as well as plant parts such as fruits, flowers, seeds, roots or bark. In fact, the use of phytobiotics in animal nutrition, which has been used for thousands of years, has received great interest in the past 30 years and more than 300 studies have been published in various journals. Today, in the feeding of poultry and other monogastric animals, this class of feed additives is being used to a great extent as an alternative to antibiotics growth promoters (AGP). Studies have shown that these additives have better physiological effects on many parameters related to yield and health in poultry. These positive effects of phytobiotics are attributed to their antimicrobial, antioxidant, antiviral, antiinflammatory, antiparasitic and insecticidal potentials. The goal of this presentation is to review scientific data related to the effect of phytobiotics on performance, gut health and function, carcass quality of broiler chickens.

KEYWORDS

Phytobiotic, broiler, performance, health, meat quality

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Poster Session 6

Submission ID: 795

ANTIMICROBIAL EFFECT OF GINGER (ZINGIBER OFFICINALE) EXTRACTS AGAINST STREPTOCOCCUS PYOGENES

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ABSTRACT

Ginger (*Zingiber officinale*) has been used widely as a food spice and an herbal medicine. It is very common to use it to treat sore throat, cough, fever etc., that are prevalent during winter. The purpose of this study was to investigate the antimicrobial effect of ginger extracts against *Streptococcus pyogenes* (ATCC® 19615™) which is group A streptococci causing infections. Although there is a wide range of antibiotics for the treatment of bacterial infections, the development of resistance to chemotherapeutic agents increasingly become a pressing problem which makes researchers looking for alternative therapeutic agents. For this reason, fresh and dried ginger aqueous extracts and essential oils were assessed for their antimicrobial activity. Disc-diffusion method on blood sheep agar was used to test the antimicrobial efficiency of the extracts. The essential oil obtained from hydrodistillation of dried ginger was the most effective with 17.43 mm inhibition zone. The aqueous extracts obtained by decoction process was not effective as essential oils. Tetracycline, cefixime and streptomycin were used as positive controls and antimicrobial activity of the essential oil of dried ginger is not significantly different than that of tetracycline ($p < 0.05$). It was concluded that the essential oil of ginger may contain compounds with therapeutic activity against *Streptococcus pyogenes*.

KEYWORDS

Ginger (Zingiber officinale), Streptococcus pyogenes, antimicrobial effect

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Poster Session 6

Submission ID: 796

**DETERMINATION OF SOME IMPORTANT POMOLOGICAL AND
PHYSICOCHEMICAL CHARACTERISTICS OF STRAWBERRY TREE
GENOTYPES (ARBUSUS UNEDO L.) SELECTED IN BOLU
PROVINCE IN TURKEY**

TAKİ DEMİR¹, ÖMER BEYHAN¹, HAMDİ ZENGİNBAL², BAYRAM YURT³

ABSTRACT

This study was carried out in order to determine some important pomological and physicochemical characteristics of strawberry tree (*Arbutus unedo* L.) genotypes selected in Bolu province in Turkey. Twenty genotypes, which were found to be most promising according to the data obtained during the two last years, were examined. Fruit length was ranged from 15.48 to 21.44 mm, fruit width from 14.07 to 21.46 mm and fruit weight from 2.94 to 7.47 gr for the examined genotypes. Soluble Solid Content (SSC) was ranged from 13.95 to 21.75%, fruit juice pH value from 3.40 to 3.83, titratable acid content (TAC) from 0.48 to 0.83%; ash content from 0.428 to 0.848%, moisture content from 63.78 to 77.93%, nitrogen content from 0.11 to 0.3% and protein content from 0.76 to 1.85%. The results obtained suggest that the comparison of the results of the studies done in our country and the international data shows that the genetically domesticated genotypes that have grown in the region constitute a promising potential and that selection studies should be continued under controlled conditions.

KEYWORDS

Tree Strawberry, Arbutus, Pomological, Physicochemical content

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Poster Session 6

Submission ID: 797

**DETERMINATION OF ANTIOXIDANT ACTIVITY, PHENOLIC
COMPOUNDS AND PHYSICOCHEMICAL PROPERTIES OF CHERRY
LAUREL GENOTYPES (*LAUROCERASUS OFFICINALIS R.*) GROWN
IN SAKARYA PROVINCES IN TURKEY**

ÖMER BEYHAN¹, TAKİ DEMİR¹, BAYRAM YURT²

ABSTRACT

This study was carried out in order to determine some important physicochemical characteristics, phenolic compounds and antioxidant activity of cherry laurel genotypes (*Laurocerasus officinalis R.*) grown in Sakarya provinces in Turkey. Fifteen genotypes which were found to be most promising according to the data obtained during the two last years (2014-2015) were examined in this study. The average fruit weight ranged from 1.08 to 5.33 gr, fruit length from 14.07 to 21.46 mm and fruit weight from 2.94 to 7.47 gr. Results showed that dry matter content of fruit ranged from 16.62 to 25.49%, titratable acid content (TAC) from 0.22 to 0.49%; fruit juice pH value from 4.43 to 4.93; nitrogen content from 0.11 to 0.37%, crude protein content from 0.760 to 1.850%, soluble solid content (SSC) from 15.53 to 31.36%, refractive index from 1.356 to 1.385 and ash content from 0.237 to 0.720%. Furthermore, total phenolic content ranged from 1197 to 4741 mg GAE/100 g and antioxidant activity from 3.36 to 25.10% for the studied genotypes. The results obtained suggest that the comparison of the results of the studies were conducted in our country and the international data shows that the genetically domesticated genotypes that have grown in the region constitute a promising potential and that selection studies should be continued under controlled conditions.

KEYWORDS

Cherry laurel, Laurocerasus, Physicochemical, Phenolics, Antioxidant

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Poster Session 6

Submission ID: 798

IN-VITRO GLYCEMIC INDEX DETERMINATION OF SOURDOUGH BREADS PREPARED BY USING SOURDOUGHS COLLECTED FROM DIFFERENT REGIONS OF TURKEY

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ABSTRACT

Bread is of great importance for diet of Turkish people. Especially white bread is one of the most consumed foods with its high glycemic index (GI). As known, white sourdough bread or sourdough bread containing different rate of dietary fibers has lower GI than white bread. The aim of this study was to collect traditional sourdough samples from different regions of Turkey and determine the GI of sourdough breads made from these sourdoughs. For this purpose, 5 different traditional sourdoughs were obtained: 4 different homemade white sourdoughs (Ođuzlu (O), Kastamonu (K), Lüleburgaz (L), Afyon/ Bolvadin 2 (B2)) and 1 commercial whole wheat sourdough, Safranbolu Yıldız Fırını (SYF). Sourdough breads were prepared using the dough of these samples with their own flour and long timed-cold fermentation (18h). Then GI values of the prepared sourdough breads were evaluated by using an in vitro method based on Goni-assay calculating the GI by measuring rate of starch digestion. A similar glycemic response was observed for sourdough breads except whole wheat sourdough bread. O, K, L, B2, SYF had GI of 50.05 ± 0.3 , 51.8 ± 1.65 , 50 ± 0.5 , 51 ± 0.5 and 46.5 ± 0.5 , respectively. Compared to the control (White bread, GI: 70), the GI of sourdough breads was found low (<55). There was no significant difference among the GI values of white sourdough breads collected from different regions. The difference of SYF was thought to stem from dietary fiber. There was a negative correlation between the GI value and sourdough - dietary fiber. According the results, the ability of breads to lower GI was affected by sourdough, dietary fiber and long timed-cold fermentation.

KEYWORDS

in vitro glycemic index, sourdough, dietary fiber, fermentation temperature

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Poster Session 6

Submission ID: 799

CHEMICAL COMPONENTS AND ANTIMICROBIAL ACTIVITIES OF NEST MATERIALS DOLICHOVESPULA SAXONICA

ÖMER ERTÜRK¹, CEREN YAVUZ², ZEYNEP KOLÖREN¹

ABSTRACT

Social wasp nests serve as a place for rearing brood and the centre for their nesting activities [1,2]. Wasps collect plants, woody fibers, mud, which they masticate and mix with oral secretion to construct the nest with a variety of architectural design [1]. This salivary secretion is also used to physically maintain their nests. In the present study, were determined the antimicrobial effects of bee nest samples obtained from East Black Sea Region. The nest of *D. saxonica* collected in Trabzon during July-August 2015 Region of East Black Sea. Larvae, pupae and eggs were removed from the nest. Small fragments were cut from the comb for observation. The nests were stored in the Entomology Laboratory at Biology Department of Ordu University. The antimicrobial effects of bee nest sample was determined with disc diffusion method. The antimicrobial activity of bee nest samples was studied using ten microorganisms. Three gram-positive: *Staphylococcus aureus* ATCC®25923, *Micrococcus luteus* B1018, *Basillus subtilis* B209, and five gram negative: *Proteus vulgaris* B123, *Klebsiella pneumonia* ATCC®13883, *Pseudomonas aeruginosa* ATCC®27853, *Streptomyces murinus* ISP 5091, *Yersina enterocolitica* ATCC®27729, and two fungus ATCC®10231, *Aspergillus niger* ATCC 9642. The antibacterial activity of diluted with ethanol five fraction nest was assayed in vitro by agar disc diffusion method against 8 bacterial and 2 fungi species. The five dilute nest ethanol extract showed Antibacterial antifungal activity. On the other hand, ethanol extracts of almost all the nest exhibited antibacterial antifungal activity towards one or another bacterium against to all of microorganism used in this study. The maximum antibacterial antifungal activity was shown by diluted 25 µL (2.5 mg) of nest extracts 20 µL (2 mg), followed by and 15 µL (1.5mg), respectively. In conclusion, beeswax nest extracts possess a broad spectrum of activity against a panel of bacteria responsible for the most common bacterial diseases. Key words: *Dolichovespula saxonica*, antimicrobial activity

KEYWORDS

Dolichovespula saxonica, antimicrobial activity

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Poster Session 6

Submission ID: 800

FATTY ACID COMPOSITION OF SOME EUPHORBIA SPECIES BY USING GC/MS

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ABSTRACT

Euphorbia genus have been investigated for a long time in view of different specialities, like more energy content as alternative source of hydrocarbons, laticifers , phytochemicals and systematics. Mediterranean Euphorbia species have been the object of various studies and they have been proposed as potential renewable sources of unsaturated and uncommon fatty acids. Euphorbia genus patterns has been found to include chemotaxonomically important myrsinane diterpenoids and cycloartane triterpenoids. The aim of this study was to determine the fatty acid composition of petroleum ether extracts of Euphorbia aleppica, E. eriophora, E. grisophylla, E. seguiriana subsp. seguiriana, E. craspedia, E. denticulata and E. fistulosa. E. aleppica, E. eriophora, E. grisophylla, E. seguiriana subsp. seguiriana, E. craspedia, E. denticulata and E. fistulosa species were collected from Turkey (Diyarbakır, Diyarbakır, Van, Diyarbakır, Mardin, Kayseri and Diyarbakır, respectively) and identified by Mehmet Fırat (Yüzüncü Yıl University, Faculty of Education, Department of Biology). Powdered form of the whole plant material was weighed (100 g) and macerated three times with petroleum ether (250 mL each) at 25 °C for 24 hours. Esterification of the petroleum ether extract and GC/MS procedures were applied as described by Ertas et al . Thermo Scientific Polaris Q GC-MS/MS instrument was used. The major fatty acid components were identified as 17-tetratriactonen (31.59%) for E. aleppica, palmitic acid (43.83%) for E. eriophora, hexatriasontan (52.32%) for E. grisophylla, 17-tetratriactonen (19.86%) for E. seguiriana subsp. seguiriana linoleic acid (40.52%) for E. craspedia, 17-tetratriactonen (64.75%) for E. denticulata and hexatriasontan (38.13%) for E. fistulosa.

KEYWORDS

Euphorbia, Fatty acid, GC-MS

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Poster Session 6

Submission ID: 801

DETERMINATION OF BIOACTIVE COMPONENTS OF THYMUS PRAECOX OPIZ. SSP. GROSSHEIMII PLANT BY USING ON-LINE HPLC-FRAP METHOD

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ABSTRACT

Thymus praecox OPIZ ssp. grossheimii (Ronniger) Jasas, which is an aromatic plant with its own odor, is used for therapeutic purposes. It is a thyme species and is known as the "yayla çayı" in the Sürmene, county of Trabzon, in Turkey. It is consumed as herbal tea because of its appetizing, digestion facilitating and nervous relaxing effects. It also has antimicrobial and antioxidant effects and is used in cases of colds. In this study, FRAP (Fe (III) reduction antioxidant power) assays were performed by spectrophotometric (off-line) and on-line HPLC methods in yayla çayı extracts prepared in six different solvents (water, methanol, ethanol, isopropanol, butanol and acetonitrile). By the developed post-column HPLC-FRAP method, separation and antioxidant activity determination were performed simultaneously. In the course of method development with HPLC, fifteen phenolic acid standards were used (gallic acid, protocatechuic acid, protocatechuic aldehyde, p-OH benzoic acid, chlorogenic acid, vanillic acid, caffeic acid, syringic acid, vanillin, p-coumaric acid, syringic aldehyde, benzoic acid, ferulic acid, sinapic acid and rosmarinic acid). When chromatograms of yayla çayı extracts in different solvents were examined, the most phenolic acids (protocatechuic acid, protocatechualdehyde, p-OH benzoic acid, vanillic acid, caffeic acid, syringic acid, ferulic acid) were detected in the aqueous extract of yayla çayı. In addition, when the spectrophotometric (off-line) iron (III) reduction potential values of 1:10 diluted samples of yayla çayı extracts were compared in μM FRAP and μM TEAC, especially the iron (III) reduction antioxidant power value (1501 μM FRAP, 590 μM TEAC) of aqueous extract was found significantly higher than the others. The fact that this plant is consumed as a tea brewed with water among the people and shows highest activity in aqueous extract makes consumption of yayla çayı become important (*). *This work reflects a part of the doctoral thesis prepared in Karadeniz Technical University, Institute of Science, Department of Chemistry and was supported by Scientific Research Project of KTU. Project No. 666 (2008-111.02.5).

KEYWORDS

on-line HPLC, spectrophotometric, FRAP, different solvents, antioxidant

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Poster Session 6

Submission ID: 802

**DETERMINATION OF ANTIHYPERGLYCEMIC AND
ANTIOXIDATIVE EFFECTS OF PRUNUS LAUROCERASUS
EXTRACT ON STREPTOZOTOCIN-INDUCED EXPERIMENTAL
TYPE I DIABETIC RATS**

HAMİT USLU¹, GÖZDE ATILA², MUSA KARAMAN³

ABSTRACT

Diabetes mellitus is a metabolic disorder that is diagnosed with hyperglycemia resulting from defects in insulin secretion, insulin action, or both. The chronic hyperglycemia can adversely effect various organs like as eyes, kidneys, liver, nerves, heart, and blood vessels. The existing drugs are not treating diabetes only in the prevention of complications. Nowadays researchers are directed to find new sources due to the lack of certain treatment of diabetes. For this reason herbal sources have begun to be preferred because of the less or no side effects. The extract used in this study was obtained from *Prunus laurocerasus* leaves. *Prunus laurocerasus* is a member of the Rosaceae family which is known wild cherry or chery laurel. This plant is mostly spread on during the coast of the Black Sea region of Turkey and is locally called Taflan or Karayemiş. This species is also well known as a traditional medicine in northern side of Anatolia; the leave extract is used in the therapy of coughs, hemorrhoids, eczemas, asthma, digestive system complaints as well as in the treatment of stomach ulcers. In northern Anatolia, the fruits and seeds of Cherry laurel are used against Diabetes mellitus and its complications widely on the grounds that useful in among to local people. In this study, we aimed to determine effect of administering oral Cherry laurel leaf extract and subcutaneous insulin for 28 days on fasting blood glucose and glycated hemoglobin (HbA1c) levels and oxidative stress. It was determined that *Prunus laurocerasus* plant has antioxidant properties in vitro total phenolic component, nitric oxide scavenging and iron reduction tests. A total of 60 Spraque-Dawley rats, aged 2 months, divided into 6 groups including 10 animals, were used. Groups were consist of normoglycemic control group, diabetic control group, 500 mg/kg (PL500), 1000 mg/kg (PL1000), 1500 mg/kg (PL1500) leaf extract administrating groups and insulin group (2IU). The rats were defined as type I diabetic if the fasting blood glucose levels were higher than 200 mg/dL after 72 hours of Streptozotocin administration. Blood glucose levels in insulin-treated group significantly decreased from day 7th ($p<0.05$). At the end of study blood glucose levels of PL500, PL1000 and PL1500 groups lower than diabetic control group, though this reduction was not significant ($p>0.05$). HbA1c levels significantly increased ($p<0.05$) as serum insulin levels decreased ($p<0.001$) in the diabetic control group. However no significant change in both insulin and HbA1c levels in the experimental group ($p>0.05$). Thiobarbituric acid reactive substances (TBARS) levels increased in both the liver and kidney tissues ($p<0.05$, $p<0.001$ respectively), while catalase (CAT) ($p\leq 0.001$) and superoxide dismutase (SOD) ($p<0.001$, $p<0.05$ respectively) levels decrease significantly in the diabetic control group compared to

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normoglycemic control group. Despite significant reduction of TBARS levels in kidney tissue at the end of substances use ($p \leq 0.001$), this reduction was observed only in the liver of the insulin group ($p < 0.05$). SOD enzyme levels of the PL500, PL1000, PL1500, and of the insulin groups were significantly higher than the liver ($p < 0.01$) and kidney ($p \leq 0.001$) tissues of the diabetic control group. CAT enzyme levels in liver ($p < 0.05$) and kidney ($p < 0.01$) tissues were increased by insulin administration, but the changes in other groups were not significant ($p > 0.05$). In conclusion, *Prunus laurocerasus* has not been a significant effect on hyperglycemia, HbA1c and insulin levels in diabetes, but it has been determined that to be effective in reducing oxidative damage by decreasing TBARS levels and increasing SOD levels.

KEYWORDS

Prunus laurocerasus, Type I Diabetes mellitus, Oxidative stress, Antioxidant

Poster Session 6

Submission ID: 803

LAVENDER ESSENTIAL OIL IN CLINICAL PRACTICE

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ABSTRACT

Patients take health care due to their health problems. In health care process, people get medical treatment and/or surgical treatment. Because they think that they will have high level of pain and they will die due to operation, especially in surgical treatment people are anxious. Also, because there are invasive approaches, infection risk is available. These problems increase the hospitalization time and health care costs. Also they effect negatively the quality of health of people. To eliminate these possible situations, drugs have different effects are used. But using many drugs cause liver dysfunction. To hinder this, today complementary therapies are used commonly. Aromatherapy is one of these therapies. In this therapy, essential oils extracted from aromatic plants are used. These oils can be applied by inhalation, topical or massage. Lavender essential oil is well known. This essential oil has different properties. Some of these properties are antiseptic, antifungal, sedative, anxiolytic and analgesic activity. In the literature, it is seen that lavender essential oil is used for different aims and it has positive effects. Soltani et al. (2013) found that aromatherapy with lavender essential oil was effective to decrease the number of required analgesics after tonsillectomy. Ghods et al. (2015) stated that topical application of lavender essential oil decreased intensity of pain related to dialysis needles. In an other study conducted with patients undergoing coronary artery bypass graft surgery, Bikmoradi et al. (2015) found that lavender aromatherapy decreased the systolic blood pressure. Also Vakilian et al. (2011) stated that lavender was superior to povidone-iodine for episiotomy wound care. As seen in the studies, lavender essential oil is important in managing the symptoms which can be seen in health care. By generalizing this therapy, a qualified care can be provided to patients. For this, more scientific meetings should be organized and people should be informed.

KEYWORDS

aromatherapy, clinical, essential oil, lavender

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Poster Session 6

Submission ID: 804

NORHARMANE PRODUCTION OF ANABAENA ORYZAE UNDER DIFFERENT TEMPERATURE AND LIGHT CONDITIONS

TÜNAY KARAN¹, RAMAZAN ERENLER¹

ABSTRACT

Cyanobacteria are photosynthetic prokaryotes found in all around the world including the extreme condition. Cyanobacteria have been accepted as one of the most promising groups of organisms having biologically active natural products. Herein, *Anabaena oryzae* was collected from freshwater and was isolated under inverted microscope. Identification was carried out by morphologically. The isolated *Anabaena oryzae* was cultivated in BG11 nutrient medium. The different temperature and light conditions were executed at 15 °C and 35 °C at the irradiation of 1896 lux and 4300 lux. The norharmane production was determined by HPLC using the C18 120 A reverse phase column. Based on the results, the amount of norharmane at 15 °C and 1896 lux, 15 °C and 4300 lux, 35 °C and 1896 lux, 35 °C and 4300 lux were 0.231, 0.268, 2.741, 1.016 µg/g respectively.

KEYWORDS

Anabaena oryzae, norharmane, HPLC, light, temperature

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Poster Session 6

Submission ID: 805

**EVALUATION OF PULPS OF THE FRAGRANT JUNIPER
(JUNIPERUS FOETIDISSIMA) CONES USED FOR PRODUCTION IN
THE ISPARTA REGION**

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ABSTRACT

Total forest area in our country is 21,678,134 ha and it is constitutes 27.6 % of our total land size. Approximately 4.29 % (958.423 hectares) of this area constitutes the junipers that have the potential to use as a non-wood forest product. In our country, especially Eğirdir Forest Nursery, Forest Nursery Directorates collect an average of 85 tons of cones every year and about 5 million fragrant juniper (*Juniperus foetidissima*) saplings produced from these cones. During this production, about 20 tons of seeded cone emerged and this pulp completely discarded. In this study, the evaluation possibilities of the Fragrant Juniper (*Juniperus foetidissima*) pulp as a non-wood forest product investigated. In the study, it was determined that the fragrant Juniper (*Juniperus foetidissima*) cone pulp contained about 2% volatile oil. It found that about 400 liters of juniper volatile oil could obtained annually when about 20 tons of pulp produced.

KEYWORDS

Non-wood forest product , Juniperus foetidissima, essential oil, essential oil component.

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Poster Session 6

Submission ID: 806

ISOLATION OF AXILLARIN FROM TANACETUM ALYSSIFOLIUM AND DETERMINATION OF ANTICANSEROGEN AND ANTIOXIDANT PROPERTIES

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ABSTRACT

The aim of this study was to isolate the available secondary metabolites in *Tanacetum alyssifolium* plants by column chromatography and determine their structures with spectroscopic methods. It was also aimed to examine the antioxidant and anticancerogen properties of *Tanacetum alyssifolium*. For this purpose, *Tanacetum alyssifolium* plants was collected from the foothills of Munzur Mountains in Erzincan province and dried at room temperature. The upper part of ground plant was extracted with ethyl acetate/ butanol solvent system. The ethyl acetate extract was subjected to the procedure of column chromatography. The structure of the isolated compound with column chromatography method was elucidated by spectroscopic techniques (1D-NMR, 2D-NMR, HPLC-TOF). The isolated compound was determined as 2-(3,4-dihydroxyphenyl)-5,7-dihydroxy-3,6-dimethoxy-4H-chromene-4-on (axillarin). The antioxidant capacity of the isolated compound was evaluated with CUPRAC method and DPPH radical scavenging activity tests, respectively. Trolox was used as standard antioxidant. In terms of the iron (Fe+3) reduce ability, axillarin compound was found to have more reduction potential than standard trolox and when compared the copper (Cu+2) reduce ability, axillarin compound displayed less reduction potential. However, axillarin and trolox showed close results in terms of DPPH radical scavenging capacities. For anticancerogen tests, 3 different concentrations of axillarin compound were prepared and applied to HeLa cells in order to determine the concentration at which the maximal activity was shown. The highest anticancerogen activity was observed at 50 µg/mL and reached at 43 hours.

KEYWORDS

Tanacetum alyssifolium, isolation anticancerogen activity, antioxidant activity

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Poster Session 6

Submission ID: 807

THE EFFECTS OF TARAXACUM OFFICINALE EXTRACT ON HYPERLIPIDEMIA, OXIDATIVE STRESS AND VASCULAR CONTRACTION–RELAXATION RESPONSES IN EXPERIMENTAL TYPE II DIABETES

HAMİT USLU¹, GÖZDE ATILA², EMİN ŞENGÜL³, VOLKAN GELEN², DİNÇER ERDAĞ⁴, MUSTAFA MAKAV²

ABSTRACT

Diabetes mellitus is a very important health problem increasing day by day in the world. This disease negatively affects of the entire body, especially the cardiovascular system. Nowadays, there is no drug that treats diabetes precisely; for this reason scientists to search for new sources of may be effective on diabetes and its complications. *Taraxacum officinale*, a member of the Asteraceae family, its expressed that to be effective in the treatment of disorders such as upper respiratory tract infections, jaundice, anemia, fever, eye problems, gastrointestinal problems, eczema in traditional medicine. There are also expressions that *Taraxacum officinale* may have an impact on the complications of diabetes. In this study, we aimed to determine the effects of administering oral *Taraxacum officinale* extract and metformin for 30 days on the hyperlipidemia, oxidative stress and vascular contraction–relaxation responses in type II diabetic rats. *Taraxacum officinale* plant was collected from Trabzon province and then extracted with ethanol using soxhlet method. It was determined that *Taraxacum officinale* plant has antioxidant properties in vitro total phenolic component, nitric oxide scavenging and iron reduction tests. In this study a total of 50 Sprague Dawley male rats, aged 3 months, divided into 5 groups including 10 animals, were used. Groups were consist of normoglycemic control (NC), extract (E) (50 mg/kg), diabetic control (DC), diabetic + extract (D + E) (50 mg/kg) and diabetic + metformin (D + M) (1000 mg/kg). Rats with fasting blood glucose levels of ≥ 200 mg/dL 7 days after nicotinamide + streptozotocin injection were defined as type II diabetics. Serum HDL, LDL and triglyceride levels were determined by commercial ELISA kits. MDA, GSH and GPx analyzes were performed spectrophotometrically in homogenizates obtained from heart and aortic tissues. Furthermore, thoracic aorta tissues were used for take values of phenylephrine (PE 10-9–10-5 M) induced contraction acetylcholine (ACh 10-8–10-5 M) induced relaxation in the isolated organ bath. The triglyceride level decreased significantly in the D+E ($p < 0.05$) and D+M ($p < 0.001$) groups compared to the DC group. LDL cholesterol level increased, while HDL cholesterol level decreased significantly in the DC group ($p < 0.01$). Although there were some positive changes in HDL and LDL cholesterol levels of D+E and D+M groups, this changes was not significant ($p > 0.05$). The MDA level of aortic tissue was significantly elevated in the DC group ($p < 0.01$), but this result did not change with substance applications ($p > 0.05$). There was no change in the MDA levels of heart tissue among groups

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($p > 0.05$). GSH levels were significantly elevated in the D+E ($p < 0.01$, $p < 0.05$ respectively) and D+M ($p < 0.01$) groups in both the heart and the aortic tissues compared to the DC group. Although GPx level of the DC group was significantly reduced ($p < 0.05$) in aorta there was no change in the diabetic trial groups ($p > 0.05$). GPx level did not change in heart tissue of the DC group ($p > 0.05$), but it was significantly increased in the D+M group ($p < 0.001$). In the thoracic aorta induced with ACh (10-5 M) values of relaxation were significantly lower in the DC group compared to other groups ($p < 0.05$). In the thoracic aorta induced with PE (10-7, 10-6 and 10-5 M) values of concentrations were significantly high in the NC group compared to other groups ($p < 0.05$, $p < 0.01$, $p < 0.01$ respectively). As a result, it was determined that *Taraxacum officinale* extract has significant positive effects on the lipid metabolism, antioxidant system and vessels contraction–relaxation mechanisms disrupted in type II diabetes.

KEYWORDS

Taraxacum officinale, Type II diabetes, Hyperlipidemia, Oxidative stress, Vascular contraction–relaxation

Poster Session 6

Submission ID: 808

A DIFFERENT USE AREA OF AROMATIC PLANTS: LIQUID SMOKE FOR MEAT PRODUCTS

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ABSTRACT

Researchers and industry in many different areas have been an increased interest in medicinal and aromatic plants in recent years. However, aromatic plants have been used in preservation of meat products by smoking process for centuries. The smoking process of meat products is one of the most ancient and important methods. Smoking process contribute flavor and color of meat products with aromatic compounds and additionally show bacteriostatic and antioxidant effect. However, from a human healthy point of view, smoking with gases is not very favorable as it generates several polyaromatic hydrocarbons that are carcinogenic compounds. Therefore, liquid smoke has been used as an alternative method to gas smoking in recent years. The organoleptic smoke properties depend on the smoke composition and therefore depend on the source from which it is produced. Some aromatic plants such as daphne, juniper, thyme and linden have used in liquid smoke. These aromatic plants provide suitable gas composition that contains some phenols, carbonyls, alcohols and organic acids for meat products. In this review study, properties and usage areas of liquid smoke produced from aromatic plant for meat industry are explained.

KEYWORDS

Aromatic plants, smoke process, meat products

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Poster Session 6

Submission ID: 809

IMPORTANT FUNGAL DISEASES IN CUMIN PRODUCTION AND SUGGESTIONS FOR THE DISEASE MANAGEMENT

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ABSTRACT

Cumin is an important spice plant that is widely grown in the Central Anatolia Region of Turkey and commonly used in cooking and also in traditional medicine because of its essential oils. Cumin production is seriously affected by some seed-borne and soil-borne plant pathogens causing significant crop losses. Different fungi species that cause diseases were determined previously in cumin production. *Fusarium* wilting caused by *Fusarium oxysporum* f.sp. *cumini* and *Alternaria* blight caused by *Alternaria burnsii* have been identified as the most important diseases limiting the production of cumin in Turkey. In the field observations, *Alternaria* blight was determined as the most widespread in the periods after flowering and the losses could be up to 100% in some areas. It has been observed that *F. oxysporum* f.sp. *cumini* restricts seed germination, destroys the root systems and causes typical signs of wilting. In this study, the prevalence of the pathogens, favorable environmental conditions required for the disease epidemic and genetic structures of the pathogens were assessed. The necessary elements to be considered in the breeding studies and integrated diseases management methods to prevent possible losses have been discussed.

KEYWORDS

Cumin, Alternaria blight, Fusarium wilt, Disease management

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Poster Session 6

Submission ID: 810

ANTIOXIDANT, ANTIMICROBIAL ACTIVITIES, AND PHENOLIC COMPOUNDS OF LYCOPUS EUROPAEUS DETERMINED BY LC/MS- MS

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ABSTRACT

Evaluation of biological activities of medicinal plants is important, because they are the largest natural source of pharmaceuticals. In the present study, we assessed antioxidant, antimicrobial activities, and phenolic composition of *Lycopus europaeus*, (*L. europaeus*) which is widely known and used in medicinal treatments in different part of the globe. For Antioxidant activity of the sample, CUPRAC, FRAP and DPPH assays were utilized. For Antimicrobial activity properties, disc diffusion method was used against three Gram positive, four Gram-negative microbial species and three fungi species. Phenolic composition of *L. europaeus* was evaluated by LC/MS/MS technique. The result showed that water and ethanol extract of *L. europaeus* exhibited moderate metal reducing and DPPH radical scavenging activities compared to standard antioxidants (BHA, BHT and ascorbic acid). The sample showed the strongest antibacterial activity against the *B. megaterium*, *K. pneumoniae* and *E. aerogenes*, weak antibacterial activity against *P. aeruginosa*, *S. aureus* and *E. coli* however no antifungal activity. The HPLC-MS/MS analysis has revealed that Rosmarinic and Kaempferol are the most abundant phenolics among the studied 27 compounds. The findings of this study have could be useful for the preparation of high-value medicines and functional ingredients for foods.

KEYWORDS

Lycopus europaeus, CUPRAC, FRAP, DPPH, LC/MS/MS and phenolics

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Poster Session 6

Submission ID: 811

TOTAL PHENOLIC CONTENT AND ANTIMICROBIAL ACTIVITY OF METHANOL EXTRACT OF GERANIUM MACRORRHIZUM L. (GERANIACEAE) NATURALLY FOUND IN TURKEY

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ABSTRACT

The genus *Geranium* L. is taxonomically classified within the family Geraniaceae and comprises about 400 species distributed in temperate regions and tropical mountains all over the world. Turkish *Geranium* includes 40 species, 9 of which are endemic. *G. macrorrhizum* L. is mainly distributed in temperate zones of Europe, but in Turkey it is only found on the Kapıdađ Peninsula (Erdek, Balıkesir Province). This species is a perennial herbaceous plant with a stout, long, cylindrical and horizontal rhizome, orbicular leaves and erect stems with entire and magenta petals. *Geranium* has been used in folk medicine for the treatment of various ailments due to its therapeutic characteristics, such as anticarcinogenic, antipyretic and antiseptic in wounds. However, total phenolic content and antimicrobial activity of many species of this genus have been virtually unexplored. In this study, total phenolic content and antimicrobial activity of methanol extracts of *G. macrorrhizum* in Turkey were comprehensively investigated for the first time. The level of total phenols in methanol extracts was determined by using Folin–Ciocalteu reagent and external calibration with gallic acid. The absorbance was measured at 760 nm using a spectrophotometer. The concentration of the total phenolics was calculated as mg of gallic acid equivalent by using an equation obtained from gallic acid calibration curve. The total amount of phenolic substance in the extracts was 76.32 mg. GAE/g.sample DW. Additionally, susceptibility tests were performed by the disc diffusion method of Bauer et al. (1966) with Mueller-Hinton agar (Difco). Zones of inhibition were measured after 24 hours of incubation at 37°C. A bacteria culture was used to Mueller-Hinton agar plates evenly using a sterile swab. The test organisms used in this study were as follows: *Escherichia coli* ATCC35218, *Klebsiella pneumoniae* ATCC700603, *Bacillus subtilis*, *Pseudomonas aeruginosa* ATCC27853, *Staphylococcus aureus* ATCC25923, *Enterococcus faecalis* ATCC 51299 and *Listeria monocytogenes* ATCC1911. Methanol was used as a negative control while Ceftizoxime (ZOX 30 µg), Penicillin (P 10U), Tetracycline (TE 30 µg), Clindamycin (DA 2 µg), Erythromycin (E 15 µg), Chloramphenicol (C 30 µg), Ofloxacin (OFX 5 µg) and Vancomycin (VA. 30 µg) were used as positive controls. The antibacterial activities were assessed by the presence or absence of inhibition zones and MIC values. The negative control showed no inhibiting effect. The antimicrobial activity of GE extract was compared with standard antibiotic disc and showed inhibition diameters ranging from 8 to 46 mm. The microbial strains displayed a variable degree of susceptibility against the GE methanole extract. Antimicrobial activity was observed against *K. pneumoniae* ATCC700603, *B. subtilis*, *S. aureus* ATCC25923 and *E. faecalis*. The most susceptible bacteria to the *G. macrorrhizum* extract preparations was *K. pneumoniae* ATCC700603 (13 mm).

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KEYWORDS

Geranium macrorrhizum, *Geraniaceae*, Total phenolic content, Antimicrobial activity

Poster Session 6

Submission ID: 812

ANTIBIOFILM EFFECTS OF THREE MACROFUNGİ (MORCHELLA ANGUSTICEPS, TRAMETES VERSICOLOR, LACTARIUS DELICIOUS) ON ENTEROCOCCUS FAECALIS

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ABSTRACT

It is commonly well known that 80% of all the bacterial infections are in relation with biofilms. Due to common problems caused by biofilms, alternative antibiofilm strategies must be developed. Enterococcus strains are able to form complex surface-associated communities, called biofilms, contributes to its resistance and persistence in both host and non-host environments. Mushrooms are functional foods and a source of physiologically beneficial medicines. Possible antibiofilm effects of medicinal mushrooms have also a notable potency against biofilms. Additionally, increasing prevalence of infectious diseases is becoming a world wide problem, and the resistance problem demands that novel antimicrobial agents originated from natural products such as medicinal mushrooms to combat with the infections should be observed. The present study reports the capacity of three medicinal methanolic macrofungi extracts (Lactarius deliciosus, Trametes versicolor, Morchella angusticeps) to inhibit in vitro biofilm formation by Enterococcus faecalis ATCC 21599 strain. The strain's antimicrobial susceptibility testing was performed by microdilution method. 6.25, 12.5, 25, 50, 100, and 200 mg/mL concentrations of three macrofungi extracts were selected to perform MIC (Minimum Inhibition Concentration) test. For antibiofilm assays, the optimum biofilm forming capacity of the strain was primarily confirmed under different incubation conditions such as incubation period (24-48 h) and culture media (TSB medium was adjusted with the different concentrations of glucose; 0, 0.25, 0.5, 1.0, and 1.25%) by microtiter biofilm assay. Quantification of the antibiofilm effects of macrofungi was carried out by modifying the microtiter biofilm formation protocol described by Stepanovic et al (2000). Briefly, in a U bottom 96 microplate, wells were filled with 200 μ L different concentrations of methanolic macrofungi extracts (6.25, 12.5, 25, 50, 100, and 200 mg/mL) and at 5% (v/v) inoculum. Following this step, the microplate was incubated at 37 $^{\circ}$ C for 48 h. To quantify biofilms, the each well was discarded and washed 3 times with sterile 0.85% NaCl in order to remove non-adherent cells. The attached biofilm samples were fixed with 200 μ L of methanol (95%) for 10 min. Methanol was then discarded and the wells were air dried. After that, 200 μ L of crystal violet solution (0.1%, prepared with distilled water) were added to the wells for 30 min. Excess stain was removed by rinsing the plate under tap water and then air dried. The bounded dye was dissolved with 70:30 ethanol-acetone solvent mixture for 15 min. The amount of dye was quantified by measuring the Optical Density (OD) at 595 nm using a microtiter plate reader. Results for this test were given as percentage of biofilm formation inhibition applying the following formula: Biofilm formation inhibition percentage = $[100 - (OD_{\text{assay}}/OD_{\text{control}})] \times 100$. The MIC values were determined as 50, 25, and 50 mg/mL for M. angusticeps, T. versicolor, and L. delicious respectively. The optimum biofilm forming conditions for the strain were assigned as 48 h-incubation period and

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0.50% glucose concentration. The biofilms were sampled considering these conditions for antibiofilm assays. While all macrofungi extracts had inhibitory effects on the biofilm formation of the strain, *T. versicolor* extract was found to be the most effective with the highest reduction rates of 99.54, 100, and 100% (50, 100, and 200 mg/mL, respectively). The results obtained showed that all the tested mushroom extracts, but mostly the *T. versicolor* extract, had inhibitory effects on *E. faecalis* biofilm production. As this report was the first on the inhibition of *E. faecalis* biofilms by these macrofungi extracts, it can be concluded that medicinal macrofungi could be considered as candidates for novel antibiofilm strategies.

KEYWORDS

Enterococcus faecalis, biofilm, antibiofilm, medicinal macrofungi

Poster Session 6

Submission ID: 813

ANTIMICROBIAL EFFECT OF ESSENTIAL OIL EXTRACTS OF ONION AND GARLIC

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ABSTRACT

Physical and chemical preservative methods were used for many years to protect foods from spoilages and pathogens. Essential oil extracts which extracted from various part of plants have been considered as natural preservatives or food additives. They are mixture of numerous components and aromatic oily liquids. They also contain alkaloids, flavonoids, isoflavonoids, tannins, coumarins, glycosides, terpenes and organic acids which may have antimicrobial and antioxidant properties. Distillation, extraction and pressing methods are used in extraction of essential oils from matrix. Allium family have more than 500 species although have similar biochemical, nutraceutical and phytochemical properties. Many are known to have antibacterial and antifungal effects because of containing antioxidants, sulphur and phenolic components. Onion and garlic are members of Allium family and also contain medically important organosulfur including components. The aim of this study was to discuss area of utilization and antimicrobial effect of essential oil extract of onion and garlic.

KEYWORDS

onion, garlic, essential oil, antimicrobial

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Poster Session 6

Submission ID: 814

USE OF AROMATIC PLANTS AND SPICES AS AN ALTERNATIVE FEED ADDITIVE

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ABSTRACT

The rapid increase in the world population makes it necessary to use limited food sources more efficiently. Today, it has been understood that a balanced diet is very important for people. The production of aquatic products in the world and in Turkey is increasing every year and natural fish stocks are decreasing due to various environmental factors. This suggests that the products obtained through hunting can no longer be increased and that existing stocks must be protected. As a result, it is inevitable that there will be an increase in the products obtained by aquaculture. Along with the increasing amount of aquaculture, the feed sector has also gained great importance. In aquaculture, feed constitutes 40-60% of the cost required for successful and healthy production. Fish feeds are obtained by mixing animal (fish meal, fish oil, squid flour, crab flour, shrimp flour, fish silage etc.) and vegetable (soybean flour and pulp, wheat, corn flour and gluten etc.) raw materials as well as feed additives (Antioxidants, pigment substances, vitamin-mineral mixture, etc.) in varying proportions. Fish meal is the most widely used protein source in fish feeds because of its good protein quality, its rich energy and mineral properties, its high digestibility and its consumption by fish. Due to the fact that the factories producing fish meal in Turkey are few and the nutritional content of fish flour is inadequate, the importation of fish meal from abroad has begun to be started and the feed cost has increased accordingly. Therefore, research on the use of alternative vegetable protein sources to reduce the use of fish meal in fish feeds has begun to gain importance. As raw materials of alternative vegetable origin which can be used in fish feed, algae, hazelnut meal, potato flour, duckweed, alfalfa flour can be given. Alternative raw materials of animal origin are more limited, such as worm flour and black fly flour. New alternative additives used in practice are enzymes, organic acids, probiotics, oligosaccharides (prebiotics) and plant extracts. The aim of this study was to investigate the use of natural and partially cheaper aromatic plants and spices such as fennel, marjoram, caraway, chamomile and garlic as alternative feedstuffs and / or additives in previous national and international publications and to evaluate the nutritional content of the morphological properties and its benefits and to investigate its use in fish feeding.

KEYWORDS

Fish feed, Feed additives, aromatic plants, spice

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Poster Session 6

Submission ID: 815

SYNERGISM BETWEEN LACTARIOUS DELICIOUS AND VANCOMYCIN AGAINST VANCOMYCIN-RESISTANT ENTEROCOCCUS FAECIUM

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ABSTRACT

Novel drug development strategies are needed to struggle antimicrobial resistance. The object of our study is to highlight a strategy such as: treating *Enterococcus faecium* antibiotic resistance with Lactarius delicious extract rather than individual antibiotics. In this respect, screening of antimicrobial activity of medicinal and edible macrofungus *L. deliciosus* was performed against vancomycin resistant *Enterococcus faecium* NJ-1 and this natural macrofungus extract and antibiotic combinations were evaluated to treat *E. faecium*. Disk diffusion and micro dilution tests were performed according to the National Committee for Clinical Laboratory Standards guidelines for enterococci (NCCLS). Agar well diffusion and micro dilution tests were also performed with methanolic (60%) extracts of *L. deliciosus* against *E. faecium* NJ-1 strain. Minimum bactericidal concentrations (MBC) of vancomycin and *L. deliciosus* extract were also determined to maintain combinative antibiotic/macrofungus antimicrobial studies. 99.9% logarithmic reduction of the bacterial population was considered as MBC value for both antibiotic and *L. deliciosus* extract. While performing the MBC assay, EC50 values were synchronously determined by performing plate count assay and the logarithmic reductions of microbial populations under different concentrations of antibiotic and macrofungus extracts were evaluated by "XLSTAT" 2017 software, in terms of evaluating the effects of antibiotic/macrofungus extract combinations further. For developing an approach in an effort to evaluate possible antimicrobial interactions (synergistic, antagonistic, additive etc.), vancomycin/*L. deliciosus* extract was selected in different combinations. The possible antimicrobial effects of combinative vancomycin/macrofungus extracts were quantified and determined by the "Compusyn" software. The strain was found to be resistant to vancomycin with 6 mm (milimeter) zone diameter (disk diffusion) and with $\leq 128 \mu\text{g/mL}$ MIC value. 10 mg/mL and 50 mg/mL concentrations of methanolic medicinal *L. deliciosus* extracts were used to evaluate antimicrobial susceptibility with agar well diffusion method. Both 10 mg/mL and 50 mg/mL extracts of *L. deliciosus* were found to be effective against the strain with the inhibition zone diameters of 17 mm and 30 mm, respectively. 6.25 mg/mL concentration of *L. deliciosus* was found as MIC value against the strain. 1024 $\mu\text{g/mL}$ of vancomycin concentration and 25 mg/mL of *L. deliciosus* extract values were found to be as MBC values. EC50 values of vancomycin and *L. delicious* extract were calculated as 145.4 $\mu\text{g/mL}$ and 12.41 mg/mL, respectively by XLSTAT software. 140, 145.4, and 150 $\mu\text{g/mL}$ concentrations of vancomycin, 10, 12.41, and 15 mg/mL concentrations of *L. delicious*, and all possible dual combinations of these factors were applied to calculate "dose effects" and "dose response curves". Dose effects values were specified according to the log-reduction of microbial population by using XLSTAT software. Obtained dose effect data were used to model the

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drug/macrofungus interaction by using Compusyn software. According to the “dose response index” (DRI) and dose response curve data, there was an absolute synergism between the vancomycin and *L. delicious* extract. As the aim in this study was to achieve synergistic therapeutic effect and dose reduction, it was absolutely concluded that natural products, such as *L. delicious*, could be taken into consideration to struggle with the antibiotic resistance in the context of combining medicinal macrofungi extracts and commonly used antibiotics. This approach has a notable potency to develop alternative clinical applications to struggle infectious diseases.

KEYWORDS

Medicinal macrofungus, Vancomycin-resistant enterococci, synergism, antimicrobial resistance

Poster Session 6

Submission ID: 816

TRUFFLES AND STUDIES OF FOREST GENERAL DIRECTORATE

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ABSTRACT

Truffles have a special position in gourmet kitchens, due to their intensive aroma. Valuable truffle species grow naturally in forests that are especially in Mediterranean ecosystem. The amount of truffles, which are harvested from natural areas, is not enough to supply the demands. Therefore, many European countries like France, Spain, Italy, Norway and Sweden, United State of America, Australia and many other countries like New Zealand carry out truffle cultivation. There are many families in Europe engaged in cultivation of truffles and transferring it from generation to the next. Cultivation of truffles is more complex than typical mushroom cultivation. The cultivation of this mushroom which is the fruit of the mycorrhizal collaboration between forest trees and fungus needs specific seedling propagation techniques. The most valuable truffle species are Tuber magnatum, T. melanosporum and Tuber aestivum which can all be cultivated except T. magnatum. T. aestivum can be collected from natural Red pine-oak and Black pine-oak mixed forests in Turkey. Truffle hunting has its own unique methods, because the fungus matures under the soil and never appears on the soil surface. Till 2014, local people who live in naturally truffle distributed regions did not have the tradition of collection, consume and trade in Turkey. The General Directorate of Forestry prepared the Truffle Action Plan in 2014 with the recognition of that truffles naturally grow in many parts of Turkey but were not know by the people. The aim of the action plan is to stimulate the collection truffles from nature, and increase the knowledge and awareness of local people and entrepreneur to establish the specific plantations for truffle cultivation. In this work, the studies which were carried out by the General Directorate of Forestry related to truffles and the plans which are under consideration for future activities are explained. Additionally, the fields where truffle mushrooms are grown in Turkey, the actual situation of truffle market in the world, and ecological needs of truffle mushrooms are given.

KEYWORDS

truffle, mushroom, mycorrhizae, cultivation, oak, tuber

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Poster Session 6

Submission ID: 817

USE OF AROMATIC PLANT EXTRACTS IN CHEESE PRODUCTION

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ABSTRACT

Nowadays, the use of natural additives as food preservatives has become popular due to concern for synthetic chemical additives and consumer conscious. There is great interest in developing new techniques to make foods safer and more natural. High quality flavored cheeses containing some aromatic vegetable such as sage, thyme or rosemary have been described as suitable in studies. Aromatic plants and their essential oils can be used as antimicrobial and antioxidants agents and also some of them can prevent cheese blowing. Cheeses are traditionally affected by common paste defects known as early and late blowing. Early blowing is caused by coliform bacteria such as Escherichia coli, Enterobacter aerogenes and late blowing is caused by butyric acid fermentation of the clostridial spores present in raw milk. The use of certain aromatic plants as antimicrobial agent can prevent blowing defect and innovative cheese covers may help to prevent the external growth of fungal spoilers and thus avoid consumer exposure to mycotoxins. In addition, recent research on spices and aromatic herbs suggests that they may be more effective in improving flavour and preserving food than artificial flavourings.

KEYWORDS

aromatic plant, cheese blowing, antimicrobial aromatic plants, natural food preserving

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Poster Session 6

Submission ID: 818

EVALUATION OF PLEUROTUS OSTREATUS EXTRACTS FOR ITS POTENTIAL ANTIBIOFILM ACTIVITY

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ABSTRACT

Biofilms are structures formed by aggregates of bacterial cells on both biotic and abiotic surfaces. These naturally existing biofilms can cause major risks to human beings, as 80% of the bacterial infections were obtained by biofilms. Biofilms are major causes of nosocomial infections and the bacterial attachment to some surfaces and the subsequent biofilm formation are important steps in the establishment of chronic infections. In the food industry, biofilms can be a source of recalcitrant contaminations, causing food spoilage, and are possible sources of public health problems. The reason why bacteria growing in biofilm structures attain antimicrobial resistance is still unknown. Therefore, the resistance of biofilm cells to antimicrobial agents make biofilms important on behalf of discovering and developing novel and natural antibiofilm and antimicrobial agents. In this context, a common edible mushroom, *Pleurotus ostreatus* was evaluated with respect to its antibiofilm activities on Gram-positive and Gram-negative pathogens. *Pseudomonas aeruginosa* ATCC 27853, *Escherichia coli* ATCC 25922, *Staphylococcus epidermidis* ATCC 35984, and methicillin-resistant *Staphylococcus aureus* (MRSA) ATCC 43300 strains were used both antimicrobial and antibiofilm assays and were routinely cultured in Tryptic Soy Broth (TSB) at 35°C. A total of 20 g *P. ostreatus* dried samples were powdered and treated with 200 mL of 95% ethanol under shaking conditions at room temperature for 24 h. Then, the ethanolic extract was filtered through Whatman No. 4 paper, and finally, the filtrate was lyophilized. The lyophilized extract was resuspended in sterile distilled water with a final concentration of 200 mg/mL. The other extraction protocol was carried out with hot water. 20 mg of the dried sample was boiled in 200 mL of distilled water for 2 h. These two suspensions were used in both antimicrobial and antibiofilm assays. Biofilm production conditions were optimized for all strains before antibiofilm assays. Cultivation under low osmolar conditions (Luria-Bertani broth without NaCl) at 28°C for *E. coli*, cultivation in TSB medium supported with 3% NaCl, and 1.0% glucose at 35°C for *S. aureus*, and *S. epidermidis*, cultivation in TSB medium supported with 0.5% glucose for *P. aeruginosa* were preferred to increase their biofilm productions. Antimicrobial assay was performed according to the microdilution method (NCCLS). Antibiofilm assays were performed according to the Stepanovic et al. (2000) with slight modifications. Briefly, the TSB broths, prepared according to the optimal biofilm forming conditions of the pathogens and different concentrations of ethanolic and hot water extracts of *P. ostreatus* (0, 6.25, 12.5, 25, 50, and 100 mg/mL) were transferred to the U bottom 96 well microtiter plates with a final concentration of 200 µL. The plates containing *E. coli* cultures were incubated at 28°C, whereas other bacterial cultures were incubated at 35°C for 24 h. The wells, containing only bacterial inocula, and the wells containing only test media were considered as positive and negative controls, respectively. At the end of the incubation period, crystal violet binding assay was performed to determine the potential antibiofilm

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activities of these extracts. Briefly, the plates were aspirated and washed with sterile physiological serum for three times. The dried plates were filled with 200 μ L of 95% methanol and emptied again. Following this step, the plates were filled with 0.1% crystal violet solution and incubated for 30 min at room temperatures. Finally, the plates were rinsed under running tap water and each well was filled with 200 μ L of an ethanol:acetone solvent mixture (70:30) to dissolve the bounded dye. The dissolved dye was quantified by measuring the Optical Density (OD) at 595 nm using a microplate reader. Results for this test were given as the percentage of biofilm formation inhibition using the following formula: Biofilm formation inhibition percentage = $[100 - (\text{OD}_{\text{assay}} / \text{OD}_{\text{control}})] \times 100$. There was not a significant antimicrobial activity on all the tested bacteria, but a significant antibiofilm activity of *P. ostreatus* was observed. The ethanolic extract of the mushroom sample was found to be more inhibitive on biofilm formation than hot water extract. The highest antibiofilm effect was detected on MRSA for both ethanolic and hot water extracts (almost 100% reduction). The lowest antibiofilm effect was detected on *P. aeruginosa* ATCC 27853 strain for the ethanolic extract of the mushroom sample having a reduction rate of 45.78%. *P. ostreatus* is an edible mushroom that also has high medicinal value such as its antimicrobial effect. In this study, *P. ostreatus* was tested for its ability to inhibit the in vitro biofilm formation of common pathogens for the first time. It can be certainly concluded that this mushroom should be taken into consideration to develop novel antibiofilm strategies.

KEYWORDS

Pleurotus ostreatus, antibiofilm, antimicrobial, biofilm formation

Poster Session 6

Submission ID: 819

USE OF BLACK SEED IN FOODS AS A NATURAL ADDITIVE

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ABSTRACT

Nowadays, there is a tendency for the use of additives which will not affect the structure, appearance, taste and smell of foods negatively and will protect the microbial, physical and chemical properties of foods. Synthetic antioxidants have been used to prevent oxidation, which is one of the most important problems that can occur during the storage of foods, and to extend the shelf life of foods. In recent years, due to their toxicological and carcinogenic properties synthetic antioxidants added to food has been avoided. The most important feature of antioxidants to be added to food is being natural, not synthetic. Another criterion for the use of antioxidants is the low cost of antioxidants, which is an important factor in consumer preference. One of the plants with antioxidant effect is the essential oil of black seed. Black seed is a valuable medicine and spice plant of Ranunculaceae family whose botanical name is *Nigella sativa* L. and used for more than 2000 years. Seed, oil and seed components - mainly thymoquinone - are traditionally used because of their potent therapeutic properties. It has attracted attention recently due to its antimicrobial, antioxidant, antiinflammatory, gastroprotective, antidiabetic, antitumor, hepatoprotective, immune system strengthening effects and contains important fatty acids, vitamins, minerals and volatile components. Black seed is widely consumed worldwide as food and spices due to its nutritious, flavorer and ornamental qualities.

KEYWORDS

black seed, natural additives, food antioxidant, aromatic oils

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Poster Session 6

Submission ID: 820

TOTAL PHENOLIC CONTENT AND ANTIMICROBIAL ACTIVITY OF METHANOL EXTRACT OF STACHYS OBLIQUA WALDST. & KIT. AND S. THRACIA DAVIDOV (LAMIACEAE) IN TURKEY

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ABSTRACT

Stachys L. is one of the largest genera of the family Lamiaceae with about 300 taxa. Stachys is a taxonomically complex and widely distributed genus in the temperate regions of the world. Many species of Stachys mainly grow in rocky areas. In Turkey, it is represented by 110 taxa, 51 of which are endemic. *S. obliqua* Waldst. & Kit. is a perennial plant with erect stems, oblong-lanceolate basal leaves, mostly remote verticillasters, subcampanulate sepals and pale yellow petals. *S. thracica* Davidov is a perennial plant with erect or ascending stems, oblong or oblong-lanceolate to lanceolate basal leaves, distant verticillasters, subcampanulate sepals and purple petals. Phytochemical investigations on Stachys species have shown the occurrence of flavonoids, diterpenes, phenyl ethanoid glycosides and saponins. They have been reported to treat genital tumors, sclerosis of the spleen, inflammatory tumors and cancerous ulcers. The aim of this work is to comprehensively investigate total phenolic content and antimicrobial activity of methanol extracts of *S. obliqua* and *S. thracica* naturally growing in Turkey. The level of total phenols in methanol extracts was determined by using Folin-Ciocalteu reagent and external calibration with gallic acid. The absorbance was measured at 760 nm using a spectrophotometer. The concentration of the total phenolics was calculated as mg of gallic acid equivalent by using an equation obtained from gallic acid calibration curve. The total amount of phenolic substance in the extracts was 35.76 mg. GAE/g.sample DW. Susceptibility tests were also performed by the disc diffusion method of Bauer et al. (1966) with Mueller-Hinton agar (Difco). Zones of inhibition were measured after 24 hours of incubation at 37°C. A bacteria culture was used to Mueller-Hinton agar plates evenly using a sterile swab. The test organisms used in this study were as follows: *Escherichia coli* ATCC35218, *Klebsiella pneumoniae* ATCC700603, *Bacillus subtilis*, *Pseudomonas aeruginosa* ATCC27853, *Staphylococcus aureus* ATCC25923, *Enterococcus faecalis* ATCC 51299 and *Listeria monocytogenes* ATCC1911. Methanol was used as a negative control while Cefprozime (ZOX 30 µg), Penicillin (P 10U), Tetracycline (TE 30 µg), Clindamycin (DA 2 µg), Erythromycin (E 15 µg), Chloramphenicol (C 30 µg), Ofloxacin (OFX 5 µg) and Vancomycin (VA. 30 µg) were used as positive controls. The antibacterial activities were assessed by the presence or absence of inhibition zones and MIC values. The negative control showed no inhibiting effect. The antimicrobial activity of extract of the species studied was compared with standard antibiotic disc and showed inhibition diameters ranging from 7 to 18 mm. The microbial strains displayed a variable degree of susceptibility against the methanol extract of the species examined. Antimicrobial activity was observed against *K. pneumoniae* ATCC700603, *S. aureus*

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ATCC25923 and *E. faecalis*. The most susceptible bacteria to their extract preparations was *S. aureus* ATCC25923 (17 mm).

KEYWORDS

Stachys, Lamiaceae, Total phenolic content, Antimicrobial activity

Poster Session 6

Submission ID: 821

THE INVESTIGATION OF GENOTOXIC EFFECTS OF SITAGLIPTIN THE ACTIVE INGREDIENT OF AN ANTIDIABETIC DRUG USING CHROMOSOMAL ABERRATION TEST

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ABSTRACT

Sitagliptin, the active ingredient of an anti-diabetic drug, is used in the treatment of Typ 2 diabetes mellitus. The aim of the present study was to investigate the ability of Sitagliptin to induce chromosomal aberrations (CAs) in human lymphocytes in vitro. The effect of Sitagliptin on mitotic index (MI) was also evaluated. 31.25, 62.50, 125.00, 250.00, 500.00, 1000.00 µg/mL concentrations of Sitagliptin were used. A negative, a solvent (25% DMSO) and a positive control (MMC) were also included. This study was approved by the ethical committee of Gazi University, Faculty of Medicine (14.11.2012-363). Sitagliptin significantly increased the frequency of CAs at 125.00, 500.00, and 1000.00 µg/mL concentrations for 24 h and at all the concentrations for 48 h treatment compared to the negative control. MI significantly decreased at the highest concentration (1000.00 µg/mL) of Sitagliptin for 24 h treatment and at all the concentrations of Sitagliptin (except for 31.25 µg/mL) for 48 h treatment compared to the negative control. Our results demonstrate that Sitagliptin have clastogenic and cytotoxic effects on human lymphocytes in vitro. Acknowledgment: This study was supported by TUBITAK under the project number 212T256.

KEYWORDS

Sitagliptin, Genotoxicity, Chromosomal aberrations, Mitotic index

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Poster Session 6

Submission ID: 822

INVESTIGATION OF RETINOL (VITAMIN A) POTENTIAL ANTIGENOTOXIC EFFECTS ON MITOMYCIN-C GENOTOXICITY BY CHROMOSOMAL ABERRATION TEST

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ABSTRACT

Vitamin-A (Vit-A) has a supporting effect on skin and immune system and protects against harmful effect of pro-oxidants. The free radical scavenging effect of Vit-A is ineffective to neutralize of singlet oxygen (1O₂), but it is considered to be a strong antioxidant since it can affect the level of other antioxidants in the tissue. In this study, potential antigenotoxic effect of Vit-A (retinol) was investigated in human peripheral lymphocytes (HPLs) by chromosomal aberration (CA) test against Mitomycin-C (MMC), an antitumor agent. Different concentrations of retinol (0.05, 0.010, 0.015, and 0.020 µg/mL) were used in combination with Mitomycin-C. Three treatment procedures were applied for 24 h and 48 h; pre-, simultaneous and post-treatment. At the 24 h pre-treatment with retinol, the percentage of abnormal cells and the frequency of abnormality significantly decreased in all the concentrations compared to positive control. This decrease was significant at the two highest concentrations at simultaneous treatment and at the only highest concentration at post- treatment. At 48 h, in all the treatments and concentrations (except 0.05+MMC µg/mL in simultaneous treatment) the frequency of abnormality and percentage of abnormal cells reduced compared to positive control. These results indicates that retinol reduced the frequency of CAs induced by MMC at all the treatment types. It can be concluded from these results that retinol has protective and ameliorating effect against MMC induced genotoxicity in vitro human lymphocytes.

KEYWORDS

Retinol, Antigenotoxicity, Chromosomal aberration

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Poster Session 6

Submission ID: 824

QUALITY EVALUATION OF FLAXSEED AND BLACK CUMIN OIL OBTAINED BY MICROWAVE AND ULTRASONIC EXTRACTION

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ABSTRACT

The growing interest in green chemistry requires fresh perspectives on analytical extractions on the medicinal and aromatic plants. Reduced solvent consumption, alternative safer solvents, and reasonable energy demands must be balanced with traditional analytical considerations such as extraction yield and selectively [1]. Especially medicinal and aromatic plant extraction methods tend to use of green solvent and new extraction technologies instead of the traditional methods. Studies in recent years, different extraction methods of plant extraction have been become crucial. Some of those supercritical fluid extraction, microwave extraction, ultrasonic extraction and accelerated solvent extraction [2,3]. In this study, the effect of different extraction technologies on flaxseed oil and black cumin oil composition will be aimed. However, these investigations are needed for the appropriate assessment of the prospective of these novel techniques. Also, black cumin seed oil and flaxseed oil is quite valuable in terms of the linoleic acid and oleic acid. The presence of these bioactive compounds helps in the prevention of cardiovascular diseases, diabetes, memory loss, and constipation. In accordance with the aim of this work, the oils will be extracted by microwave extraction and ultrasonic extraction with ethanol and oil composition will be analyzed. Consequently, for these seeds, which are wealthy in terms of fatty acid, an alternative extraction method will be investigation. [1] Essel, Victor, and Douglas E. Raynie. "Green Chemistry Perspectives on Analytical Extractions." *Lc Gc North America*, 31 (2013): 18-21. [2] Khattab, Rabie Y., and Mohammad A. Zeitoun. "Quality evaluation of flaxseed oil obtained by different extraction techniques." *LWT-Food Science and Technology* 53.1 (2013): 338-345. [3] Bakhshabadi, Hamid, et al. "The effect of microwave pretreatment on some physico-chemical properties and bioactivity of Black cumin seeds' oil." *Industrial Crops and Products* 97 (2017): 1-9.

KEYWORDS

fatty acid, flax seed, black cumin, microwave, ultrasonic extraction

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Poster Session 6

Submission ID: 826

EFFECT OF LAVANDULA ANGUSTIFOLIA ESSENTIAL OILS ON SOME RHEOLOGICAL PROPERTIES (ALVEOGRAPH AND FARINOGRAPH) OF DOUGH

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ABSTRACT

The effects of *Lavandula angustifolia* essential oils on rheological profiles (alveograph and farinograph characteristics) and also, some chemical properties (moisture content 12.1 %, ash content 0.73 %, total protein content 12.90 %, wet gluten 31 %, Perten Gluten Index 90 %, standard and modified sedimentation tests 39 ml and 62 ml respectively, before essential oil addition) for flour quality were investigated. There is no detailed study concerning the effect of essential oils of *L. angustifolia* on rheological properties (alveograph and farinograph) of dough. Aromatic profile of essential oil obtained by a hydrodistillation method from *Lavandula angustifolia* (leave + flower) grown in Afyonkarahisar – Turkey (Medicinal and Aromatic Plant Center), was determined by GC-MS (Agilent 7890 B) and this volatil oil contained as major components 1,8 Cineole (59.446 %), camphor (7.202 %), Linalol (5.368 %), β -pinene (2.950), dl-linomenen (2.337%) and α -pinene (1.460 %), respectively. This essential oil from *Lavandula angustifolia* was added to dough as % 0.2 in the course of mixing. The purpose of the present study was to elucidate the effect of essential oils (0.2 % *Lavandula angustifolia*) on the alveograph and farinograph characteristics of wheat dough. The standard and modified Zeleny sedimentation values and all farinograph data (except for development time) were generally not affected by adding with essential oil (*Lavandula angustifolia*). These results on dough rheological were rewardigly found based on alveograph (increasing W [213 -230 Joules] and L [34 -38 mm]) and farinograph data(increasing development time 2.29 – 7.49 and Falling Quality Number 116-122).

KEYWORDS

Lavandula angustifolia, essential oil, alveograph, farinograph

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Poster Session 6

Submission ID: 827

INFLUENCE OF DIFFERENT CARBON SOURCES ON GROWTH AND ROSMARINIC ACID ACCUMULATION OF THYMUS LEUCOTRICHUS HAL. SHOOT CULTURES

TUBA BEKİRCAN¹, MUSTAFA CÜCE², SERCAN YILDIRIM¹, ATALAY SÖKMEN³

ABSTRACT

Aim of the study: The aim of this study was to examine the effect of different concentrations of sucrose on growth and rosmarinic acid accumulations in vitro grown *Thymus leucotrichus* Hal. **Material and Methods:** Four different groups were obtained by changing the sucrose concentrations of the MS medium which include 2 mg/L 2ip and 0.1 mg/L NAA. Cultures in sucrose-containing (10%, 20%, 30%, 40%) media were evaluated 4 weeks later. Number of shoot and node, shoot length, fresh and dry weight of *Thymus leucotrichus* seedling were measured. In addition, the in vitro grown seedlings were dried and subjected to HPLC analysis to determine the amount of rosmarinic acid. **Results:** The highest shoot length (34.00 ± 2.83 mm) and number of nodes (6.47 ± 0.68) were observed at 10% sucrose concentration. The highest number of shoots was observed in the medium containing 30% sucrose with 4.47 ± 0.51 . When the fresh (114.8 ± 11.2 mg) and dry weight (18.05 ± 1.6 mg) parameters were examined, the most effective group was 40% sucrose concentration. While rosmarinic acid content of natural seedling was 6.78mg/g dry weight the highest rosmarinic acid value observed in the experimental groups was 19.10 ± 1.10 mg / g dry weight at 40% sucrose concentration. As the sucrose concentration increased, the amount of rosmarinic acid was found to be statistically significantly increased

KEYWORDS

T. leucotrichus, in vitro, sucrose, HPLC, rosmarinic acid

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Poster Session 6

Submission ID: 828

PHYTOESTROGENS EFFECTS ON CARDIOVASCULAR DISEASES

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ABSTRACT

Cardiovascular diseases have the most incidence density all over the world which are originated from oxidative stress, reactive oxygen production and peroxidation of lipids. In order to prevent this disease, decrease its complications or inhibit its development diet has an important factor. Phytoestrogens which are a kind of functional nutrition, act as a guardian against oxidative stress on the vascular cells. This property of phytoestrogens is coming from the endothelial nitric acid synthesis, thereby stimulating the vasodilatation activity. In addition to this, phytoestrogens provide anti thrombotic and anti atherogenic effects. **OBJECTIVE:** In this review study, phytoestrogens cardiovascular risk factors, serum lipid levels, inflammatory reagents and arterial hardness effects are investigated. **METHOD:** According to the up to date literature research, the influence of phytoestrogens which are naturally occurring on the food or supplementary phytoestrogens on cardiovascular diseases are investigated. **RESULTS:** Soya, which's phytoestrogen contribution is too high, is consumed too much in Asia territory. According to this, the cardiovascular disease rate in Asia is too low with respect to western populations. Phytoestrogens, especially increase the isoflavone groups anti oxidative activity and nitric oxides bioavailability and thereby provides vasodilatation and prevents vascular cell damage. In addition to this, it decreases liver and/or total serum triglyceride level and/or LDL cholesterol, and it increases HDL cholesterol and/or HDL/LDL cholesterol rate. Therefore it has positive effects on cardiovascular disease risk factors. Phytoestrogens contribute to the vascular consistency and helps to prevent hypertension which is one of the important risk factor due to atherosclerosis. In some studies it is mentioned that, there is a reverse relationship between dietary isoflavones and aorta hardness. However, there are also some studies which provide that, the isoflavones coming from soya and red trefoil has no influence on cholesterol levels. **CONCLUSION:** Phytoestrogens could be one of the important nutrition for preventing cardiovascular diseases which are the most common public health issue. However, there should be more studies made on this issue, in order to understand its effects more clear and the amount should be consumed for these type of illnesses.

KEYWORDS

Phytoestrogens, soya, cardiovascular diseases.

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Poster Session 6

Submission ID: 829

DETERMINATION OF FACTORS AFFECTING INDIVIDUALS' THYME CONSUMPTION (THE CASE OF MANISA PROVINCE OF SALIHILI DISTRICT)

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ABSTRACT

Total spice plant production in Turkey is 38341 tons for the year 2016. Of these 48.48% are caraway, 38.40% are thyme, 6.59% are black seed, 6.43% are fennel and 0.11% are coriander. A total of 14724 tons of thyme were produced in Turkey in 2016. Thyme was produced 1585 tons in TR33 (Manisa-Afyon-Kütahya-Uşak) region and 828 tons of in Manisa province. In other words, the production of Manisa is generated thyme constitutes 5.62% of Turkey and 52.24% of the region. With 752 tons of production, Salihli is firstly found in 90.82% of the thyme production. Salihli produces 47.44% of the region's thyme production and 5.11% of Turkey. In this context, it is aimed to determine of the individuals in Salihli Province, which is one of the most produced places of the region and province the level of thyme, which is one of the medicinal aromatic plants, consumption consciousness and factors affecting thyme consumption. This was discussed with 272 individuals determined by proportional sampling. The average age of the interviewed individuals was found to be 36.07 age, 52.21% female, 63.60% single and average income was 2,634.77 TL / month. The first ten medicinal aromatic plants that individuals bought; sage (%85.29), mint (%74.26), thyme (%73.53), tilia (%70.96), garlic (%68.75), nettle (%61.40), dill (%58.46), hibiscus (%49.63), cumin (%47.43) and nigella (%45.96). Thyme, which is the third choice for individuals to consume consumption is 59.10 grams per month. Binary logit analysis was used to determine the factors that affect the thyme consumption of individuals. A dummy variable is used as a dependent variable for consuming or not consuming thyme. As an explanatory variable; the age of the individual, gender, marital status, education status, monthly income, the number of individuals in the family, the state of knowing the definition of medical aromatic plants, use purpose (treatment and odor-taste), consumed amount, purchasing frequency (weekly and monthly), preferred shape (open and packed) and the factors to be considered when purchasing (harvest time, color, smell, freshness, drying environment, amount of drying and amount of moisture) were modeled. As a result of the analysis, it was determined that thyme consumption at the 5% significance level negatively affected the gender and the product positively affected the open purchase and drying environment. That means that women may consume 9% more thyme than men. One unit increase in thyme consumption is expected to increase by 14% when buying thyme, rather than buying it openly. In the same way, consumers consume about 11% of the drying environment compared to those who do not consume. It was observed that those who prefer to use for treatment, use for taste, and purchase once a week, which are meaningful at the 1% significance level, are positively related to consumption. One unit increase in those who prefer to consume is a 45% increase in therapeutic use. That is, consumers consume 45% probability of treatment according to their consumption. It has been determined that 21% of the thyme is consumed

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for taste and odor. One unit increase in the likelihood of consuming another tag is expected to increase the likelihood of choice for taste and odor by 21%. The likelihood of consuming in individuals is directly proportional to the increase in the purchase frequency of thyme. That is, a unit increase in the likelihood of consumption is expected to increase the frequency of purchases per week by 21%. It gives the result that the individual prefers to consume freshly or take it as much as they need to buy thyme.

KEYWORDS

Consciousness Level, Binary Logit Analysis, Thyme, Preference, Consumption

Poster Session 6

Submission ID: 830

PHYTOESTROGENS AND THYROID FUNCTIONS

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ABSTRACT

Thyroid gland is an organ which regulates the metabolic functions via hormones. Heredity, microorganisms, aging, iodine deficiency or over iodine and some of the medicines could cause thyroid originated illnesses. In addition to these, some endocrine damagers may negatively influence thyroid functions. Phytoestrogens are natural endocrine damagers. A phytoestrogen called genistein effects thyroid functions negatively. Therefore studies made to understand this issue. **OBJECTIVE:** In this study, thyroid autoantibody, subclinical hypothyroid parameters are investigated with their interactions between phytoestrogens. **METHOD:** Phytoestrogen supplementation and its effects to thyroid related sicknesses are investigated through literature research. **RESULTS:** Most of the studies point that, phytoestrogens effect the connections of thyroid hormone receptors to the thyroid hormone and negatively effects the thyroid hormone signals. Guanthyrogenic effects of genistein is coming from isoflavone's thyroid hormone synthesis, its metabolism and thyroid hormone transport proteins. Some invivo and invitro studies shows that, genistein inhibits the thyroid peroxidase (TPO) which have an important role in synthesis of thyroid hormone, and decreases the thyroid hormone levels in the circulating system. Soya, which contains phytoestrogen, consumption negatively influences the thyroid functions. Although there are some studies which reveal that, phytoestrogen consumption on healthy or thyroid sickness persons has no reasonable effects. **CONCLUSION:** Phytoestrogens have lots of positive effects on healthy people. However it shows negative influences on thyroid metabolism. But at some studies it has no effect on thyroid functions. In order to enlighten this topic, there should be more studies made.

KEYWORDS

Phytoestrogen, genistein, nutrition, thyroid

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Poster Session 6

Submission ID: 831

**DETERMINATION OF TOTAL PHENOLIC, TOTAL FLOVANOID,
CONDENSED TANNINS AND ANTIOXIDANT ACTIVITY OF
KARAÇALI FRUITS (PALIURUS SPINA CHRISTI)**

KASIM TAKIM¹, MESUT IŞIK², ADEM NECİP²

ABSTRACT

Paliurus spina-christi (PSC) plant is used against the antidiarrhea, diuretic and rheumatism among the population. In addition, the plant's samara-type fruits are used as anti-inflammatory agents against kidney stones, chest and eye infections, and the leaves are externally used for inflammation of the uterus [1]. There are five known species of plant, a member of the Rhamnaceae family. In Turkey, there are only *P. spina-christi* Mill from these five species [1]. The PSC (blackcurrant) plant is a very well known plant in Asia and the Mediterranean region. Southern Europe, Crimea, Caucasus, Western Syria, North-South-West Iran and Northern Iraq. Where the forests are destroyed, the invaders are in frequent bushes and woodlands. The zigzag branch, which grows in almost all Anatolia in Turkey, is seen as a thorny hedge with a height of two to three meters. Leaves are ovate, stipules are thorn-like, flowers are yellow, fruits are circle; Flat, winged, three-seeded and dry [3]. In this study on the mature fruit of the PSC known to be biologically active, Total phenolics, total floovoid and condensed tannin analysis of the fruits used as part of the plant were investigated and the antioxidant activity was investigated accordingly. The total phenolic compound content of the PSC extracts prepared by the deoxygenation method was found to be $22,10 \pm 0,09$ mg Gallic Acid Equivalent / g dry PSC. Total amount of flavonoid compound: $8,29 \pm 0,07$ mg Quercetin Equivalent / g dry PSC. The amount of compound in the condensate of PSC extracts was determined to correspond to $238,11 \pm 2$ mg Tannic Acid Equivalent / kg dry PSC. The total antioxidant capacity of PSC was determined by Cuprac method and found to be 10.47 ± 0.07 mg Trolox Equivalent / g dry PSC. This result shows that Trolox, Ascorbic acid and BHT, which are standard antioxidant compounds and used for comparison, have higher activity. In addition, the DPPH method was used to determine the specific antioxidant properties of PSC, and consequently PSC was reduced to $63.69 \pm 1.32\%$ at $30 \mu\text{g} / \text{mL}$ with gallic acid as standard antioxidant compounds ($66.33\% \pm 2.11$), BHT ($42.44 \pm 1.87\%$) showed higher radical reduction activity than trolox (23.10 ± 0.91) and ascorbic acid ($28.38 \pm 1.12\%$).

KEYWORDS

Paliurus spina-christi, antioxidant, tannin, phenolic

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Poster Session 6

Submission ID: 833

ANTIHYPERTENSIVES AND GENOTOXICITY

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ABSTRACT

Hypertension known as high blood pressure is the most common cardiovascular disease in the world. Hypertension usually does not cause symptoms initially, but sustained hypertension over time is a major risk factor for hypertensive heart disease, coronary artery disease, stroke, aortic aneurysm, peripheral artery disease, and chronic kidney disease. Antihypertensive are drugs used to regulate blood pressure which is a measure of the repulsive force of the blood on the vessel wall. In this study, investigations of the genotoxic effect of antihypertensive agents using different genotoxicity tests and model organisms were reviewed and the results were presented. The genotoxic effect of antihypertensive was evaluated in many *in vivo* and *in vitro* studies. Some of these studies showed that some drug active ingredient did not have genotoxic effect. On the other hand, some other studies have suggested that long-term use of antihypertensive drugs may be genotoxic and therefore associated with increased risk of cancer. In addition, the association between hypertension disease and increased incidence of some types of cancer (especially renal cancer) is determined in some studies. For this reason, it is considered that the *in vitro* and *in vivo* genotoxic effects of antihypertensive should be investigated by independent laboratories.

KEYWORDS

Antihypertensive, genotoxicity, cancer

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Poster Session 6

Submission ID: 835

GENOTOXIC AND ANTIGENOTOXIC EFFECTS OF CYNARIN AGAINST MMC- INDUCED MICRONUCLEUS FORMATION

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ABSTRACT

Artichokes are traditionally used as a medicinal plant and consumed fresh or canned since ancient times. It has been known that artichoke extracts possess many pharmacological activities, including hepatoprotection, anti-oxidative, anti-inflammatory, anti-microbial, anti-mutagenic, and anti-proliferative effects. It is a good source of natural phytochemicals such as flavonoids (mainly apigenin and luteolin) and hydroxycinnamic acids (mono- and dicaffeoylquinic acids i.e.). Cynarin, a phenolic compound present especially in leaves, is a type of di-caffeoylquinic acid in artichoke. It has strong antioxidant activity. The aim of this study was to investigate in vitro genotoxic and antigenotoxic effects of cynarin against MMC induced micronuclei in human lymphocytes (HLs). HLs from two healthy donors (1 male and 1 female) were incubated with different concentrations of cynarin (6.25, 12.5, 25, 50, 100 µg/mL) alone and simultaneously with mitomycin-C (MMC, 0.20 µg/mL) at 37°C for 48 h. A negative (sterile distilled water), a solvent (50% methanol) and a positive control (MMC, 0.20 µg/mL) were also run. Cytochalasin B was added at 44 h of culture for blocking cytokinesis. Totally, 2000 well-spread binucleated cells (1000 binucleated cells per donor) were examined for each treatment. All the concentrations of Cynarin alone did not induce statistically significant micronuclei formation compared to controls. Simultaneous treatment of Cynarin+MMC diminished the frequency of micronuclei induced by MMC alone compared to positive control in all the concentrations (except 6.25 µg/mL). However, this decline was significant at only 12.5 µg/mL concentration. The results of this study showed that cynarin neither genotoxic alone nor strong antigenotoxic against MMC induced MN formation.

KEYWORDS

Cynarin, genotoxicity, antigenotoxicity, micronucleus

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Poster Session 6

Submission ID: 836

CYTOTOXIC ACTIVITIES OF FRUIT AND LEAF EXTRACTS OF *E. ELATERIUM* AGAINST MALIGN MELANOMA

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ABSTRACT

Ecballium elaterium, a member of the Cucurbitaceae family, is a poisonous plant. The fruit of the plant is used in different regions of the world to treat sinusitis traditionally. It was reported that it exhibits various biological activities such as cytotoxic, antitumor, anti-inflammatory, antihepatotoxic, purgative, cardiovascular, analgesic and antipyretic. To the best of our knowledge, the studies have been continuing for searching a cure to skin cancer. Recently, the incidence of mortality from malignant melanoma of the skin has been rising rapidly in white populations around the world for many years. It accounts for 75% of skin cancer-related deaths in the world, although the incidence is 4% in all skin cancers. As a continuous of our study, *Ecballium elaterium* was studied against Malign Melanoma cell lines (HT 144). In this study, cytotoxic activity, intracellular ROS production, apoptosis of fruit and leaf extracts of *E. elaterium* were investigated against malign melanoma cells. Our results revealed that the extracts exhibited strong cytotoxic activity against HT 144. The extracts induced cell death through apoptosis was used Annexin V/PI. *E. elaterium* fruit and leaf methanolic extracts also promoted the release of reactive oxygen species (ROS). Therefore, it can be concluded that the cytotoxic activity of *E. elaterium* extracts induced apoptosis through generation of ROS.

KEYWORDS

Malign melanoma, Ecballium elaterium, cytotoxicity, ROS, apoptosis

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Poster Session 6

Submission ID: 837

DOES LUTEOLIN PROTECTS DNA AGAINST GENOTOXINS?

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ABSTRACT

Compounds that can resist or repair genetic damage caused by a chemical mutagen are known as antigenotoxic agents. Recently, numerous studies have been conducted on the antigenotoxic effects of phytochemicals. Especially, there has been a growing interest in chemopreventive phytochemicals to protect and to develop alternative treatment strategies against many chronic diseases such as cancer. Luteolin, one of the most common flavonoid, exists in medicinal plants and in some vegetables. A major source of luteolin are celery, green pepper, carrots, olives, and artichokes. It is known that this flavonoid has many biological activities such anti-oxidant, anti-inflammatory, cardioprotective, anti-diabetic, anti-allergic, and anti-cancer. The purpose of this research is to review investigations on genotoxic and antigenotoxic effects of Luteolin. In vivo and in vitro studies using different genotoxicity tests and model organisms have been compiled to include genotoxic and antigenotoxic activity of luteolin against DNA damage induced by various genotoxins (mitomycin -C, aflatoxin B1, and hydrogen peroxide i.e.). Numerous studies have demonstrated that luteolin exhibits protective effect against genetic damage caused by different type of mutagens in in vitro and in vivo. Furthermore, epidemiological studies have shown that luteolin has an anticancer activity against lung, head and neck, prostate, breast, colon, liver, cervical, and skin cancers. Generally, this efficacy of luteolin is associated with the induction of apoptosis and inhibition of cell proliferation, metastasis and angiogenesis. Thus, it is believed that luteolin could be a potent chemopreventive agent.

KEYWORDS

Luteolin, genotoxicity, antigenotoxicity, cancer

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Poster Session 6

Submission ID: 838

ISOLATION OF THE CHEMICAL COMPONENTS OF TURMERIC AND THEIR SEMI-SYNTHETIC MODIFICATIONS

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ABSTRACT

Turmeric (*Curcuma longa*) is a perennial herb of the ginger or Zingiberaceae family. It is cultivated mainly in India, China and South East Asia. The turmeric plant has underground rhizomes, otherwise known as its root, and is a valuable part of this plant, having culinary and medicinal properties. It's scientific history is covered by two centuries of research. It was in the year 1815 when it was first isolated [1] and later in 1870 it's crystalline form was presented [2], being identified as 1, 6-heptadiene-3, 5-dione-1,7-bis(4-hydroxy-3-methoxyphenyl) (1E,6E) or diferuloylmethane. Potential medicinal benefits of turmeric is described in the literature on many occasions, and include anti-microbial and anti-cancer properties, among many others. The literature describes turmeric as an orange-yellow crystalline powder, and with respect to its solubility it is considered to be soluble in ethanol, dimethylsulfoxide, and acetone and insoluble in water and ether [3,4]. The characteristic colour of turmeric is due to the presence of curcumin, the principal curcuminoid found in turmeric. The word curcuminoid has been coined to refer to as the chemical constituents of turmeric and include mainly curcumin (~70%), demethoxycurcumin (~17%) and bis-demethoxycurcumin (~3%), also known as curcumin I, II and III, respectively. Curcumin exists as the keto-enol tautomeric forms, where the keto form predominates in acidic and neutral solutions and enol in alkaline solutions [5]. The aim of this study was to extract and isolate components to be reacted with other compounds, in order to synthesize semi-synthetic compounds of improved medicinal uses. Typical spectroscopic techniques, such as, GC-MS, NMR, FT-IR, UV-Vis and Photoluminescence will be used for characterization purposes and in vitro biological and pharmacology data of these new semi-synthetic derivatives will be obtained. REFERENCES [1] Vogel, H. A., Pelletier, J. Curcumin-Biological and Medicinal Properties, J. Pharma., 1815, 2, 50. [2] Daube F. V. Uber Curcumin, den Farbstoff der Curcumawurzel, Ber. Dtsch. Chem. Ges. 1870, 3, 609-613. [3] Milobedeska, J., Kostanecki, V., Lampe, V. Structure of Curcumin, Ber. Dtsch. Chem. Ges., 1910, 43, 2163-2170. [4] Lampe, V., Milobedeska, J. Studien über Curcumin, Ber. Dtsch. Chem. Ges., 1913, 46, 2235-2240. [5] Priyadarsini, K. I. Photophysics, Photochemistry and Photobiology of Curcumin: Studies from Organic Solutions, Bio-Mimetics and Living Cells, J. Photochem. Photobiol. C: Photochem. Rev., 2009, 10, 81-96.

KEYWORDS

turmeric, curcumin, anti-microbial properties, photoluminescence

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Poster Session 6

Submission ID: 839

IDENTIFICATION OF THE COMPONENTS OF WALNUT KERNELS AND THEIR SOAP PREPARATION

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ABSTRACT

Walnuts are the nuts of temperate regions and belong to the Juglandaceae plant family. They are considered to be the oldest cultivated fruit in the world [1]. Walnuts and grow on large trees and bear edible nuts described as kernels; the most outer part a tough leathery husk, then the hard shell enclosing these kernels. A diet intake of these flavorful nuts provides beneficial effects on the human health, such as the lowering of blood cholesterol [2] and cardiovascular protection [3]. There many varieties of walnuts but the main types are the Persian or English walnut (*Juglans regia* L.), Black walnut (*Juglans nigra* L.) and White walnut (*Juglans cinerea* L.). Walnut kernels are rich in oil content, varying from 52-70%, where cultivar, location and irrigation rate affects this amount [4]. Hence, due to the high fat content, walnuts may assist in skin treatments for the care and repair of skin functions and thus provide valuable cosmetic value. The literature provides a wide variety of other medicinal applications of walnuts and include anti-cancer [5], and anti-microbial properties [6]. The goal of the study was to extract, isolate and identify the components of walnut kernels. Extraction was to be achieved by the soxhlet extraction technique. The extracts were then to be tested for their antimicrobial effects. The collected walnut kernel oils will be utilized for soap making purposes. REFERENCES [1] Caglarirmak, N. Biochemical and Physical Properties of Some Walnut Genotypes (*Juglans regia* L.), *Nahrung*, 2003, 47(1), 28-32. [2] Savage, G. P. Chemical composition of walnuts (*Juglans regia* L.) grown in New Zealand, *Plant Food Hum. Nutr.*, 2001, 56(1), 75-82. [3] Simopoulos A. P. Essential Fatty Acids in Health and Chronic Disease. *Am. J. Clin. Nutr.* 1999, 70(3), 560-569 (Suppl.). [4] Ozkan, G., Koyuncu, M. A. Physical and Chemical Composition of Some Walnut (*Juglan regia* L.) Genotype Grown in Turkey, *Grasas Aceites*, 2005, 56(2), 142-146. [5] Hardman, W. E. , Ion, G. Suppression of Implanted MDA-MB 231 Human Breast Cancer Growth in Nude Mice by Dietary Walnut, *Nutr. Cancer*, 2008, 60(5), 666-674. [6] Noumi, E., Snoussi, M., Hajlaoui, H., Valentin, E., Bakhrouf, A. Antifungal Properties of *Salvadora Persica* and *Juglans regia* L. Extracts Against Oral *Candida* Strains, *Eur. J. Clin. Microbiol. Infect. Dis.*, 2010, 29(1), 81-88.

KEYWORDS

walnut kernel, oil, anti-microbial effects, soap

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Poster Session 6

Submission ID: 840

DETERMINATION OF THE COMPONENTS OF CRANBERRY SEEDS AND THEIR ANTI-MICROBIAL EFFECTS AND SOAP PREPARATION FROM CRANBERRY SEED OIL

HUSEYİN ZENGİN¹, ADEM MERT¹, GULAY ZENGİN¹

ABSTRACT

Cranberries are evergreen dwarf shrubs found worldwide, and fall under the genus *Vaccinium*, and their subgenii include *oxycoccus*, *erythrocarpum*, *macrocarpon* and *microcarpum*, depending, on the region of cultivation. Cranberry fruit is a berry of admirable sweet sour taste. They have health promoting qualities and may contribute colour, flavour, and nutritional value, allowing them to be used as dyes, foodstuff and dietary supplements. They are well known for their rich phenolic compound content [1], and have been shown to exhibit beneficial anti-oxidant and anti-proliferative properties [2]. Research on the health benefits of cranberries has been provided in the literature on numerous occasions [3,4]. The literature gives a report on the anti-adhesion effects of cranberries, leading to bioactivity against urinary tract infections [5]. Anti-adhesion effects were also observed in another study, offering promise in the prevention and cure of ulcers due to *Helicobacter pylori* infections [6]. Cranberry seeds are described as being the waste material of cranberry fruit. However, the oils extracted from these seeds are known for their fine quality and invaluable cosmetic applications. Cranberry seed oil (CSO) is rich in tocotrienols and tocopherols (Vitamin E), and other anti-oxidants, and has significant amounts of Vitamin A [7], and thus can help nourish, soothe and moisturize skin and hair. The purpose of the study was to isolate and identify the components of CSO. Several CSO extraction procedures will be presented and compared for optimal oil yields. The CSO extracts will be evaluated for their anti-microbial properties, and the extracts collected will be utilized for CSO soap preparations. REFERENCES [1] Singh, A. P., Wilson, T., Kalk, A. J., Cheong, J., Vorsa, N. Isolation of Specific Cranberry Flavonoids for Biological Activity Assessment, *Food Chem.*, 2009, 116, 963-968. [2] Sun, J., Chu, Y. F., Wu, X. Z., Liu, R. H., Antioxidant and Anti Proliferative Activities of Common Fruits, *J. Agric. Food Chem.*, 2002, 50, 7449-7454. [3] Hakkinen, S., Heinonen, M., Karenlampi, S., Mykkanen, H., Ruuskanen, J., Torronen, R. Screening of Selected Flavonoids and Phenolic Acids in 19 Berries, *Food Res. Int.*, 1999, 32 345-353. [4] Cote, J., Caillet, S., Doyon, G., Sylvain, J. F., Lacroix, M. Bioactive Compounds in Cranberries and their Biological Properties, *Crit. Rev. Food Sci.*, 2010, 50, 666-679. [5] Howell, A. B. Cranberry Proanthocyanidins and the Maintenance of Urinary Tract Health, *Crit. Rev. Food Sci. Nutr.*, 2002, 42, 273-278. [6] Burger, O., Weiss, E. I., Sharon, N., Tabak, M., Neeman, I., Ofek, I. Inhibition of *Helicobacter Pylori* Adhesion to Human Gastric Mucus by a High-Molecular-Weight Constituent of Cranberry Juice, *Crit. Rev. Food Sci. Nutr.*, 2002, 42 (Suppl.), 279-284. [7] Nawar, W. W. Tocotrienols and Omega-3 Fatty Acids in Cranberry Seed Oil, *FASEB J.*, 2001, 15(5), A985-A985.

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KEYWORDS

cranberry fruit, cranberry seed oil, anti-microbial effects, soap

Poster Session 6

Submission ID: 841

SYNTHESIS, CHARACTERIZATION AND ANTI-MICROBIAL STUDIES OF DOPAMINE-DERIVED SULFONAMIDES

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ABSTRACT

Dopamine (DA) is a catecholamine neurochemical having neurohormonal functions that include cognition, and coordination. In addition to being present in the human body, it is found in many types of food. DA is essential for the proper life-dependent functions of the human body, and plays an important role in many diseases and disorders, of which Parkinson's disease [1] and schizophrenia [2] are the most common ill conditions. Further, DA has also been shown to have anti-oxidant properties [3], effectively scavenging any superoxide and hydroxyl radicals (O₂^{•-} and HO[•]-, respectively), and thus has been widely used in the food industry, as well as for medicines. The literature provides work on DA and various derivatives of pharmaceutical applications, and as anti-oxidants and anti-microbial agents in the food and cosmetic industry. Sulfonamide-type drugs are known for their varied biological applications, and are particularly used for the treatment of urinary tract infections, bronchitis and malaria [4]. The aim of this study was to synthesize new dopamine-sulfonamide derivatives with valuable medicinal properties, for potential use in the treatment of various ill states and disorders, and for application in food and cosmetics. The characterization techniques to be used include FT-IR, UV-Vis, GC-MS, NMR and Photoluminescence. Further, in-vitro biological and pharmacology data for the synthesized novel dopamine-sulfonamide derivatives will also be obtained. REFERENCES [1] Mueller, T. Catechol-O-Methyltransferase Inhibitors in Parkinson's Disease, *Drugs*, 2015, 75, 157-174. [2] Howes, O., McCutcheon, R., Stone, J. Glutamate and Dopamine in Schizophrenia: An Update for the 21st Century, *J. Psychopharmacol.*, 2015, 29(2), 97-115. [3] Yen G. C., Hsieh C. L. Antioxidant Effects of Dopamine and Related Compounds, *Biosci. Biotechnol. Biochem.*, 1997, 61, 1646-1649. [4] Hansch C., Sammes P. G., Taylor J. B. *Comprehensive Medicinal Chemistry*, Vol. 2, Pergamon Press, Oxford, UK, 1990.

KEYWORDS

dopamine, sulfonamide, anti-microbial properties, photoluminescence

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Poster Session 6

Submission ID: 842

EFFECTIVENESS OF GARLIC ON HIGH BLOOD PRESSURE

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ABSTRACT

Death rates due to cardiovascular diseases is the first in the world and in our country. Recently it has been reported that garlic has lowered blood pressure and therefore has a positive effect in preventing cardiovascular diseases. This effect was associated with the “allicin” compound found in garlic. While this compound regulates the blood pressure with the help of angiotensin-II inhibition and vasodilator effect, its mechanism of action is still contradictive. It has been stated that garlic and allisin that is its active metabolite cause a nitric oxide dependent relaxation on pulmonic arteries that are isolated from rats. It has been asserted that gamma-glutamyl-S-allyl cysteine which is a peptide in garlic inhibits an enzyme that takes a role in production of certain hormones increasing blood pressure. Moreover, it has been stated that garlic regulates the blood pressure of hypotensive people. Garlic is the second most common consuming food among individuals with cardiovascular diseases due to these effects. It is used in many European countries such as Germany, England and Austria due to its nutraceutical properties. Some studies suggest that garlic and garlic derived bioactives have important medicinal features with the potential for ameliorating hypertension. In this study, it was aimed to investigate the studies which searched garlics’ effect on blood pressure, and to make recommendations interested with nutrition.

KEYWORDS

garlic, blood pressure, allicin, nutrition

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Poster Session 6

Submission ID: 843

ANTIOXIDANT PROPERTIES AND PHENOLIC COMPONENTS OF PRUNUS SPINOSA L. BRANCHES, LEAF AND FRUITS FROM TEKIRDAG

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ABSTRACT

Prunus spinosa, named in traditional as çakal plum, or güvem plum, a species from the family of Rosaceae. A wide distribution area is shown in Anatolia. This plum type is widely consumed as fresh, dried or marmalade. The high antioxidant capacity of the fruit is depends on polyphenols compositions and this changed collected area geographical properties.1 In this study, polyphenolic profiles and antioxidant capacities of Güvem plum was studied in the three part of stembark, leaf and fruit collected from Tekirdağ Muratlı region. The total phenolic contents of the ethanolic extracts was found 382, 927 and 956 mg GAE / 100 g in fruit, leaf and branch, respectively. Rutin was the major component. While rutin, epicatechin and ferulic acid were detected in stembarks, vanillic acid, luteonil, \square -OH benzoic acid and p-coumaric acid were found in the fruits. Syringic acid and cinnamic acid were detected only on the leaf side. Compared with other studies, Gümüşhane species, vanillic acid and benzoic acid were major components of the fruit, but it was found that other polyphenols were changed. As a result, the stembark and leaves of Gövem plum is rich in flavanoids, and it is beneficial for public health to evaluate these parts as phytotherapy. References 1. Aliyazicioğlu, R., Yildiz,O., Sahin, H.,Eyuğolu, O. E., Ozkan, M.T., Karaoğlu, S. Kolaylı,S. Phenolic Components and Antioxidant Activity of *Prunus spinosa* from Gumushane, Turkey. *Chemistry of Natural Compounds* , 51, 2 346-349, 2015.

KEYWORDS

Guvem plum, antioxidant, phenolics, flavanoids, Tekirdag

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Poster Session 6

Submission ID: 844

THE EFFECTS OF DIFFERENT PREPARATION CONDITIONS ON THE ANTIOXIDANT POTENTIALS OF CINNAMON, CLOVE AND HIBISCUS TEAS

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ABSTRACT

In this study, the effects of different preparation conditions on the antioxidant activities of cinnamon, clove and hibiscus teas were investigated. The teas were prepared by infusion at 95°C and decoction of dried plant materials (2 g/40 ml deionized water) for 5 and 10 minutes. Total phenolic contents (TPC), free radical scavenging activities (FRSA), and iron chelating capacities (ICC) of teas were determined and their antioxidant potentials were evaluated by using Folin-Ciocalteu reagent, measuring the DPPH radical scavenging activity, and measuring the Fe²⁺ chelating capacity, respectively. The highest TPC and FRSA values were determined for hibiscus teas and varied from 19580 to 52779 µg gallic acid/g and from 54.86 to 73.91 µmol trolox/g, respectively. Hibiscus teas had between 2 and 45 times higher TPC and between 1.25 and 17 times higher FRSA than other tea samples. As the infusion time increased from 5 to 10 minutes, TPC (between 12 and 87%), FRSA (between 62 and 93% - except for clove teas) and ICC (more than 500%) values of teas were significantly increased (P<0,05). Particularly cinnamon tea had the highest increment in antioxidant parameters among teas. On the other hand, decoction process had reverse situation and all parameters were inversely changed as the time was increased (P<0,05). Only ICC of clove tea increased almost 4 times. In hibiscus tea, TFC was conserved while FRSA was decreased for 25% as the decoction time was increased. However, decoction process produced teas with lower TPCs compared those of produced with infusion process, FRSA values of teas were higher in 5 minute-decoction but lower in 10-minute-decoction (P<0,05). This study revealed the potential of mostly consumed teas to use as natural antioxidant additive in functional food formulations by determining the variations in their antioxidant activities depending on the preparation conditions. For better evaluation, further studies are needed to determine the storage stability of teas and formation of powder from teas by lyophilization or spray drying.

KEYWORDS

cinnamon, clove, hibiscus, antioxidant activity, functional food

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Poster Session 6

Submission ID: 845

ANTIOXIDANT ACTIVITIES OF ROSA CANINA SPECIES COLLECTED FROM TURKEY

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EKREM KÖKSAL⁷

ABSTRACT

Plants generate secondary metabolites, which could be used as novel therapeutic compounds. These compounds are well known for their beneficial effects on human health. Thus, it is important to evaluate total phenolic and flavonoid contents as well as antioxidant activities of different plants. The present study was conducted to determine the total phenolic/flavonoid content and antioxidant activity of ethanol extract prepared from fruits of *Rosa canina*. This black *Rosa canina* is only grown in Gümüşhane, Bayburt, Ağrı and Erzurum in our country. The total phenolic content of the ethanol extract of the sample were determined using the Folin-Ciocalteu reagent. Antioxidant activity of *Rosa canina* was determined using different in vitro experimental models, which include DPPH, FRAP, CUPRAC and potassium thiocyanate method. Total phenolic and flavonoid contents of *Rosa canina* were found to be 153,4 mg GAE/g and 13,8 mg QE /g, respectively. Antioxidant activity of the sample was comparable to commercial antioxidant standards (BHT, α - tocopherol and trolox). The results showed that *Rosa canina* has moderate free radical scavenging and reducing capacity. Overall, this study discovers total phenolic and flavonoid content as well as antioxidant properties of *Rosa canina*.

KEYWORDS

Antioxidant, Rosa canina, oxidative stress

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Poster Session 6

Submission ID: 846

POLLEN AND NUTLET MORPHOLOGY OF TWO MEDICINAL SALVIA L. (LAMIACEAE) TAXA IN HATAY

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ABSTRACT

The genus *Salvia* L. (Lamiaceae), is represented by 950-100 taxa worldwide. The genus has been widely distributed in five regions of the world; central and South America (*500 spp.), western Asia (*200 spp.), eastern Asia (*100 spp.), Africa (*60spp.) and Europe (*36 spp.). Turkey is one of the centres of diversity regions in Southwest Asia with 99 *Salvia* species. Turkey is main center of diversity for the genus. Of the 97 *Salvia* taxa in Turkey, 51 are endemic to the country and endemism rate of the genus is 52,5%. In this study, pollen and seed morphology of *Salvia sericeo-tomentosa* var. *tomentosa* L. and *Salvia sericeo-tomentosa* var. *hatayica* L. endemic for Turkey were investigated. Plants specimens used in this study were collected from Çevlik coastal area (C6 Hatay) in vegetation period in 2016. The detailed pollen and seed morphological structures of *Salvia sericeo-tomentosa* var. *tomentosa* L. and *sericeo-tomentosa* var. *hatayica* L. were comparatively studied using scanning electron microscopy (SEM). In the SEM investigations pollen grains were directly placed onto stubs, sputter-coated with gold, and examined by ZEISS Evo LS10 scanning electron microscope. Palynological analysis showed that the pollen shape of *S. sericeo-tomentosa* var. *hatayica* is oblate, but *S. sericeo-tomentosa* var. *tomentosa* is suboblate. The ornamentasyon are reticulate and bireticulate. Aperture number/type is similar (6-colpus). The nutlets are subprolate and prolate-spheroidal. nutlet surface sculpturing are reticulate. However according to size of nutlets, *Salvia sericeo-tomentosa* var. *hatayica* (1,58x,66 mm) is bigger than *S. sericeo-tomentosa* var. *tomentosa* (1,28x1,62 mm). The results demonstrated that pollen and seed micromorphology useful for the identification of these species. We believe that finding of this study will significantly contribute to the biodiversity and taxonomy studies of medicinal endemic plant species at local and regional scales.

KEYWORDS

Lamiaceae, Salvia, Pollen morphology, Seed morphology, SEM.

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Poster Session 6

Submission ID: 847

ANTIOXIDANT PROPERTIES OF ETHANOLIC EXTRACT OF BEE POLLEN FROM EREĞLİ (KONYA, TURKEY) REGION

GÖKHAN ZENGİN¹, HALUK OZPARLAK¹, RAMAZAN CEYLAN¹

ABSTRACT

Pollen of bee is one of the purest and the richest natural food supplements packed by honeybees into granules and subsequently harvested from hives by humans. Honeybee-collected pollen is composed of nutritionally essential substances such as proteins, amino acids, carbohydrates, lipids, vitamins, mineral substances and trace elements. Its beneficial effect on health is thought to be due to the presence of phenolic compounds with its antioxidant activity. The aim of this study was to determine the total phenolic and flavonoid contents and antioxidant activity of ethanolic extract of honeybee-collected pollen from Ereğli (Konya, Turkey) region for the first time. In this study, ultrasonication assisted extraction method was used in contrast to routine methods. Total phenolic and flavonoid contents present in the extract were also determined by Folin-Ciocalteu and AlCl₃ assays. Antioxidant activities were investigated by using different assays, including free radical scavenging assays (DPPH and ABTS) reducing power (FRAP and CUPRAC), phosphomolybdenum and metal chelating assays. Total phenolic and flavonoid contents were found to be 15.90 mgGAE/g extract and 4.89 mgRE/g extract, respectively. The extract was more effective than ABTS (34.77 mgTE/g extract) as compared to DPPH (19.64 mgTE/g extract). Moreover, the reducing abilities were 77.12 mgTE/g extract for CUPRAC and 18.02 mgTE/g extract for FRAP. Molybdenum reducing power was found to be 260.54 mgTE/g extract. Ferrous chelating power was 9.47 mgEDTA/g extract. Results indicate that, pollen of bee from Ereğli region could be considered as a natural source of high-valued functional ingredients for further use in healthful formulations.

KEYWORDS

Bee pollen, Ereğli, Free radical scavenging, Konya, Total flavonoid, Total phenolic.

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Poster Session 6

Submission ID: 848

IN VITRO ENZYME INHIBITORY PROPERTIES OF ETHANOLIC EXTRACT OF BEE POLLEN FROM EREĞLI (KONYA, TURKEY) REGION

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ABSTRACT

Bee pollen is a valuable apitherapeutic product greatly appreciated by the natural medicine because of its potential nutritional and medical applications. In the last three decades many papers have been published on issues concerning bee pollen. Although many studies have been conducted on bee pollen and other bee products, there are few studies of enzyme inhibition. Therefore, the enzyme inhibitory potentials of ethanolic extract of honeybee-collected pollen from Ereğli (Konya, Turkey) region were investigated against cholinesterase, amylase and glucosidase for the first time. In this study, ultrasonication assisted extraction method was used in contrast to routine methods. The in vitro enzyme inhibitory potentials were measured with a microplate reader. The activities were evaluated as standard equivalents. The extract was found to be effective on these enzymes. Acetylcholine- and butrylcholinesterase inhibitory activities were 2.51 mgGALAE/g and 1.70 mgGALAE/g, respectively. Anti-diabetic activity was evaluated with α -amylase and α -glucosidase inhibitions and the results were determined as 0.34 mmolACAE/g and 2.57 mmolACAE/g extract, respectively. The results suggested that honeybee-collected pollen from Ereğli region could be considered as a source of natural enzyme inhibitors for the treatment of major health problems such as Alzheimer Disease and Diabetes mellitus.

KEYWORDS

Bee pollen, Enzyme inhibition, Ereğli, Konya, Natural agents.

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Poster Session 6

Submission ID: 849

THE CHARACTERISTICS OF POPLAR MUSHROOM (AGROCYBE AEGERITA) AND WOOD CHICKEN MUSHROOM (LEATIPORUS SULPHUREUS) SPECIES

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ABSTRACT

In this study, some characteristics of the species of poplar mushroom (*Agrocybe aegerita*) and wood chicken mushroom (*Leatiporus sulphureus*) identified in Konya ecology have been discussed. The poplar mushroom was found in the root zone of poplar tree and the wood chicken mushroom was found on trunk of the black willow tree (*Salix nigra*). Poplar mushroom is a kind of mushroom which is on the white stalk with a cap and milky coffee color, non-poisonous, edible and delicious. If poplar mushroom spores are present in the roots or logs of old poplar trees, they grow spontaneously when ambient conditions occur. Mushrooms can harvest in 20-28 days, if mushroom spores begin to develop after rainfall in spring and autumn, when the relative humidity reaches 95-100% and the temperature reaches 21-27 °C in Konya central ecology. Poplar mushroom is a natural type of Turkey nature and is not culturally cultivated but it is seen in the nature of Asia, Europe and Australia and culture is also being made. The wood chicken mushroom known as sulfur mushroom is a kind of edible mushroom species from the Polyporaceae family. The taste is known as chicken mushroom because it is similar to chicken meat taste. Chickens are easily recognized by their large clusters of overlapping brackets, and bright yellow-orange colors. The colors fade as the mushroom grows older. Its appearance is impressive, like an opened large flower that is fleshy, in large chunks, and weight can be too much. The chicken mushroom tree which is the subject of my work of this study, have been identified in the fall on the ordinary willow tree (*Salix nigra*). It has been reported in the literature in which chicken mushrooms are also found in eucalyptus, elm and walnut trees. If the chicken mushroom is not harvested on the tree, it becomes aged and becomes wood. Fresh mushrooms should be preferred for consumption. Wood chicken mushrooms can cause allergies in some people. Adults should consume a small amount by trying. It has been reported that wood chicken mushrooms cause some problems such as hallucinations and ataxia in children and that consumption is not appropriate. As a result, the types of poplar and wood chicken mushrooms found in the central ecology of Konya are not among the cultivated mushroom species that are very well known in Turkey. It has been concluded that it is appropriate to study for cultivation these mushroom species in terms of human nutrition and economic contribution.

KEYWORDS

poplar mushroom, Agrocybe aegerita, wood chicken mushroom, Leatiporus sulphureus

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Poster Session 6

Submission ID: 850

CULTIVATION OF NATURAL PLANTS "MEDICAL MINT" EXAMPLE IN TOKAT-ERBAA

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ABSTRACT

The rural part of Tokat's Erbaa County is very rich in terms of medical and aromatic plant diversity, and some people continue their livelihood by collecting them. Some of these plants that grow in natural environment are cultured depending on demand. As a matter of fact, some plants such as rosehip, poppy, fenugreek grass are raised by taking incentives from the government. One of these plants, Medical Mint (*Mentha x piperita* L.), has grown in size over the last years in terms of the size of the cultivation area, as well as the amount of production. In the research, the subjects such as the production, drying, processing, packaging, marketing and exporting of the medical mint in the rural part of Erbaa have been determined on site by contacting the relevant institutions. The research also examines the place of other plants in natural plant diversity of Erbaa and the potential and emphasizes its contribution of Erbaa and Turkey to the economy in case of making use of this potential. Some of the farmers who participated in the medical and aromatic plant course launched in Erbaa in 2012 applied for the benefit of the relevant monetary grant and incentive for production after they have received their certificates. The mint seedlings brought to Erbaa through a company were replicated by two farmers in an area of 100-150 m² and first production was achieved. Thus, the medical mint whose production started in 2013, soon attracted attention with its efficiency in rural part of Erbaa due to the suitability its geographical conditions. Later, as a result of the fact that purchase guarantee was provided for this plant whose production continued with contracted agriculture method to the producers, they achieved a guaranteed and stable income. The harvest that starts on May, despite changing based on the natural conditions, continues up to November in harvesting 4-5 times. At each harvest, 2 tons per acre are produced. There is also no need for extra labor due to the fact that the natural environment conditions are effective and machinery is used during harvest. The harvested medical mint is dried with natural methods and exported abroad through the related company. There are around 10 farmers who produces it, as well as the farmers who are currently in the preparation stage for sowing. With the increasing demand for natural products, studies on medical and aromatic plants in the world and in Turkey have gained importance. Natural plants and new drugs derived therefrom are becoming more and more important as an alternative to widely used drugs such as antibiotics, etc. The increase in the consumption of these plants as raw materials both in the chemical and pharmaceutical industries has also changed the way these plants are obtained. The production in the form of harvest in the past is being replaced with plantation-type production over time. As demand increases in the market, this transition is accelerating. Increasing market value of natural plants has led to the necessity of readdressing the production and sale of these plants with more scientific methods. In addition, in order to slow down the immigration process from rural areas to urban areas, which is one of the biggest problems of our country, the cultivation of these products in the rural areas provides

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an important contribution. The revenue generated is likely to be an important revenue channel for those residing in rural areas and wanting to engage in such agricultural activities. As one of the leading counties in Turkey, Erbaa contributes to the economy of the country through both rural development and exports.

KEYWORDS

Medical and Aromatic Plants, Medical Mint, Erbaa, Tokat.

Poster Session 6

Submission ID: 851

INVESTIGATION OF PHENOLIC COMPOUNDS AND ANTIOXIDANT ACTIVITY OF TEUCRIUM POLIUM L. DECOCTION AND INFUSION

ZÜLEYHA ÖZER¹, TURGUT KILIÇ¹, SEMA ÇARIKCI¹, HASIBE YILMAZ²

ABSTRACT

Teucrium polium L. belongs to the family of Lamiaceae (Labiatae), which is one of the most common and diverse plants in the world, comprising over 150 species. T. polium named as 'mayasıl otu' and widely used as herbal tea in folk medicine. Also decoction and infusion of this species is used as treatment diabetes, kidney, liver diseases, stomach and hemorrhoids. In the previously studies anti-inflammatory, anti-nociceptive, anti-bacterial and anti-hypertensive activities of T. polium were reported. In this study, we report the phenolic compounds and antioxidant activity of the decoction and infusion of T.polium. The quantitative amounts of the phenolic compounds were determined by LC/MS-MS. The main compounds and amounts were determined as follow for decoction; fumaric acid, luteolin-7-glucoside, luteolin-5-o-glucoside, palargonin (2060.09; 1167.04; 835.18; 829.96 mg/kg dried herba, respectively). For the infusion samples main compounds and amounts were as follow; fumaric acid, luteolin-7-glucoside, palargonin, luteolin-5-O-glucoside (1456.2; 431.15; 312.5; 278.43mg/kg dried herba, respectively). The antioxidant activities were determined based on three methods: 2,2-Diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging, β -carotene linoleic acid and cupric ion reducing antioxidant capacity (CUPRAC) assays. For all the activity assays, infusion and decoction of the T.polium showed good activity.

KEYWORDS

Teucrium polium, decoction, infusion, phenolic compounds, antioxidant activity.

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Poster Session 6

Submission ID: 854

PHENOLIC COMPOUNDS AND ANTIOXIDANT ACTIVITY OF SIDERITIS SIPLEA BOISS. TEA

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ABSTRACT

The genus *Sideritis* (Labiatae=Lamiaceae), collected under two sections, 46 species, 12 subspecies and two varieties in Turkey. The species are widely found in the Mediterranean area especially Spain and Turkey and Turkey is gene center of these species. Moreover *Sideritis* is one of the genera with high endemism rate, almost 80%. The species have spread especially in Western Anatolia. *Sideritis* species have been popularly used as herbal tea especially in Aegean and Mediterranean regions for centuries due to their anti-inflammatory, anti-ulcerogenic, digestive and antimicrobial properties. In this study, we aimed to determine phenolic compounds and antioxidant activity of infusion and decoction tea samples of the *Sideritis sipylea*. For this purpose, the aerial parts of *S. sipylea* collected from Sipil Mountain (Manisa)-Turkey, in June 2014. The quantitative amounts of the phenolic compounds were determined by using LC/MS-MS. Fumaric acid and chlorogenic acid were determined as the main components of the both decoction and infusion. The amounts are as follow; fumaric acid (277.7; 281.05 mg/kg dried herba) and chlorogenic acid (204.47; 174.85 mg/kg dried herba) respectively. The antioxidant activities were determined based on three methods: 2,2-Diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging, β -carotene linoleic acid and cupric ion reducing antioxidant capacity (CUPRAC) assays. The tea samples of *S. sipylea* showed good antioxidant activity for all the tested activity assays.

KEYWORDS

Sideritis sipylea, phenolic compounds, antioxidant activity, decoction, infusion

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Poster Session 6

Submission ID: 855

PHENOLIC COMPOUNDS AND ANTIOXIDANT ACTIVITY OF SIDERITIS TMOLEA P. H. DAVIS TEA

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ABSTRACT

Sideritis L. belongs to the family of Lamiaceae (Labiatae), which is one of the most common and diverse plants in the world, comprising over 150 species. Sideritis species are generally known under the names “adacayı or dagcayı” and widely used as herbal tea in folk medicine in Turkey as well as Europe. Phenols are very important plant constituents because of their scavenging ability on free radicals due to their hydroxyl groups. Therefore, phenolic contents of plants may contribute directly to their antioxidant activity. Sideritis tmolea P.H. Davis, named as Sivri çayı in vernacular, is an endemic species for Turkey. Aerial parts of S. tmolea collected in July 2015 from Bozdağ, Ödemiş in Turkey. In present study, we investigated the phenolic compounds and antioxidant activity of the decoction and infusion of S. tmolea. The quantitative amounts of the phenolic compounds were determined by using LC/MS-MS. The main compounds and amounts were determined as follow for decoction; fumaric acid, penduletin and chlorogenic acid (240.33; 160.85; 160.21; mg/kg dried herba, respectively). For the infusion samples main compounds and amounts were as follow; fumaric acid, chlorogenic acid and penduletin (238.71; 142.22; 70.22 mg/kg dried herba, respectively). The antioxidant activities were determined based on three methods: 2,2-Diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging, β -carotene linoleic acid and cupric ion reducing antioxidant capacity (CUPRAC) assays. For all the activity assays, infusion and decoction of the S. tmolea has showed good activity.

KEYWORDS

Sideritis tmolea, phenolic compounds, antioxidant activity, decoction, infusion

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Poster Session 6

Submission ID: 856

PHENOLIC COMPOUNDS OF CHERRY LAUREL (*LAUROCERASUS OFFICINALIS* ROEM.)

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ABSTRACT

Cherry laurel (*Laurocerasus officinalis* Roem.) or taflan is a characteristic summer fruit of Blacksea Region. It's a variety of cherry that grows up without using agricultural pesticide or fertilizer. It's mostly consumed as fresh fruit. Also it's consumed after dried, pickled or boiled as molasses. Total phenolic content, total flavonoid content, antioxidant activity and phenolic compositions of the edible parts of the fruits were investigated in this study. The quantity of total phenolic content was found as 280 mg GAE /100 g fresh fruit according to Folin-Ciocalteu method, total flavonoid content was found as 7.2 mg QUE/100 g and total antioxidant activity was found as 300 μ mol Trolox/100 g according to FRAP method. The phenolic compounds of the fruit was determined by using HPLC-UV system. While the major component was found as vanillic acid; syringic acid, epicatechin, gallic acid, p-OH benzoic acid, protocatechuic acid, caffeic acid, rutin, luteolin, p-coumaric acid and ferulic acid were determined in a descending sort. The cherry laurel fruit that has high phenolic content and antioxidant capacity is a valuable natural fruit for preventive medicine. It will be beneficiary to extend it's utilization by cultivation and to return it to the economy.

KEYWORDS

Cherry laurel, Laurocerasus officinalis Roem., phenolic compounds, antioxidant

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Poster Session 6

Submission ID: 857

RELATION OF MINERAL COMPONENTS IN OUR NUTRITION AND CANCER

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ABSTRACT

Cancer is one of the most important diseases of today. There are many types of cancer. Every type of cancer is affected by many factors. In some societies, the incidence and type of cancer and their lifestyle, culture and nutritional habits have been compared. Misnutrition is one of the causes of cancer. Reduction of cancer risk can be achieved through proper nutrition. We take many food items with our food in our bodies. While some nutrients help prevent cancer formation, some nutrients can also increase. Minerals, which are a major factor in the survival of our vital functions, are one of these nutrients, even though they are small in quantity. In our regular work of our body, more than 20 denier minerals are involved. Some minerals help prevent cancer, while others cause cancers. Some of them affect both ways, depending on their intake patterns. In this study, information on the types of minerals found in foods and the positive or negative effects on cancer were compiled.

KEYWORDS

Nutrition, Mineral components, Cancer

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Poster Session 6

Submission ID: 858

THE RESEARCH OF THE USING OF OPUNTIA FICUS-INDICA, A MEDICAL AROMATIC PLANT IN THE FIELD OF LANDSCAPE ARCHITECTURE

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ABSTRACT

The plants which are significant element of landscape arrangement are used to form both living and livible places. Being the core elements of green places, plants fulfill so many tasks in terms of functionality, esthetic and ecology. In this regard, xerophilous landscape movement has gradually become widespread nowadays and instead of common cultivated plants, the usage of natural plants has been increased in planting works. Opuntia ficus-indica from opuntia kind, is a plant of cactus (Cactaceae) family. In Turkish, some different names such as ‘‘frenk inciri, frenk yemişı, dikenli incir’’ or public saying ‘‘kaynanadili’’ are used. This plant can be seen in West and South Anatolia. As it is an edible fruit, it is a means of living for people. In this study, the using of Opuntia ficus-indica in the area of landscape architecture for ornamental purposes and application (aesthetic and functional properties) opportunities are evaluated.

KEYWORDS

Opuntia ficus, Landscape, Medicinal plant

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Poster Session 6

Submission ID: 860

A TOXICOLOGICAL INVESTIGATION OF GENETICALLY MODIFIED ORGANISMS

KEYSER YÜKSEL¹, GÜLDEN ZEHRA OMURTAG¹

ABSTRACT

Genetically modified organisms (GMO) has been a question of debate in science for years. Production of GMO's is increasing gradually. They take place in numerous fields of our lives and they benefit us, however they also have risks. Thus society approaches GMO's with suspicion. But the gene technology that takes place in various sectors from agriculture to health, is a new technology and it has been improving fast. Therefore there are not sufficient scientific data about the subject, such as; long term studies or human trials to prove those risks. Even so, it is an acknowledged necessity to approach this process with caution.

KEYWORDS

Foods, genetically modified organisms, toxicology

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Poster Session 6

Submission ID: 861

UTILIZATION OF ESSENTIAL OILS AS BIOPESTICIDES

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ABSTRACT

Essential oils are lipophilic and highly volatile secondary metabolites of plants. They are extracted from more than 17,000 aromatic plant species commonly belonging to angiospermic families Lamiaceae, Rutaceae, Myrtaceae, Zingiberaceae and Asteraceae. They have insecticidal, nematicidal, ovicidal, fungicidal and bactericidal effects against pathogens and pests owing to the active biochemical compounds. Mode of action of these effects is based on the ability to disrupt the cell wall and cytoplasmic membrane of bacteria and fungi, leading to lysis and leakage of intracellular. There is an increasing demand for alternative strategies to control of insect pests for avoiding the negative effects of the chemical control of pests. From this aspect, biopesticides is one of the best alternative strategies for eco-friendly and relatively safe pest management. Biopesticides are much more active to the targeted pests as opposed to synthetic pesticides that have harmful effects to birds, mammalian species and human. According to the Food and Agriculture Organization (FAO), about 1000 million metric tons of food is wasted each year because of mycotoxins produced by moulds during storage. *Boswellia carterii* essential oil is recommended for fumigation against these moulds and aflatoxin metabolites. "Active packaging" that is based on adding active compounds in the packaging material is one of the most promising innovations for food preservation. In this context, the use of citronella essential oil in a coating material for carton packages has been published in a study, recently.

KEYWORDS

essential oils, biopesticides, food preservation

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Poster Session 6

Submission ID: 862

CLINICAL STUDIES EXAMINING THE EFFECTS OF ALOE VERA IN SKIN CONDITIONS: A SYSTEMATIC REVIEW

ZEHRA GÖK METİN¹

ABSTRACT

Background: Aloe vera is a succulent from the Aloe family includes 400 different species, a tropical plant which is easily grown in hot and dry climates and widely distributed in Asia, Africa and other tropical areas. The use of Aloe vera is being promoted for a large variety of skin conditions. The aim of this systematic review was to summarize all skin oriented clinical studies on Aloe vera products in human subjects. Methods: Extensive literature search were carried out to identify all clinical studies published between 1991-2017 years on the subject. Data were extracted from PubMed, Medline, Google Scholar data bases a predefined standardized manner using Aloe vera, clinical trial, psoriasis, burn, skin condition, wound-healing research terms. All studies published in English were read by author and data were extracted in a standardized, predefined manner. Results: A total of thirty-seven studies met inclusion criteria. They were characterized by different study designs including double-blind placebo-controlled or double blind controlled (n=27), experimental (n=7) and case-reports (n=3). Total of 3001 patients participated in all studies. The mean age of participants was 42,2 years. The big majority of studies were performed in Asian countries (45.9%), USA (18.9), and European countries (18.9%). Duration of intervention varied between two days and nine months. Aloe vera applied orally or topically once, twice, third or four times throughout the day. Studies focused on dermatitis (n=10), wound-healing process (n=6), oral-mucosa related problems including stomatitis, radiotherapy-induced mucositis, and burning mouth syndrome (n=5), lichen planus (n=3), psoriasis (n=3), burn (n=3), dry skin (n=3) and other skin-conditions involved ultraviolet erythema test, acne vulgaris, scabies and sulfur mustard exposure (n=4). Dermatitis-related studies on topical administration of Aloe vera had contradictory findings whether Aloe vera was effective (n=5) or not (n=5). As for oral mucosa-related problems, studies (n=2) indicated that use of Aloe vera had superior impact on radiation-related mucositis rather than placebo and was as effective as placebo in remaining studies (n=3). Studies (n=3) conducted in oral-vulval Lichen Planus reported that Aloe vera gel reduced erosive and ulcerative lesions and assisted a complete clinical remission. Considering psoriasis studies, two of those found that placebo was more effective than Aloe vera, while one of them showed Aloe vera was superior that of placebo. Likely, wound-healing studies founded misleading findings including beneficial (n=4), harmful (n=1) or no effects (n=1). In addition, Aloe vera showed a significant effect on second-degree burn (n=1) or no superior effects than placebo in patients with sunburn or sun exposure (n=2). All studies (n=3) implied that Aloe vera was efficacious for dry-skin problem. Other skin-related studies (n=4) involving ultraviolet erythema test, acne vulgaris, scabies and sulfur mustard exposure problems stated promoting results including significant reductions in the frequency of pruritus, burning sensation, and inflammatory lesions scores. Moreover, almost all studies (89.1%) reported no side effects associated with use of Aloe vera. Conclusion: In conclusion, studies outcomes point that Aloe vera is an important aromatherapeutic plant is generally well tolerated,

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as no serious side effects were reported. However, small sample size, limited number of studies, and lack of knowledge on randomization procedures in included studies need to be considered. Results on the effectiveness of Aloe vera are contradictory; study analysis reveals the presence of methodological gaps preventing to reach final conclusions. Therefore, clinical effectiveness of oral and topical Aloe vera application is need to be evaluated using recent guidelines and well-designed clinical trials.

KEYWORDS

Aloe vera, medical herbal, skin, randomized trial, systematic review

Poster Session 6

Submission ID: 863

INVESTIGATION OF THE EFFECT OF DIFFERENT DRYING METHODS ON BIOACTIVITY AND BIOAVAILABILITY OF CHESTNUT POLLEN

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ABSTRACT

Pollen is a bioactive food with high nutritional value, which is gathered from flowers by honey bees. Although our country is a very rich country in terms of bee products, there is no standardization about bee products to put on market as qualified products in some countries. Due to high water content and nutritional value, pollen can be exposed to spoilage by microorganisms. Therefore, drying of pollen and preserving the bioactive compounds of pollen when it is dried is important. In this study, chestnut pollen obtained from a beekeeper in Duzce was dried using oven, vacuum and microwave dryers and the effect of drying processes on bioactive properties and bioavailability of chestnut pollen were investigated. To determine the bioactive properties of bee pollen; total phenolic content, total flavonoid content and total antioxidant capacity were performed. Total antioxidant capacity was carried out two different methods which were DPPH and CUPRAC methods. Total phenolic content and total flavonoid content were determined as spectrophotometrically. According to results of analyses, values of total phenolic content, total flavonoid content, antioxidant activity and bioavailability of fresh chestnut pollen were decreased after drying processes. The lowest value of total phenolic content was found with oven method and the lowest values of total flavonoid and antioxidant activity was found with microwave method. The bioavailability percentage of the fresh pollen IN fraction was determined to 8.27% for the total phenolic content. After drying this value was ranged from 2.05 to 3.32%. It was determined that the total flavonoid content was 1.64%, while it was 1.08 to 1.43% after drying. Total antioxidant activity decreased from 1.05% to 0.33-0.69%.

KEYWORDS

Bee pollen, Antioxidant, Phenolic, Flavonoid, Bioavailability

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Poster Session 6

Submission ID: 867

SPARTIUM JUNCEUM'UN FARKLI EKSTRAKLARININ ANTIOKSIDAN ETKİLERİ ÜZERİNE BİR ÇALIŞMA

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ABSTRACT

In this study, antioxidant abilities of different extracts (ethyl acetate, methanol and water) form *Spartium junceum* were investigated with spectrophotometric methods. Antioxidant capacity was evaluated using different assay including free radical scavenging (DPPH), reducing power (FRAP), phosphomolybdenum and β -carotene/linoleic acid test system. Total phenolic and flavonoid contents were also determined. Total phenolic and flavonoid contents in methanol extract was higher than other extracts. Also, DPPH scavenging activities were determined as 32.79% (in ethyl acetate), 77.68% (in methanol) and 73.65% (in water) at 1 mg/ml concentration. The best FRAP activity was observed in the methanol extract, followed by water and ethyl acetate extracts. In β -carotene/linoleic acid test system, the inhibition abilities of these extracts were ranked as water (90.86%), methanol (82.38%) and ethyl acetate (74.82%). From these results, *S. junceum* could be considered as potential candidate for designing new nutraceuticals or drugs.

KEYWORDS

Spartium, free radical scavenging, flavonoid, different solvents.

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Poster Session 6

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ASPHODELINE LIBURNICA KÖKLERİNİN METANOL EKSTRAKTININ ANTIOKSIDAN ÖZELLİKLERİ

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ABSTRACT

Asphodeline is one of the most important genera of family Xanthorrhoeaceae (the genus was recently classified under the family Liliaceae) and widely distributed in the Mediterranean region (mainly in the Middle-East countries). In Turkey this genus contains 20 taxa, 12 of which are endemic. The genus Asphodeline has medicinal importance and some Asphodeline members are traditionally used in different countries including Turkey. Antioxidant effects methanol extract form Asphodeline liburnica were investigated with spectrophotometric methods. Antioxidant capacity were evaluated using different assay including free radical scavenging (DPPH and ABTS), reducing power (FRAP and CUPRAC), phosphomolybdenum, and metal chelating. Total phenolic and flavonoid contents were also determined. Total phenolic and flavonoid contents of A. liburnica were determined as 9.67 mgGAE/g extract and 1.48 mgRE/g extract, respectively. Radical scavenging effects in ABTS and DPPH assays were found to be 66.99 mgTE/g extract and 13.23 mgTE/g extract. Also, the reducing power activities of the extract were moderate in CUPRAC (33.29 mgTE/g extract) and FRAP (33.81 mgTE/g extract). These findings suggest that the A. liburnica could serve as an important natural source of biologically active agents for using in food and pharmaceutical industry.

KEYWORDS

Asphodeline, free radical scavenging, phenolic, natural product.

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Poster Session 6

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ASPHODELINE LIBURNICA KÖK EKSTRAKTININ ALZHEIMER, DIYABET VE DERİ HASTALIKLARI İLE BAĞLANTILI ENZİM ÜZERİNE İNİHİTÖR ETKİLERİ

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ABSTRACT

Key enzyme inhibitory theory is the most popular for the management of global health problems including Alzheimer Disease, diabetes mellitus and skin disorders. For these purposes, enzyme inhibitory effects (cholinesterase, tyrosinase, α -amylase and α -glucosidase) of root methanolic extract form *Asphodeline liburnica* were investigated with spectrophotometric methods. The cholinesterase inhibitory activities were determined as 1.67 mgGALAE/g extract in AChE and 1.64 mgGALAE/g extract in BChE. Anti-tyrosinase effect was found to be 29.78 mgKAE/g extract. Anti-diabetic effects of the extract were determined 0.31 mmolACAE/g extract in amylase and 0.70 mmolACAE/g extract in glucosidase. The presented results suggest that the *A. liburnica* roots may be considered as valuable candidate for new nutraceutical, pharmaceutical or cosmeceuticals.

KEYWORDS

Enzyme inhibitory activities, cholinesterase, tyrosinase, amylase, glucosidase.

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Poster Session 6

Submission ID: 1844

AROMATHERAPY OILS USED FOR SYMPTOM MANAGEMENT IN RHEUMATIC DISEASES: A LITERATURE REVIEW

AFRA ÇALIK¹

ABSTRACT

Background and aim: Rheumatic diseases are characterized by inflammation that affects the connecting or supporting structures of the body most commonly the joints, but also sometimes the tendons, ligaments, bones, and muscles. Some rheumatic diseases even affect the organs^{1,2}. Patients with rheumatologic diseases seek to use complementary therapies due to the etiology of rheumatic diseases is not fully understood, lack of complete cure, chronic symptoms including pain and fatigue, decreased quality of life, and side effects related conventional therapies. Particularly, aromatherapy oils have gained popularity for alleviating rheumatic symptoms in recent years. This review was written to evaluate the specific effects of aromatherapy oils used for the management of symptoms in rheumatic disease. **METHOD:** Extensive literature search was conducted using PubMed database involving 1990 and 2017 years. Predefined standardized keywords including ankylosing spondylitis, Behcet disease, fibromyalgia, osteoarthritis, systemic lupus erythematosus and rheumatoid arthritis, Studies conducted in pediatric population were excluded. A total of 178 articles were found and finally 12 studies met inclusion criteria³⁻¹⁴. **RESULTS:** Studies had randomized controlled trials (RCTs) (n=10) and semi-experimental design (n=2). The big majority of studies conducted osteoarthritis (n=10), in patients with rheumatoid arthritis (n=1) and fibromyalgia (n=1). The total of 727 patients participated in the studies and the age of patients ranged from 29 to 40 years. Aloe vera (*Aloe Barbadensis*), black seed (*Nigella sativa*), castor oil (*Ricinus communis*), chamomile (*Matricaria chamomilla*), eucalyptus (*Eucalyptus globulus*), ginger (*Zingiber officinale*), lavender (*Lavandula angustifolia*), lemon (*Citrus lemon*), orange (*Citrus sinensis*), peganum (*Peganum harmala*), peppermint (*Mentha piperita*), rosemary (*Rosmarinus Officinalis*) mostly preferred aromatherapy oils. The intervention period varied between two and 12 weeks. Aromatherapy oils were applied orally, topically or with a compress. Specific symptoms including pain, fatigue, joint motion and quality of sleep were examined in the studies. ³⁻¹⁴. Brief Pain Inventory (BPI), Fullerton Advanced Balance Scale (FAB), Korean Sleep Scale, Modified Health Evaluation Questionnaire (MHEQ), Ontario and Mc. Master Universities Osteoarthritis Index (WOMAC), SF-36 Quality of Life Scale, Ritchie Articular Index (RAI) and Visual Analog Score (VAS) often used in data collection process³⁻¹⁴. Studies testing the effects of ginger oil (n=5), found a significant reduction in pain scores in the intervention group compared with the control group³⁻⁷. Another study examining the impact of lavender, ginger and chamomile aromatherapy oil blend reported a decrease in pain and fatigue scores and improved functional capacity^{8,9}. A semi-experimental study conducted in patients with rheumatoid arthritis, applying black seed topically revealed a significant reduction in disease activity scores of patients¹⁰. **CONCLUSIONS:** Considering the results of these clinical studies, aromatherapy oils have promising outcomes in pain, fatigue, inflammation parameters and capability of joint motion. However, small sample sizes and lack of information on randomization procedures need to be

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considered. Therefore, well-design RCTs testing the effectiveness of aromatherapy oils on specific symptoms including morning stiffness, low back pain, or depression are needed. References 1. Karadağ A. Romatizmal hastalıklarda alternatif tıp ve tamamlayıcı tedavi yöntemleri. Uzmanlık Tezi. Sivas: Cumhuriyet Üniversitesi Tıp Fakültesi, Fiziksel Tıp ve Rehabilitasyon Anabilim Dalı, 2012. 2. Güneş ŞD. Romatizmal hastalıkların tedavisinde sıklıkla kullanılan bitkiler ve bitkisel ürünler. Bitirme Tezi. Erciyes Üniversitesi Eczacılık Fakültesi, Farmakognozi Anabilim Dalı, 201. 3. Bliddal H, Rosetzsky A, Schlichting P, Weidner MS, Andersen LA, Ibfelt HH, Christensen K, Jensen ON, Barslev J. A randomized, placebo-controlled, cross-over study of ginger extracts and ibuprofen in osteoarthritis. *Osteoarthritis Cartilage*. 2000;8(1):9-12. 4. Yip YB, Tam AC. An experimental study on the effectiveness of massage with aromatic ginger and orange essential oil for moderate-to-severe knee pain among the elderly in Hong Kong. *Complement Ther Med* 2008;16(3):131-138. 5. Therkleson T. Topical ginger treatment with a compress or patch for osteoarthritis symptoms. *Journal of Holistic Nursing* 2014;32(3):173-172 6. Paramdeep G. Efficacy and tolerability of ginger (*Zingiber Officinale*) in patients of osteoarthritis of knee. *Indian J Physiol Pharmacol* 2013; 57(2) : 177–183. 7. Drozdov VN, Kim VA, Tkachenko EV, Varvanina GG. Influence of a specific ginger combination on gastropathy conditions in patients with osteoarthritis of the knee or Hip. *J Altern Complement Med*. 2012;18(6):583-588. 8. Kim IJ, Kim EK. Effects of aroma massage on pain, activities of daily living and fatigue in patients with knee osteoarthritis. *Journal of Muscle and Joint Health* 2009;16(2):145-153. 9. Nasiri A, Mahmodi MA, Nobakht Z. Effect of aromatherapy massage with lavender essential oil on pain in patients with osteoarthritis of the knee: A Randomized Controlled Clinical Trial. *Complementary Therapies in Clinical Practice* 2016;25: 75–80. 10. Gheita TA, Kenawy SA. Effectiveness of nigella sativa oil in the management of rheumatoid arthritis patients: A placebo controlled study. *Phytother Res*. 2012;26(8):1246-1248. 11. Shoara R, Hashempur MH, Ashraf A, Salehi A, Dehshahri S, Habibagahi Z. Efficacy and safety of topical matricaria chamomilla L. (Chamomile) oil for knee osteoarthritis: A randomized nontrolled clinical trial. *Osteoarthritis Cartilage*. 2000;8(1):9-12. 12. Abolhassanzadeh Z, Aflaki E, Yousefi G, Mohagheghzadeh A. Randomized clinical trial of peganum oil for knee osteoarthritis. *J Evid Based Complementary Altern Med* 2015;20(2):126-131. 13. Medhi B, Kishore K, Singh U, Seth SD. Comparative clinical trial of castor oil and diclofenac sodium in patients with osteoarthritis. *Phytother Res*. 2009;23(10): 1469-1473. 14. Rutledge DN, Jones CN. Effects of topical essential oil on exercise volume after a 12-week exercise program for women with fibromyalgia: A pilot study. *Journal Of Alternative And Complementary Medicine* 2007;13(10):1099-1106.

KEYWORDS

aromatherapy, herbal medicine, inflammation, rheumatology, symptom control

Poster Session 7

Submission ID: 130

ANALYSIS OF BAY (LAURUS NOBILIS) LEAF VOLATILE OIL BY GC/MS AND ITS USAGE IN COSMETIC APPLICATIONS

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ABSTRACT

Bay-tree (*Laurus nobilis*) is an evergreen tree specie unique to the Mediterranean region and has been extensively cultivated as an ornamental plant in many countries. Turkey is the leader bay leaf exporter of the World. The reason of great attention on the bay leaf as a medicinal and aromatic plant is the content of volatile oil in its leaves. Volatile oils have been used since ancient times in order to make people healthier, change their appearance, protect the body against possible damage by environment. Volatile oils are used in fragrances, skin products, hair care products and in general terms to give a pleasant fragrance to the products. These oils, also known as essential oil, etheric oil by people, can contain terpenic hydrocarbons and their oxygenated derivatives as well as organic acids, alcohols, phenols and ketones. Volatile oils are found in any organs of the plant as well as in organs such as secretory follicles, secretory pockets, secretory ducts or secretory cells according to the family. It has been concluded that the essential oils are formed by the hydrolysis of glycosides as well as asserted that its presence in protoplasm of the plant or formed by the decomposition of the resinous layer of the cell wall. Antioxidant, antimicrobial, analgesic and antiinflammatory properties of bay (*Laurus nobilis*) leaf volatile oil have been proven in previous studies. Previous studies have also reported the use of bay leaf volatile oil in the form of soap and anti-dandruff hair care preparations. In this study, the components of the obtained volatile oil were determined using Agilent 6890 GC (Gas Chromatography) and 5975 MS (Mass Spectrometry). 1,8-Cineole (46.16%), alpha-Terpinyl acetate (10.62%), alpha-Pinene (6.27%), Terpinen-4-ol (5.07%) and Sabinene (4.99%) were found to be the major compounds in volatile oil. The obtained volatile oil was used to prepare skin lotion. For this purpose, 6 g of lilac-flavored hazelnut oil and 6 g of bay leaf oil were added to 87 g of purified water. Then it was stirred with magnetic stirrer for 10 minutes. Finally, the formulation is completed by the addition of the homogenized polymer mixture. The rheological properties of the final product were determined after all treatments were finished.

KEYWORDS

Laurus nobilis, Volatile oil, 1,8-Cineol, Cosmetic

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Poster Session 7

Submission ID: 131

DETERMINATION OF PHENOLIC COMPOSITION OF *TILIA TOMENTOSA* FLOWERS USING UPLC-ESI-MS/MS

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ABSTRACT

As a result of bioactive components found in different parts of plant such as flowers, peel, leaf and increased interest in natural products, medicinal and aromatic plants have found application fields such as pharmaceutical, cosmetic and dye industries. Therefore, they have been subjected to numerous researches. Phenolic compounds, which are secondary metabolites of plants, are one of the main groups of compounds that provide antiallergic, antiarterogenic, antiinflammatory, antimicrobial, antioxidant, cardioprotective properties of medicinal and aromatic plants. These broad physiological effects that they possess lead researchers to examine the phenolic contents of plants. *Tilia tomentosa* Moench is one of 45 species belonging to Tiliaceae family, and the usage of flowers in traditional treatment methods is quite common. Researches on different parts of *T. tomentosa* showed that the plant possesses spasmolytic, diuretic and sedative effects due to its flavonoids, essential oil and mucilage components and has been used to treat disorders such as nervous tension, cough, flu, migraine. There are no studies on phenolic components of its parts such as leaves, flowers using UPLC-ESI-MS / MS, etc. until now. In this study, firstly, *T. tomentosa* flowers were extracted with hexane and volatile oil fractions were separated from the plant. Distilled water was added to the remaining flower part at 80 ° C and subjected to extraction for 15 minutes. The obtained extract was filtered and dried in a lyophilizer at -70 ° C. The residue was redissolved in a mixture of water:methanol (80:20). The solution was analyzed by UPLC-MS / MS (Waters Acquity Ultra Performance LC, Xevo TQ-S MS-MS) by passing through Macherey-Nagel Chromafil Xtra PTFE-20/25 0.20µm filters. According to the analysis results, 3,4-Dihydroxybenzoic acid (66.82 mg/kg), Myricetin (29.39 mg/kg), Rutin (21.42 mg/kg), Ferulic acid (12.33 mg/kg) ve 3,4-Dihydroxybenzaldehyde (10.38 mg/kg) were detected. *T. tomentosa* flowers have great potential to usage in industries such as food, medicine and cosmetic due to its rich content of phenolics.

KEYWORDS

Phenolic compounds, 3,4-Dihydroxybenzoic acid, Tilia tomentosa, UPLC-ESI-MS/MS

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Poster Session 7

Submission ID: 132

INVESTIGATION OF MYRTUS COMMUNIS LEAF ESSENTIAL OIL AND SEED FIXED OIL COMPOSITION USING GC-MSD

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ABSTRACT

Myrtus communis belongs to Myrtaceae family and it is a evergreen plant in the form of shrub. This plant which grows by itself along the Mediterranean region has been used for its medicinal and aromatic benefits since ancient times. It is called "hambeles", "mersin" or "murt" in various regions of Turkey. The essential oil of plant's leaves has very rich content and this essential oil is widely used in food, pharmaceutical and cosmetic industries. It has been determined in various studies that about 30 components constitute %90 of the myrtle leaf essential oil. However, the essential oil yield and composition varies according to ecological and geographical conditions. Some of the known biological activities of leaf essential oil include antioxidant activity and antimutagenic activity, antimicrobial activity, antibacterial activity and antifungal activity. There is few research on the seeds of plant but in some studies, it has been reported that the content of seed's fixed oil is rich in linoleic acid and shows antioxidant activity. In this study, the components of essential oil obtained by *M. communis* leaves using hydrodistillation and fixed oil obtained by its seeds using cold press method analyzed with GC-MSD. According to the analyse result, 1,8-Cineole (21.68%), Alpha-Pinene (18.02%), Linalol (14.12%), Alpha-Terpinyl Acetate (10.40%) and Myrtenol (8.59%) were detected as majör compounds in the myrtle leaf essential oil. In the content of fixed oil obtained by its seeds presences Linoleic acid (77.59%) as the major fatty acid. According to the analyse result toher fatty acids were determined as Palmitic acid (10.36%), Oleic acid (8.26%), Stearic acid (2.81%), Elaidic acid (0.91%), Eicosanoic acid (0.05%) and Myristic acid (0.03%).

KEYWORDS

Essential oil, Myrtus communis, 1,8-Cineole, GC-MSD

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Poster Session 7

Submission ID: 870

ASPHODELUS AESTIVUS KÖKLERİNİN FARKLI EKSTRAKLARININ INVITRO ANTIOKSIDAN AKTİVİTELERİ

ABDURRAHMAN AKTUMSEK¹, GOKHAN ZENGİN¹, SENGUL UYSAL¹

ABSTRACT

Asphodelus aestivus is mostly used in the treatment of hemorrhoids, nephritis, and burns in Turkey. The aim of the study was to test the antioxidant activity of *A. aestivus* extracts obtained by extraction with ethyl acetate, dichloromethane, methanol, and water. Antioxidant activity of these extracts was evaluated by different assays (including ABTS, DPPH, FRAP, CUPRAC, phosphomolybdenum and metal chelating activity). The higher level of total phenolic content was in the ethyl acetate and dichloromethane extracts. Generally, the ethyl acetate extract exhibited the best results in these assays. The highest free radical scavenging activity was observed in ethyl acetate extract in both ABTS (21.23 mgTE/g) and DPPH (9.12 mgTE/g). Our findings suggest that *A. aestivus* could be used as a biologically-active compounds for food and pharmaceutical purposes.

KEYWORDS

Asphodelus aestivus, antioxidant, phenolic content, Turkey.

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Poster Session 7

Submission ID: 871

**ASPHODELUS AESTIVUS KÖKLERİNİN FARKLI
EKSTRAKLARININ ANTI-KOLINESTERAZ, ANTI-TIROZİNAZ,
ANTI-AMİLAZ, ANTI-GLUKOZİDAR VE ANTI-LİPAZ
AKTİVİTELERİ**

ABDURRAHMAN AKTUMSEK¹, GOKHAN ZENGİN¹, SENGUL UYSAL¹

ABSTRACT

Asphodelus aestivus is known by different local names like çiriş otu and yabani pırasa in Turkey. In the present study, the various solvent extracts (ethyl acetate, dichloromethane, methanol and water) from *Asphodelus aestivus* were assessed for in vitro enzyme inhibitory activity against AChE, BChE, α -amylase, α -glucosidase and tyrosinase. The methanol extract exhibited the strongest AChE (1.91 mgGALAE/g extract) and BChE (2.07 mgGALAE/g extract) inhibitory activity. The anti-diabetic activity of *A. aestivus* was screened using α -amylase, and α -glucosidase inhibition assays. The ethyl acetate extract showed high α -amylase (0.75 mmolACAE/g) and α -glucosidase (2.97 mmolACAE/g) inhibitory activity. The dichloromethane extract had the highest lipase inhibitory activity (86.32 mgOE/g). *A. aestivus* could be effective as natural for treatment of various diseases like Alzheimer's disease, diabetes mellitus, and obesity.

KEYWORDS

Asphodelus aestivus, enzyme inhibitory activity, Turkey

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Poster Session 7

Submission ID: 873

LOTONONIS GENISTOIDES SOLVENT EKSTRATKLARININ ANTIOKSIDAN ÖZELLİKLERİ

ABDURRAHMAN AKTUMSEK¹, RAMAZAN CEYLAN¹, GOKHAN ZENGİN¹

ABSTRACT

Antioxidant effects of ethyl acetate, methanol, and aqueous extracts from *Lotononis genistoides* (Fabaceae) were investigated with spectrophotometric methods. Antioxidant capacity were evaluated by using different assay including free radical scavenging (DPPH and ABTS), reducing power (FRAP and CUPRAC), phosphomolybdenum, and metal chelating experiments. Total phenolic and flavonoid content was also determined as 30.40-53.94 mg GAEs/g and 29.53-51.15 mg REs/g, respectively. ABTS and DPPH free radical scavenging activities were ranged from 112.90 to 126.10 mgTE/g and 80.76 to 99.27 mgTE/g extract, respectively. The best reducing activity in CUPRAC and FRAP were observed in ethyl acetate and water extracts, respectively. The highest metal chelating ability were detected in ethyl acetate extract with 12.31 mgEDTAE/g extract, followed by methanol and water. This study supports the potential use of *L. genistoides* for designing new functional food formulations.

KEYWORDS

Lotononis genistoides, antioxidant properties, natural products.

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Poster Session 7

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LOTONONIS GENISTOIDES FARKLI SOLVENT EKSTRATLARININ NÖROPROTEKTİF, ANTI-DIABETIC VE DERİ HASTALIKLARI ÜZERİNE INVITRO BİR ÇALIŞMA

ABDURRAHMAN AKTUMSEK¹, RAMAZAN CEYLAN¹, GOKHAN ZENGİN¹

ABSTRACT

Enzyme inhibitory properties of water, methanol and ethyl acetate extracts from *Lotononis genistoides* (Fabaceae) were investigated by using colorimetric methods. Enzyme inhibitory effects were evaluated against cholinesterases, tyrosinase, α -amylase and α -glucosidase. The ethyl acetate (1.92 mgGALAE/g) and methanol (1.89 mgGALAE/g) extracts have the highest acetyl cholinesterase inhibitory effects as compared to water extract. The ethyl extract exhibited the strongest anti-tyrosinase effect with 13.51 mgKAE/g. α -amylase and α -glucosidase inhibition were found to be 0.11-1.51 and 11.26-28.14 mmol ACAEs/g. Our findings could provide an important contribution for *Lotononis genistoides* different solvent extracts potential uses in pharmaceutical and nutraceutical fields.

KEYWORDS

Lotononis genistoides, enzyme inhibitory potentials, natural products.

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Poster Session 7

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DORYCNIUM PENTAPYLLUM SUBSP. HAUSSKNECHTII'NIN FARKLI METOTLAR İLE ANTIOKSIDAN ÖZELLİKLERİNİN İNCELENMESİ

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ABSTRACT

The extraction yield and antioxidant properties of *Dorycnium pentapyllum* subsp. *haussknechtii* have been evaluated by use different extraction methods including maceration, soxhlet, and ultrasonication-assisted extraction. Antioxidant properties were performed by free radical scavenging activity (DPPH and ABTS), reducing power activity (FRAP and CUPRAC), metal chelating activity, and phosphomolybdenum assays. Compared with different extraction methods for the yields, the soxhlet extraction was more efficient than other methods. Total phenolic content was varied from 48.33 to 105.12 mgGAE/g. In free radical scavenging assays (ABTS and DPPH), the methanol extract exhibited more potent radical scavenging activity as compared to ethyl acetate and water extracts. The water extract showed highest metal chelating activity as compared to ethyl acetate and methanol extracts. This study demonstrated that *Dorycnium pentapyllum* subsp. *haussknechtii* can be use as a promising source in the fields of food and pharmaceutical.

KEYWORDS

Dorycnium pentapyllum subsp. *haussknechtii*, antioxidant, extraction methods

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Poster Session 7

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DIANTHUS CALOCEPHALUS 'UN ENZİM İNHİBİTÖR ÖZELLİKLERİ ÜZERİNE BİR ÇALIŞMA

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ABSTRACT

Dianthus genus is represented by 67 species in Turkey. Dianthus species are widely used for treating gastro-intestinal disorder, wound, and cough. This work aimed to evaluate the effects of three various solvents (ethyl acetate, methanol, and water) and three different extraction methods (maceration, soxhlet, and ultrasonication-assisted) on extraction yield, phytochemical profile and enzyme inhibitory activity of *Dianthus calozecephalus*. The inhibitory activities of extracts were tested against cholinesterase's (AChE and BChE), α -amylase, α -glucosidase and tyrosinase. The highest extract yields were obtained from soxhlet extraction method. In all extraction methods, methanol extract had the highest total phenolic and flavonoid content. The water extract demonstrated the lowest AChE inhibitory activity than ethyl acetate and methanol. The results showed that ethyl acetate extract exhibited the greatest tyrosinase and α -amylase inhibitory activity. *D. calozecephalus* can be used as natural sources in cosmetic and pharmaceutical industries.

KEYWORDS

Dianthus, extraction methods, enzyme inhibitory activity.

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Poster Session 7

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**BARSSIA SP. NOVA (ASCOMYCOTA, PEZIZALES); A NEW
HYPOGEOUS SPECIES TURKEY (OSMANIYE)**

HASAN HÜSEYİN DOĞAN¹, ŞABAN GÜNERİ²

ABSTRACT

Osmaniye situated in the East Mediterranean region of Turkey and in square C6 according to grid square system of Davis (Davis, 1965). Antakya in south Kahramanmaraş in north, Gaziantep in east and Adana in west of Osmaniye are located. Many studies on the fungal diversity of Turkey were investigated by different researchers (Sesli and Denchev, 2014). Recently, new fungal records for Turkey were determined with macrofungal studies (Allı et al. 2011; Güngör et al., 2013; Sesli and Helfer, 2013; Kaya, 2015). Thus, aforementioned these local studies show that it is necessary more research on fungal diversity of Turkey. The aim of this study is contribute to macrofungi of Turkey with a new fungal record.

KEYWORDS

Osmaniye situated in the East Mediterranean region of Turkey

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Poster Session 7

Submission ID: 878

THE EFFECTS OF LYCIUM BARBARUM (GOJI BERRY) POLYSACCHARIDES ON 17-B-ESTRADIOL SERUM LEVELS OF OVARIECTOMIZED FEMALE RATS

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ABSTRACT

The Effects of Lycium barbarum (Goji berry) Polysaccharides on 17- β -estradiol Serum Levels of Ovariectomized Female Rats Lycium barbarum (Kurt üzümü) Polisakkaritlerinin Ovarektomili Dişi Sıçanların Serum 17- β -Östradiol Seviyeleri Üzerine Olan Etkileri Bihter Gökçe BOZAT¹, Fatma PEHLİVAN KARAKAŞ^{1,2}, Hayriye ORALLAR³, Hamit COŞKUN⁴ 1Abant İzzet Baysal University, Department of Biology, Faculty of Science and Art, Bolu, Turkey 2Abant İzzet Baysal University, Department of Field Crops, Faculty of Agriculture and Natural Sciences, Bolu, Turkey 3Abant İzzet Baysal University, Department of Poultry Breeding, Faculty of Agriculture and Natural Sciences, Bolu, Turkey 4Abant İzzet Baysal University, Department of Psychology, Faculty of Science and Art, Bolu, Turkey Email: bozatgokce@gmail.com Abstract Menopause is a physiological and endocrinological process that lead to a diminish in circulating levels of the female sex steroids naturally or after surgery. During menopause, both diminish in 17-beta-estradiol (17- β ES) and the increment in follicle-stimulating hormone trigger several alterations in the body. Healthy women's reproductive life span is average 36 years, with an age range varying between 40 and 60 years. Although bilaterally surgical removal of ovaries has been applied for treatment in women with endometrial and ovarion cancer, but it has been applied for ovariectomy model in rodents. The ovariectomy has been used to clarify insufficiency of estrogen hormone and its metabolic results to rodents. Estrogens are steroid hormones found in three form (estrone, 17- β ES and estriol) in the women body, protect and regulate life of neurons and glial cell and regulation of brain functions. Goji berry belongs to genus Lycium of the family Solanaceae. The fruits used in herbal medicine and health food for thousands of years in China, Southeast Asia, Europe, and North America. Goji berry can lower blood lipid levels and promote fertility. Goji berries have carotenoids, zeaxanthin and polysaccharides. Especially, its polysaccharides importantly alleviated neuronal injury and obstructed lactate dehydrogenase release. Furthermore, it was also reported that Lycium barbarum polysaccharides (LBP) could prevent cognitive and memory deficits. Similarly, estrogen has protective roles in woman body, lock of the protective roles during the menopause causes trigger many of diseases such as behavioral, hormonal and cognitive disorders. For these similar protective roles of estrogen and LBP on brain functions, we investigated the effects of LBP on 17- β -ES serum level of ovariectomized female rats using ELISA test. Fifteen days after ovariectomy operations, rats were divided into four major groups: control (distile water, 3 mL/kg, oral gavage, per day), low dose of LBP (20 mg/kg, 3 mL/kg, oral gavage, per day), high dose of LBP (200 mg/kg, 3 mL/kg, p.o., per day), 17- β -ES (1 mg/kg, 3 mL/kg, oral gavage, per day) and two minor group within the each major group: sham (pseudo ovariectomized rat) and overiectomized (ovx) rat groups. The treatments were

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applied for 30 consecutive days and then serum sample of all rats were collected. 17- β ES analysis of the samples were performed by ELISA test. The findings of the experiment showed that distile water treated-sham operated group had higher serum level of 17- β -ES than distile water treated-ovx operated group ($p < 0.05$). This means that ovariectomy model caused decreasing 17- β ES serum level. Furthermore, the high dose LBP, low dose of LBP and 17- β ES applications showed a similar increase in 17- β ES serum levels of ovariectomized rats compared to control group (distile water treated) ($p < 0.05$). In conclusion, LBP treatments may be perform protective and regulator roles on the brain by increasing 17- β ES serum level. Keywords: Goji berry, Lycium barbarum polysaccharides, Ovariectomy, 17- β -estradiol, ELISA Acknowledgement: This work was supported by grants from the Abant Izzet Baysal University Research Foundation (Project No: 2016.10.07.956).

KEYWORDS

Goji berry, Lycium barbarum polysaccharides, Ovariectomy, 17- β -estradiol, ELISA

Poster Session 7

Submission ID: 883

USE OF SOME MEDICINAL AROMATIC PLANTS IN DAIRY PRODUCTS

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ABSTRACT

Turkey has an important place that geographical location, climate, plant diversity and flora with regard in trade of medical and aromatic plants. Today, about 50% of this plants, which are used in many areas including medicine, cosmetics, perfume, paint etc. industry, has been used in food sector. In food industry, it is offered as consumption of spices, herbal tea and food additives in terms of functionality. In recent years, with increasing demand for minimum treatment and natural additives products, the studies on the active ingredients in essential oils, which obtained from medicinal aromatic plants and their extracts, have also gained momentum. It has been found that these components both give flavor and prolong the shelf life of the foods by the antioxidative effect and bacteriostatic / fungustatic effect, which are prevented oxidative rancidity, and microbial spoilage. Nowadays, studies has been increased which benefit from antimicrobial compounds naturally found in spices instead of chemical and synthetic antimicrobial agents. In this regard when looking at the studies done, has been seen the most use of thyme, black cumin, pepper (pulbiber, isot), cumin, cinnamon like spices, extracts and oils that high antimicrobial and antioxidant capacities. In this review has been searched use of thyme, black cumin, pepper, cumin and cinnamon in dairy products and showing antimicrobial effects.

KEYWORDS

Spice, antimicrobial effect, dairy products

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Poster Session 7

Submission ID: 886

IN VITRO MICROPROPAGATION OF HYPERICUM PRUINATUM BOISS& BAL.

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ABSTRACT

Hypericum pruinatum Boiss & Bal. is a medicinal plant spread out in Blacksea region in Turkey. *Hypericum* species have medicinal properties such as antidepressant, antibacterial and antiviral and has been used traditionally for many years in the world. Secondary metabolite contents of the species are very rich and plant tissue culture applications represent a potential source of valuable bioactive compounds. The goal of the research was also to achieve high compact, friable callus production and regeneration of *H. pruinatum* by somatic embryogenesis or organogenesis. The seeds of *H. pruinatum* were collected from Amasya-Gümüşhacıköy district and incubated in a water solution containing 1.5 g /L GA for breaking dormancy. The seeds were surface sterilized and germinated on MS medium containing 0.005 mg/L GA and 0.6 % agar. Leaves, axillary buds, root and hypocotyledon explants were excised and cultured on MS medium supplemented with B5 vitamins. The compact and suitable callus production obtained on MS callus induction medium containing 2 mg/L 2,4-D using axillary buds. Axillary buds gave the best regeneration results in all media tested. The best adventitious shoot regeneration was also achieved on MS medium supplemented with B5 vitamins and 1mg/L BAP+0.5 mg/L NAA and 1mg/L BAP. The shoots were successfully rooted on MS medium containing 1.5 mg/L IBA and rooted plantlets were transferred to torf and perlite (1:1) mixture and acclimatized in greenhouse conditions with high survival ratio.

KEYWORDS

Hypericum pruinatum Boiss&Bal., in vitro, medicinal plant, axillary buds, micropropagation

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Poster Session 7

Submission ID: 888

CAULERPIN, A BISINDOLE ALKALOID, FROM CAULERPA SPP OFF THE TURKISH COASTLINE

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ABSTRACT

Caulerpa cylindracea and Caulerpa taxifolia are the most famous members of Genus Caulerpa because of their invasive properties. Although the number of publications on C. taxifolia is higher than that of C. cylindracea, the latter one has invaded more areas compared to C. taxifolia. Turkey is one of the countries where C. cylindracea has invaded. No eradication method has been proposed for these species, therefore the biotechnological evaluation methods are of great importance. Recent studies show medicinal importance of secondary metabolites of Caulerpa genus. One of the secondary metabolites is bisindole based caulerpin. Anticancerogen effect has been recently attributed to caulerpin. Therefore, the monitoring of caulerpin within invasive and non-invasive species is important for their biotechnological evaluation. In this study, the levels of caulerpin were analysed in the C. cylindracea and C. prolifera collected off the İzmir coastlines (Turkey). Since there is no authentic caulerpin standard available in market, caulerpin was first isolated from C. cylindracea and then characterized by means of chromatographic techniques. According to the results, the levels of caulerpin in C. cylindracea are significantly higher than that of non-invasive C. prolifera. In conclusion, the conditions related to biotechnological production of caulerpin from invasive C. cylindracea are strongly recommended.

KEYWORDS

Caulerpa cylindracea, Caulerpa prolifera, Caulerpin, invasive species.

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Poster Session 7

Submission ID: 890

DENİZLİ DE TRUFFLE MUSHROOMS

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ABSTRACT

ABSTRACT Truffle mushroom known as black diamond in the world has come to the agenda of Turkey widely in Denizli city. Denizli Forest Regional Directorate has determined which tuff mushroom species are in our records. *Tuber aestivum* (summer truffle) is usually found widespread in fungus flora of Denizli. The trees with truffle mushroom were controlled its productivity taking under protection. Our staffs were informed about truffle by Truffle experts from the USA and European Union. Sapling infected with mycorrhizae of *Tuber melanosporum* (winter truffle) was planted for the purpose of the experiment. When detected that Turkey was rich in the direction of truffle, a species action plan comprising 2014-2018 years was prepared by General Directorate. Sapling infected with mycorrhizae of *Tuber melanosporum* (winter truffle) was planted for the purpose of the experiment. Oak seedlings infected with truffle mycorrhizae were produced by Seedlings Directorate in Regional Directorate. For this purpose, a special greenhouse was build and taken equipment. The necessary seedlings will be provided here for erection of artificial truffle forests that will be generated in constitution of species action plan of Forest General Directorate.

KEYWORDS

Tuber aestivum, *Tuber melanosporum*, *mycorrhiza*

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Poster Session 7

Submission ID: 892

USE OF PROBIOTICS AND PREBIOTICS IN CHRONIC KIDNEY DISEASE

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ABSTRACT

Chronic kidney disease is defined as decrease in glomerular filtration rate that would cause significant changes in kidney function. Uremic syndrome is a clinical manifestation of severe renal insufficiency and is intoxication affecting many systems. In healthy individuals, uremic toxins are cleared by the kidneys, but these toxins cause to uremic syndrome by accumulating in individuals with renal insufficiency. In uremic syndrome, toxins such as phenols and indole are formed throughout the gastrointestinal tract and impaired intestinal microbiota has an important role in their production. Potential use of intestinal microbiota-regulating treatments such as probiotics has emerged as an attractive strategy to reduce uremic toxins. Experimental and clinical data have strengthened the hypothesis that probiotics have a therapeutic role in the protection of the gastrointestinal tract, the progression of chronic kidney disease, and the reduction of uremic toxin formation. It is believed that probiotics make this effect by blocking the passage of pathogens through the mucosa and reducing intestinal permeability. Prebiotics, which are indigestible nutrients, have a positive effect because they stimulate the activity and development of bacteria in the colon. Nutritional resources of probiotics and prebiotics usually contain high levels of sodium, potassium, phosphorus and sugar. For this reason, patients with renal insufficiency have difficulty in taking probiotic and prebiotics with nutritional resources, and supplementation is an alternative. Individuals have different microbiota diversity. For this reason, increase in strain type of supplementation suggests that it increases the positive effect. Personal biota analysis together with evolving technology can be an important guide for supplementation.

KEYWORDS

Chronic kidney disease, probiotic, prebiotic

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Poster Session 7

Submission ID: 893

USEFUL PLANTS USED AS HERBAL TEA IN TOSYA (KASTAMONU) DISTRICT

GAMZE TUTTU¹, GÖKHAN ABAY², ŞINASI YILDIRIMLI³

ABSTRACT

Introduction: The relationship between man and plants is as old as human history. Some plants have been used as food sources and some of them in the treatment of diseases. In the course of time, humans learned to identify plants in the nature, benefit from them and developed different forms of usage. One of the common usage forms is to brew the tea. To prepare a drink, the plant parts (leaves, fruits, barks, branch etc.) are brewing (pouring boiling water on the plant and waiting for 5 min-infusion) or boiling (putting the plant in cold water for half an hour by boiling-decoction). This drink is generally named tea. Also, tea has special names according to the prepared herbs (linden tea, sage tea, lemon balm tea etc.). In our country, tea is often consumed as food or in order to benefit from its medicinal properties (to increase body resistance and the treatment of diseases). The aim of this study is to determine the plants used as herbal tea in Tosya district and to present usage purposes. **Material and Methods:** The plants specimens were collected from Tosya district, Kastamonu province, in 2014-2016 within the fieldwork of the doctoral program. The specimens were identified by using 'Flora of Turkey and the East Aegean Islands'. Interviews were carried out with local people in Tosya center and villages to determine the ethnobotanical usages of plants. Also we went to Tosya Bazaar to get information about plant usages from sellers and villagers. In addition, a survey about 'edible plants' and 'medicinal plants' was applied to 217 people. This study includes, plants used as herbal tea and their usage purposes is presented. **Results:** In this study, as a result of the interviews and surveys 48 taxa were determined used as herbal tea in Tosya. One of them is food, 34 are medical and 13 are both food and medical purposes. Most of the plants (25 taxa) used to prepare herbal tea are collected from nature and some of them are cultivated (16 taxa). However some plants which are not growing in Tosya (7 taxa) are taken from the bazaar. Some of the diseases commonly treated with herbal tea are: cold, cough, flu, stomach diseases, indigestion, rheumatism, urethritis, diabetes and cancer. **Acknowledgement:** We thank to Çankırı Karatekin University scientific research projects unit (BAP-project no: of12035d02), for the support provided for this project.

KEYWORDS

Herbal tea, Ethnobotany, Useful plants, Tosya, Turkey

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Poster Session 7

Submission ID: 894

EVALUATION OF ANTIOXIDANT AND ANTICHOLINESTERASE ACTIVITIES OF IRIS XANTHOSPURIA EXTRACTS GROWING IN KÖYCEĞİZ REGION

MEHMET ALI ÖZLER¹, YUSUF SICAĞ², MEHMET ÖZTÜRK¹, MEHMET EMİN DURU¹

ABSTRACT

The effect of oxidation on human health has been widely recognized. Oxidative metabolism is compulsory for the survival of cells. An antioxidant may be defined as a substance that significantly delays or inhibits the oxidation of a substrate even at low concentrations when compared with oxidizable. Antioxidants play an important role in the prevention and cure of various of chronic diseases such as cancer, cardiovascular, atherosclerosis, stroke, diabetes, and Alzheimer's diseases. The study was aimed to determine antioxidant and anticholinesterase activities of various extracts; namely, n-hexane, dichloromethane, ethyl acetate and n-butanol obtained from rhizome and stem of *Iris xanthosporia*. The in vitro antioxidant activity were performed by four complementary assays, namely, ABTS cation radical scavenging, β -carotene-linoleic acid, CUPRAC and DPPH free radical scavenging methods, while anticholinesterase activity performed according to Ellman method in which acetylcholinesterase and butyrylcholinesterase were used as enzymes. The ethyl acetate extract of rhizome and stem showed the highest antioxidant capacity and anticholinesterase activity. The results for both activities were close to those of standards. Compounds present in this plant are good candidates for isolation and commercial use as antioxidants and anticholinesterase agents.

KEYWORDS

Iris xanthosporia, antioxidant activity, anticholinesterase activity

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Poster Session 7

Submission ID: 895

AN ASSESSMENT OF NON-WOOD FOREST PRODUCTS IN TURKEY

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ABSTRACT

Forest resources produce a variety of benefits such as direct use values, indirect use values, option values and existence or non-use values. Wood has been the most recognized economic product form while Non-Wood Forest Products (NWFPs) have been labelled as minor forest products. The term NWFPs encompasses all biological materials other than wood, and may include foods, medicines, spices, essential oils, resins, gums, tannins, dyes, ornamental plants, water and wildlife. Turkey has a spectacular geography with its natural passageway between Asia and Europe, and is at the junction of Mediterranean, Irano-Turanian, and Euro-Siberian phytogeographic regions, besides being under the influence of Mediterranean, continental, oceanic climates. These unique properties put Turkey among the richest countries with regard to biodiversity that covering diverse flora and fauna values. That is why Turkey has great potential in NWFPs. This study sought to introduced NWFPs important in Turkey and to reveal the economic value of NWFPs in the national market and to determine both the difficulties in managing of NWFPs and the policies, strategies and regulations that govern, and finally, various deliberations and suggestions have been made on the axis of sustainable development of that resources.

KEYWORDS

Non-Wood Forest Products (NWFPs), Trade, Sustainability, Turkey,

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Poster Session 7

Submission ID: 896

A ETHNOBOTANICAL RESEARCH ON WILD FRUITS OF BİNGÖL

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ABSTRACT

This study carried out between May 2012 and September 2014 proposed to identify wild fruits and the diverse ways they are used by the local populations of Bingöl. During this period, 56 vascular plant specimens were collected. The plants were pressed in the field and prepared for identification. A total of 22 wild fruit plants belonging to different families were identified in the region. In the research area, local people were found to use wild fruits for food and for curative purposes. These plants are used in the treatment of many diseases. By drying infusions or decoctions of these plants, local people use them during the whole seasons of the year. Most commonly used plants genus are Crataegus, Rosa, Rubus and Pyrus.

KEYWORDS

Etnobotany, Traditional medicine, Food plants, Wild fruits, Bingöl.

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Poster Session 7

Submission ID: 897

CEREALS AND ANTHOCYANINS

ÇAĞLA KAYIŞOĞLU¹, MÜNİR ANIL¹

ABSTRACT

Cereals and Anthocyanins Çağla KAYIŞOĞLU, Münir ANIL Ondokuz Mayıs University Engineering Faculty Food Engineering Department, Samsun The anthocyanins compose a group of intensely coloured pigments responsible for the orange, red, purple and blue colours of many fruits, vegetables, flowers, leaves, roots and other storage organisms of plants. They are found in nature in the form of polyhydroxylated and or methoxylated heterosides which derive from the flavylum ion or 2-phenylbenzopyrilium. The de-glycosylated or aglycone forms of anthocyanins are known as anthocyanidins. Aglycon (anthocyanidin) is found united to one or various sugars, which, in turn, can be acylated with different organic acids. The presence of these hydroxyl groups on the rings, as well as one or several sugar molecules, make these compounds quite soluble in water, ethanol, and methanol. Anthocyanin stability increases with the number of methoxyls in the B ring and decreases as hydroxyls increase. Thus, among the most common anthocyanidins, the most stable is malvidin, followed by peonidin, petunidin, cyanidin and delphinidin. The differences between anthocyanins relate to the number of hydroxyl groups, the nature and number of sugars attached to the molecule, the position of this attachment, and the nature and number of aliphatic or aromatic acids attached to sugars in the molecule. Anthocyanins occur naturally in fruits and vegetables as glycosides, having glucose, galactose, rhamnose, xylose or arabinose attached to an aglycon nucleus. Purple corn is a special cultivar of corn that is rich in anthocyanins and other functional phytochemicals. The health benefits of anthocyanins in purple corn have been attributed to their high antioxidant activities and to other mechanisms, such as the presence of components that have been shown to potentially reduce the risk of colon cancer by inhibiting the proliferation of human colon cancer cells in vitro. The anthocyanins of purple corn have been characterized and these include cyanidin-3-glucoside, cyanidin-3-(6"-malonylglucoside), cyanidin-3-(3", 6"-dimalonylglucoside), pelargonidin-3-glucoside, peonidin-3-glucoside and their malonated counterparts as the major anthocyanins. Although widely consumed as white rice, there are many special cultivars of rice that contain colour pigments, such as black rice, red rice and brown rice. Their name refer to the kernel colour (black, red or purple) which is formed by deposits of anthocyanins in different layers of the pericarp, seed coat and aleurone. The most abundant colored rice anthocyanins are cyanidin 3-glucoside and peonidin 3-glucoside with cyanidin 3-glucoside levels being significantly higher than peonidin 3-glucoside. The functional properties of the extracts from black rice have been widely studied using in vivo and in vitro models. Because of their high antioxidant activity, they can protect endothelial cells prevent heart and cardiovascular diseases and act as anticancer agents. Whole wheat grain is a good source of dietary fiber and antioxidants which can promote health benefits towards several chronic diseases usually associated with oxidative stress. Although most of the cultivated cultivars are white or red-grained, some varieties such as purple and blue wheat grains have drawn the attention of researchers and food industry due to their high content in anthocyanin pigments and to their antioxidant properties. Color in wheat grains is

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localized in the bran layers. The red color is due to the presence of major catechin-tannin and minor anthocyanins in the diploid testa of seed coat. The purple color is due to anthocyanins and in the diploid pericarp layer. Blue color is due to anthocyanins in the aleurone layer. Anthocyanins in purple wheat; delphinidin 3-galaktosid, delphinidin 3-arabinosid, siyanidin 3-arabinoz, petunidin 3-galaktosid, siyanidin 3-glukozid, peonidin 3-glukosid, malvidin 3-glukosid 3-galaktosid, pelargonidin 3-arabinosid ve peonidin 3-arabinosid, malvidin 3-glukosid, siyanidin. Siyanidin 3-glikosid was also the most abundant anthocyanin in purple wheat; however, this was followed by siyanidin 3-galaktosid and malvidin 3-glikosid. Blue wheat, reported the most abundant anthocyanin to be delphinidin-3-glucoside followed by delphinidin-3-rutinoside, accounting for %37 and %32 of the total anthocyanin content, respectively. Cyanidin-3-glucoside and peonidin-3-glucoside have also been detected in purple wheat reported that cyanidin-3-glucoside was the principal anthocyanin in aleurone blue wheat with pelargonidin 3-glucoside and cyanidin-3-galactacide also being present. In barley, delphinidin 3-glucoside, delphinidin 3-rutinoside, cyanidin 3-glucoside, petunidin 3-glucoside, and cyanidin chloride were positively identified with delphinidin 3-glucoside and cyanidin 3-glucoside being high in yellow and purple barley, respectively.

KEYWORDS

anthocyanin, wheat, corn, rice, barley

Poster Session 7

Submission ID: 899

A REVIEW OF DIETARY TOTAL ANTIOXIDANT CAPACITY AND CORONARY ARTERY DİEASE

NESLIHAN ARSLAN¹, GAMZE AKBULUT¹, NILÜFER ACAR TEK¹, GÜLSÜM DEVECİ¹

ABSTRACT

The relationship between diet and health have been an important issue. The roles of dietary antioxidants and health also have been of particular interest. Compounds in fruits and vegetables are bioactive and they interact with each other. These compounds are antioxidants. The Institute on Medicine has defined a dietary antioxidant as “a substance in foods that significantly decreases the adverse effects of reactive species (oxygen and nitrogen species) on normal physiological function in humans. Reactive oxygen species can form as a result of metabolic and physiological processes and as oxidative reactions in the organism. The organism can prevent these reactive oxygen species with enzymatic and non-enzymatic antioxidative mechanisms. Under some circumstances, the increase of oxidants and the decrease of antioxidants may not be prevented and the oxidative/antioxidative balance may shift towards the oxidative state. As a result, oxidative stress is responsible for more than 100% of the disease. Antioxidant molecules prevent oxidative reactions that occur in the organism. The total antioxidant capacity (TAC) aims to measure the free radical-reducing capacity of all antioxidants in the diet and takes into account synergistic effects between substances. Measuring the “total antioxidant capacity of the diet” is a challenge and different alternatives have been explored which show similar ranking of foods according to their antioxidant capacity. Concentrations of different antioxidants in serum can be measured separately in the laboratory environment. But these measurements are both time consuming, expensive and complicated. Since individual measurements of different antioxidant molecules are impractical and the effects of these antioxidants are synergistic, an antioxidant response is measured, and this is named Total Antioxidant Capacity (TAC). Dietary intake of antioxidants has been reported to reduce the risk of many metabolic diseases. However, it is not clear which antioxidant is more effective in reducing this risk, but there are also studies showing the ineffectiveness or adverse effect of using a single antioxidant. Total antioxidant capacity reflects all antioxidants in the diet and synergistic effects of these antioxidants. Dietary total antioxidant capacity and serum antioxidant capacity were found to be inversely related to coronary artery disease according to the data obtained from epidemiological studies. At the same time the antioxidant capacity of serum is related with coronary artery disease. The purpose of this review is to demonstrate the relationship between dietary and serum total antioxidant capacity and coronary artery disease. In a study of 53 coronary artery 42 healthy control groups, serum TAC levels in the patient group were significantly lower than in the healthy control group ($p < 0.001$). TAC levels were significantly lower in diabetic, smokers, hyperlipidemic and obese subjects compared to those who did not include these factors [13]. In the study with individuals with coronary angiography abnormalities who admitted to the hospital with 42 myocardial infarction under the age of 35, the TAC level was significantly higher in the control group. TOS level was significantly higher in the patient group. The disease showed a positive correlation with severity and TOS. As a result, increasing the total antioxidant capacity of the

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diet in individuals with a high risk of coronary artery disease is an important effect in preventing disease formation.

KEYWORDS

dietary antioxidant capacity, coronary artery disease, antioxidants

Poster Session 7

Submission ID: 900

DETERMINATION OF APPROPRIATE AREAS AND DESIGN PROPOSALS FOR HEALING GARDENS IN TOKAT

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ABSTRACT

In recent years, research on the psychological impact of the structural environment on human health has come to the fore in the world public, resulting in the emergence of the 'healthcare design and quality of life' approach. Healing garden designers have positive effects on users by creating spaces with natural and artificial elements. Created spaces ensure that people are physically and mentally healthy. Recently, in Tokat, projects related to the importance of medicinal aromatic plants as well as their development have been carried out. However, the design of healing gardens is a fairly new topic today and there is no public healing garden in Tokat. The purpose of this research was to determine the appropriate areas for the healing gardens in Tokat in the light of the available research and to explain the design principles and benefits for visitors. In conclusion, this study was described the role of the history of the region and plant diversity in planning in the design of healing garden.

KEYWORDS

Healing garden, Landscape design, Tokat

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Poster Session 7

Submission ID: 901

DETERMINATION OF ANTIBACTERIAL ACTIVITIES OF DIFFERENT PLANT SPECIES BELONGING TO ASTERACEAE FAMILY

DUDU DUYGU KILIÇ¹, ARIF AYAR¹, CEREN YAVUZ¹, TUBA YILDIRIM¹

ABSTRACT

The use of herbs as alternative medicine have increased dramatically in the last years. In recent years, due to the harmful effects of chemical drugs are frequently observed antimutagenic, antioxidant, antibacterial and antifungal properties of extracts which derived from plants and they have been used in medicine. In this study, aim was investigate the antibacterial activities of some plant species belonging to Asteraceae family which distributed to different ecological conditions in Amasya. The antibacterial activities of *Anthemis tinctoria*, *Matricaria chamomilla* and *Achillea biebersteinii* plant extracts which belonging to Asteraceae family from Amasya region were determined by disc diffusion and microdilution method. The methanolic extracts of these plants were prepared with Soxhlet extractor. The antibacterial activities of plant extracts were tested against standard strains of *Staphylococcus aureus* ATCC 25923, *Escherichia coli* ATCC 35218, *Klebsiella pneumoniae* ATCC 70600, *Pseudomonas aeruginosa* ATCC 27853 and *Salmonella enteritidis* ATCC 13076. As a result of this study, it was observed that plant extracts had antibacterial effects when they compared with control group antibiotics According to the results of disk diffusion method, the highest antibacterial effect was identified *Anthemis tinctoria*, *Matricaria chamomilla* and *Achillea biebersteinii* respectively. The microdilution method was studied concentration range from 6.25 - to 50 mg/ml. The minimum inhibition concentration (MIC) of the most effective *Anthemis tinctoria* plant extract were 12.5 mg/ml for *Klebsiella pneumoniae* and *Pseudomonas aeruginosa*; 25 mg/ml for *Staphylococcus aureus* and *Escherichia coli*; 25 mg/ml for *Salmonella enteritidis*. The MICs of the most effective *Matricaria chamomilla* plant extract were 25 mg/ml for *Klebsiella pneumoniae*, *Escherichia coli*, *Salmonella enteritidis* and *Pseudomonas aeruginosa*; 50 mg/ml for *Staphylococcus aureus*. The MICs of the most effective *Achillea biebersteinii* plant extract were 25 mg/ml for *Klebsiella pneumoniae*; \geq 50 mg/ml for *Escherichia coli* and *Pseudomonas aeruginosa*; 12.5 mg/ml for *Staphylococcus aureus*; 50 mg/ml for *Salmonella enteritidis*. As a result, We determined *Anthemis tinctoria*, *Matricaria chamomilla* and *Achillea biebersteinii* plant extracts which are belonging to Asteraceae family have properties of bacterial inhibition. In this context, it can be considered that these plant species are used as an alternative treatments and can lead to later studies.

KEYWORDS

Asteraceae, *Disc diffusion*, *Microdilution*

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Poster Session 7

Submission ID: 902

TYROSINASE INHIBITORY ACTIVITIES OF IRIS XANTHOSPURIA EXTRACTS

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ABSTRACT

Tyrosinase inhibitors inhibit the production of melanin in the derm. Up to date, many natural compounds have been screened for their tyrosinase inhibitory potential, and they were compared to those of synthetic tyrosinase inhibitors. The tyrosinase inhibitors such as arbutin, kojic acid, and hydroquinones are used as whitening and anti-hyperpigmentation agents. In this context, there is a need for new tyrosinase inhibitors without the side effects. The study was aimed to determine tyrosinase inhibition activities of various extracts obtained using n-hexane, dichloromethane, ethyl acetate and n-butanol solvents from rhizome and stem of *Iris xanthosporia*. In this study, it can be concluded that the ethyl acetate extracts of *I. xanthosporia* rhizome can be a potential candidate for the inhibition of tyrosinase enzyme.

KEYWORDS

Iris xanthosporia, Tyrosinase inhibition activity

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Poster Session 7

Submission ID: 903

SPIRULINA AND ITS HEALTH EFFECTS

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ABSTRACT

The dried state of *Arthrospira platensis*, an oxygenic photosynthetic bacteria found in sea water, is called Spirulina. The name Spirulina comes from the spiral filaments of *Arthrospira platensis*. Spirulina naturally grows in alkaline lakes and seas and is commercially produced under controlled conditions in the greenhouse. Because it has not cellulose and cell walls, it is readily digested. In this review, spirulina's effects on health such as antioxidant, antidiabetic, antihypertensive, antiinflammatory are discussed. THE CONTENT OF SPIRULINA 60-70% of the dry weight is composed of protein. It contains all essential amino acids ; gamma-linolenic acid, alpha-linolenic acid, linoleic acid, EPA, DHA, stearidonic acid and arachidonic acid. It contains vitamin B1, B2, B3, B6, B9, C,A and E and minerals such as calcium, potassium, chromium, copper, manganese, iron, phosphorus, magnesium, and selenium. EFFECTS ON HEALTH ANTIOXIDANT EFFECT The antioxidant effect of spirulina has been demonstrated by in vitro and in vivo studies. This antioxidant effect is known to be caused by phycocyanins, B-carotene and other vitamins and minerals contained in the content. In a study conducted in hypercholesterolemic rats, 1-5 g / kg spirulina is administered for 8 weeks. Ultimately, it has been shown to increase glutathione, glutathione peroxidase and glutathione reductase activity in the liver. The DNA degradation in lymphocytes is significantly reduced. ANTIDIABETIC EFFECT In a study of diabetics, SP administration reduced plasma fasting glucose level significantly. Fluid uptake was significantly lower in the SP group than in the 2 diabetic groups. The possible mechanism of SP is suggested to stimulate pancreatic beta cells, either to increase insulin release or to help transport blood glucose to peripheral tissues. NUTRITION STATUS A study in which 87 malnourished children aged 0-5 years were given 3 grams of spirulina for 12 weeks showed significantly better height and body weight when compared to the vitamin and mineral treated group. It is also more effective than vitamin-mineral treated group at ferritin and iron levels. TOXICITY There is no information yet on the toxicity of spirulina. However, it is said that potentially toxic materials such as heavy metals can be found in the water. It has also been reported that pesticides may contain cyanobacterial toxins. That is why Spirulina should be acquired from trusted sources. Spirulina usually works at 1-10 g/day doses. Doses recommended for adults are 3-10 g/day. The Dietary Supplements Information Expert Committee (DSI-EC) has shown that spirulina does not constitute a class of health hazard. However, it is still unclear whether it interacts with other medicines. Headache, stomachache, muscle pain and concentration problems have been reported in some cases. It is also not recommended for use in patients with phenylketonuria, autoimmune diseases and ALS . Spirulina is generally recognized as safe (GRAS list). In 2012, it was found safe to use both spirulina and extract as a coloring agent. The dose with no observable side effects (NOAEL) was determined to be 10.00 mg/ kg. The safe dose was 4,12 mg/kg according to the information obtained from human studies. CONCLUSIONS AND RECOMMENDATIONS Human studies done up to daylight are rather limited. More case-control studies are needed. Given its composition, spirulina is

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said to be a rich source of protein, vitamins, minerals and phytochemicals. The use of this source in poor and malnutrition-fighting countries is being debated. In order to be cheap and accessible, studies on the use of spirulina for this purpose should be undertaken.

KEYWORDS

Spirulina, Arthrospira platensis, Nutrition

Poster Session 7

Submission ID: 904

ANTIBACTERIAL EFFECTS OF METHANOL EXTRACTS OF SOME PLANT SPECIES BELONGING TO LAMIACEAE FAMILY

DUDU DUYGU KILIÇ¹, ARIF AYAR¹, CEREN YAVUZ¹, TUBA YILDIRIM¹

ABSTRACT

The effects of medicinal and aromatic plants have been known since ancient times and these plants are widely used in the treatment of diseases. Especially the species belonging to Lamiaceae family are used as antibacterial agent among medical plants. The aim of the present study was to determinated the antibacterial effects of the methanolic extracts of some plant species belonging Lamiaceae family which distributed to different ecological conditions in Amasya. The antibacterial effects of *Stachys annua*, *Scutellaria salviifolia* and *Nepata nuda* plant extracts was determined by disc diffusion and microdilution methods. The methanolic extracts of these plants were prepared with Soxhlet extractor. The antibacterial effects of plant extracts were tested against standard strains of *Staphylococcus aureus* ATCC 25923, *Escherichia coli* ATCC 35218, *Klebsiella pneumoniae* ATCC 70600, *Pseudomonas aeruginosa* ATCC 27853 and *Salmonella enteritidis* ATCC 13076. In this study, we observed that plant extracts had antibacterial effect when they compared with control group antibiotics. According to the results of disk diffusion method, the highest antibacterial effect was identified *Scutellaria salviifolia*, *Stachys annua* and *Nepata nuda* respectively. The microdilution method was studied concentration range from 6.25 - to 50 mg/ml. The minimum inhibition concentrations (MIC) of the most effective *Scutellaria salviifolia* plant extract were 12.5 mg/ml for *Staphylococcus aureus*, *Salmonella enteritidis* and *Escherichia coli*; 25 mg/ml for *Klebsiella pneumoniae* and *Pseudomonas aeruginosa*. The MICs of *Stachys annua* plant extract were 12.5 mg/ml for *Pseudomonas aeruginosa*, *Salmonella enteritidis* and *Escherichia coli*; 25 mg/ml for *Staphylococcus aureus*; 50 mg/ml for *Klebsiella pneumoniae*. MICs of *Nepata nuda* plant extract were 12.5 mg/ml *Klebsiella pneumoniae*; 25 mg/ml for *Staphylococcus aureus*; 50 mg/ml for *Pseudomonas aeruginosa*, *Salmonella enteritidis* and *Escherichia coli*. As a result, Our study it was determined that *Scutellaria salviifolia*, *Stachys annua* and *Nepata nuda* species belonging to the Lamiaceae family have antibacterial activities in vitro conditions. After investigating toxicological and pharmacological properties, we think that it may be the subject of use in medicine, food, cosmetics and other industrial fields.

KEYWORDS

Lamiaceae, Disc diffusion, Microdilution

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Poster Session 7

Submission ID: 906

ANTIOXIDANT PROPERTIES OF SOME NON-WOOD FOREST PRODUCTS AT DIFFERENT TEMPERATURES

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ABSTRACT

Some non-wood forest products are brewed and consumed as tea. Among the reasons for the consumption of herbal tea, digestive problems are located in the first row. Antioxidants help to human body for arranging digestive and immune system. Herbal tea is brewed in various ways such as boiling at different durations or waiting in hot water at different temperatures etc. Type of brewing can affect to bioactive properties of herbal tea. In this study, it was investigated the bioactive properties (total phenolic content, total flavonoid content, condensed tannin content and antioxidant properties) of some herbals brewed (Green tea / *Camellia sinensis*, senna / *Zea mays* ssp., corn silk / *Cassia* ssp., rosemary / *Rosmarinus officinalis*) at different temperature. These herbs were brewed for 10 minutes at 60oC, 80 oC and 100 oC temperatures. After cooling, total phenolic content, total flavonoid content, condensed tannin content and antioxidant properties of these herbs were determined. Consistently; the highest results were found in the tea brewed at 100oC The highest total flavonoid (0.305 ± 0.005 mg QE/g) and ferric reducing ability (670.150 ± 2.121 μ mol FeSO₄7H₂O/g) was in *Rosmarinus officinalis*. . The highest condensed tannin (9.443 ± 0.524 mg CE/g) and the highest total phenolic content (4.872 ± 0.005 mg GAE/g) was in *Camellia sinensis* and *Cassia* ssp., respectively

KEYWORDS

Antioxidant, corn silk, green tea, rosemary, senna

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Poster Session 7

Submission ID: 908

UTILIZATION OF JERUSALEM ARTICHOKE FLOUR IN THE MANUFACTURING OF TURKISH DRY FERMENTED SUCUK

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ABSTRACT

Jerusalem artichoke is a medicinal plant with various effects such as antimicrobial, antifungal and anticancer activities and it is often used as folk medicine for the treatment of some problems. Additionally, it contains high amount of phenolic compound, antioxidants and dietary fiber. It can be concluded that artichoke may be used as a functional food additive in food industry because of these useful properties. The objective of this study was to investigate the effect of replacing animal fat with Jerusalem artichoke flour on the quality characteristics of sucuk (Turkish dry fermented sausage). Experimental sucuks were manufactured with replacing animal fat with 0, 5, 10, 15 and 20% artichoke flour. Chemical composition, color and texture properties and microbial properties of sucuks were determined during manufacture and storage period. The results indicated that addition of artichoke flour decreased TBARS values compared to control group ($p<0.05$). The use of Jerusalem artichoke flour affected lactic acid bacteria counts and fermentation process in positive manner ($p<0.05$). Moreover, pH, ash and hardness values were influenced by use of Jerusalem artichoke flour ($p<0.05$). Addition of artichoke flour enhanced pH decrease in sucuk during the fermentation and storage period ($p<0.05$). Increasing levels of artichoke flour in sucuk formulation caused a decrease in hardness values of sucuk ($p<0.05$). The results indicated that the use of artichoke flour in sucuk manufacture had no negative effects on quality parameters of sucuk and therefore it can be concluded that utilization of artichoke flour in sucuk manufacture may has positive nutritional effects and may contribute to improve shelf life of sucuk.

KEYWORDS

Sucuk, Jerusalem artichoke, Fermentation Texture, TBARS

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Poster Session 7

Submission ID: 909

YOUTH ATTITUDES AND BEHAVIORS OF MEDICINAL PLANT OR MEDICINAL PLANT BASED DRUG USE

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ABSTRACT

Herbal treatment and alternative medicine methods are widely used in old and strong eastern cultures like China and India and also Middle East countries like Syria, Iran, and Iraq. In the last 20 years, interest in herbal medicine has been dramatically increased in our country and Europe. When compulsory migrations from the Middle East are expected to affect western cultures; it is envisaged that herbal cure will become prevalent and the importance of the herbal cure will increase. This work was supported by the Ahi Evran University Scientific Research Projects Coordination Unit. Project Number: TIP.E2.17.006. In this study, it was aimed to determine the attitudes and behaviors of the young population in the age of university in Turkey regarding the use of medicinal plants or medicinal plant based drugs. For this purpose, a survey study was conducted on 400 university students. Participation in the survey was done on a voluntary with randomly selected students. The descriptive statistics as well as the chi-square test were used in the study. The average age of the students who participated in the survey was calculated as 20.43 ± 0.098 . In this study conducted with a young group, it was determined that 32.5% of the youth use medicinal plants or medicinal plant based drugs and 67.5% do not use them. Gender was statistically significant in the use of these products ($p < 0.01$) and also it was found that the place of birth in the rural or urban was not effective on the medicinal plant or medicinal plant based drug use ($p > 0.05$). Mothers and grandparents were found to be most effective in the use of these products in their families ($p < 0.01$). In the study of participation from seven geographical regions of Turkey, it was determined that there was no significant relationship between the medicinal plant or medicinal plant-based drug use and the regions where the students' families lived ($p > 0.05$). However, the distribution of the medicinal plant or medicinal plant based drugs used according to regions was statistically significant ($p < 0.01$).

KEYWORDS

Alternative medicine, complementary medicine, herbal medicine, herbal treatment, medicinal plant

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Poster Session 7

Submission ID: 910

DETERMINATION OF ANTIOXIDANT AND ANTIMICROBIAL ACTIVITIES OF SOME TAXA OF THE GENUS TANACETUM L.

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ABSTRACT

Tanacetum L., the third largest genus in the family Asteraceae (Compositae), which has 160 taxa worldwide. Usually, the taxa of Tanacetum have spread to Europe, Asia, North Africa and North America. In our country, 46 taxa are present. In our work, plant samples were collected in the province of Bitlis. Extracts of Tanacetum taxa (Tanacetum aureum (lam.) Greuter var. oligocephalum (DC.) Kandemir (Ekşi pireotu), Tanacetum parthenium (L.) Sch. Bip. / beyaz papatya, Tanacetum balsamitoides L. (Marsuvanotu), Tanacetum zahlbruckneri (Nab) Grierson (Özge pireotu)) were obtained from the plant samples by cleverger hydrodistillation. Antimicrobial and antioxidant activities of extracts of Tanacetum taxa were investigated. The antimicrobial activities of the T. aureum var. oligocephalum, T. parthenium, T. Balsamitoides and T. zahlbruckneri taxon extracts were determined by the hollow agar method. Bacillus subtilis ATCC 6633, Staphylococcus aureus ATCC 25923, Bacillus megaterium DSM 32, Enterobacter aerogenes ATCC 13048, Escherichia coli ATCC 11229, Pseudomonas aeruginosa ATCC 9027, Klebsiella pneumonia ATCC 13883, Candida albicans ATCC 10231, Yarrowia lipolytica and Saccharomyces cerevisiae was used as test microorganisms. Eritromisin (E-15), Ampisillin (AM- 10), Amikasin (AK-30), Rifampisin (RD-5) and Fluconazole (25 µg) antibiotics were used for positive control. According to the results obtained, T. aureum var. oligocephalum extract showed the highest antimicrobial activity against Y. lipolytica (26 mm) and T. zahlbruckneri extract the lowest activity against B. subtilis (11 mm). We have found that plant extracts generally have better antimicrobial activity when compared with antibiotics that we use. Antioxidant activities of plant extracts were examined using different in vitro methodologies such as total antioxidant activity by ferric thiocyanate, total reducing power by potassium ferricyanide reduction method, reduction capacity of cupric ions (Cu²⁺) by the Kuprak method, 1,1-diphenyl-2-picrylhydrazyl (DPPH•) free radical scavenging, 2,2'-azino-bis(3-ethylbenzthiazoline-6-sulfonic acid) (ABTS) radical scavenging activity. Compared with the standard antioxidants BHA, BHT and α-tocopherol, reduction capacities for samples are as follows T. balsamitoides > BHA > T. aureum var. oligocephalum > BHT > α-tokoferol > T. parthenium > T. zahlbruckneri. According to the results of the study, % inhibition was 70.77% for BHT, 66.35% for BHT, 62.11% for α tocopherol, 61.86% for extracts. When we look at the results of ABTS•+ radical scavenging activity, we can say that all of them are close to each other and show very good activity. ABTS radical activities of plants and standards are listed as follows: BHT (%96,16) ≥ α-tocopherol (%96,15) ≥ BHA (%96,04) ≥ T. aureum var. oligocephalum (%95,99) ≥ T. balsamitoides (%95,97) ≥ T. parthenium (%95,95) ≥ T. zahlbruckneri (%95,92).

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KEYWORDS

Tanacetum (Asteraceae), Extract, Antimicrobial and Antioxidant Activity

Poster Session 7

Submission ID: 911

HYPOGEOUS FUNDAL SPECİES GROWN IN OSMANIYE

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ABSTRACT

In the present study, we report seven truffle taxa from Amanos Mountains and Karatepe-Aslantaş regions (Osmaniye) for Turkey. These species are as follows: *Tuber aestivum*, *T. brumale*, *T. borchii*, *T. nitidum*, *T. rufum*, *Terfezia olbiensis* and *Hysterangium clathroides*. Of these species, we also report new localities for *T. olbiensis* and *H. clathroides* within Turkey.

KEYWORDS

Tuber, Truffle, Osmaniye, Turkey

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Poster Session 7

Submission ID: 912

**INVESTIGATION OF ANTIMICROBIAL ACTIVITIES OF EXTRACTS
OBTAINED FROM NEPETA TRANSCAUCASICA GROSSH. VE
SCUTELLARIA ALBIDA L. SUBSP. CONDENSATA (RECH.F.)
J.R.EDM. TAXA**

YUSUF ALAN¹, AHMET SAVCI¹, SIRAÇ TOPDEMİR², MURAT KURŞAT²

ABSTRACT

Lamiaceae family in Turkey is represented by 46 genera, 577 species and 755 taxa in total. In our work, plant material was collected in Bitlis province. The collected plant samples of *Nepeta transcaucasica* (Kaf pisikotu) and *Scutellaria albida* L. subsp. *condensata* (Kırk kaside) were dried and extracted with the soxhlat method. The antimicrobial activities of the extracts obtained were investigated. The antimicrobial activities of the *Nepeta transcaucasica* ve *Scutellaria albida* L. subsp. *condensata* taxon extracts were determined by the hollow agar method. *Bacillus subtilis* ATCC 6633, *Staphylococcus aureus* ATCC 25923, *Bacillus megaterium* DSM 32, *Enterobacter aerogenes* ATCC 13048, *Escherichia coli* ATCC 11229, *Pseudomonas aeruginosa* ATCC 9027, *Klebsiella pneumonia* ATCC 13883, *Candida albicans* ATCC 10231, *Yarrowia lipolytica* and *Saccharomyces cerevisiae* was used as test microorganisms. Eritromisin (E-15), Ampisillin (AM- 10), Amikasin (AK-30), Rifampisin (RD-5) and Fluconazole (25 µg) antibiotics were used for positive control. According to the results obtained, *Nepeta transcaucasica* extract showed the highest antimicrobial activity against *C. albicans* (27 mm) and extracts the lowest activity against *E.coli* ve *P. aeruginosa*'a (12 mm). When we compare plant extracts with the antibiotics we use, it has been found that they generally exhibit similar antimicrobial activity.

KEYWORDS

Nepeta transcaucasica, *Scutellaria albida* L. subsp. *condensata* , Extract, Antimicrobial Activity

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Poster Session 7

Submission ID: 915

ASTAXANTHIN, OXIDATIVE STRESS AND SENESCENCE

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ABSTRACT

A progression process becomes reality by each turn of Earth around the sun. In this period, numerous systems such as hormones, proteins, immunity are affected by results of changes in gene expression of human. In addition to gene expression, changeable factors such as type of nutrition, environment, stressve life style end up with people' s appearanceduringthis all term.Senescence ensues from these differentiations and cumulations increasing based on it. Stochastic theories that are some of assumptions explained by approximately over 300 theories, suggesting which senescence occurs with accumulation of toxic products, include hypotheses of free radical, wear and tear, destructive DNA damage, mitochondrial and lacking of cellular adaptation mechanism. Besides of degenerative diseases, process of senescence also accelerates due to heaps and increments of free radicals in cells and tissues and alterations in oxidation pathway depending on some metals. Natural antioxidants that are present as ascorbic acid, caratenoids, phenolic compounds, phospholipids,sterols, reaction products of maillard and protein-related components in foods minimize this oxidative damage of biomolecules and hinders oxidative cycle. Although astaxanthin, being a carotenoid source, resembles its genus, having both hydroxy- and oxi-parts makes it different from other carotenoids. Including both bathces, double bonds in its structure and property of polar-nonpolar-polar enable it to be more antioxidant activity. Astaxanthin, doses of it is 2 mg/kg/day, 6 mg/day or 0.02 % of daily diet, possesses favorable effects on reactive oxygen species by affecting activity of antioxidative enzymes such as superoxide dismutase, catalase and glutathione peroxidase, levels of oxidative stress products such as nitric oxide, acrolein and 8-hydroxydeoxyguanosine (8-OHdG), pathways of heme oxygenase-1, nuclear factor like-2 (Nrf2) and phosphatidylinositol-3 kinase/protein kinase-B (PI3K/Akt), and also decreases these cases increasing with senescence. It is mentioned that effects of different amounts of astaxanthin on oxidative stress and aging process in this review. After all, it has been stated that effects of antioxidant and inflammation prevention would influence positively senescence mechanisms and impressions of aging. Astaxanthin is important with regards to awareness raising in this topic.

KEYWORDS

Astaxanthin, oxidative stress, antioxidative enzymes, senescence

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Poster Session 7

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POTENTIAL EFFECTS OF ASTAXANTHIN IN THE PREVENTION OF DISEASES

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ABSTRACT

Astaxanthin, belonging to xanthophyll's which are oxidized derivatives of carotenoids, differs from other xanthophylls due to having both hydroxy- and oxy-groups. Hydroxyl groups in both terminal ends gives astaxanthin polar property and middle section also does nonpolar property. While there have been various isomers in parallel with configurations of these hydroxy groups, esterification of astaxanthin with diverse fatty acids and their degree influence its effectiveness and half of life. Not being activity of vitamin A during metabolized in liver, ability of passing blood-brain barrier, joining in grey matter of brain are other specific features of astaxanthin. In addition these, taking part in membrane structure, activities of antioxidative, anti-inflammatory and antiapoptotic make it protective effect in diverse chronic diseases. Treatments with different quantity of astaxanthin, 25 mg/kg/day, 50 mg/kg/day, 75 mg/kg/day, 100 mg/kg/day or 720 mg/kg/day, result in a reducing in cytokine and bacterial burden in gastric inflammation, amelioration of GLUT4 and interlinkage of insulin-substrate, decreasing postprandial blood sugar, enhancing insulin secretion by β -cells. Besides these findings, inhibiting growth of cancer cells, enhancing cerebral edema and blood-brain barrier, attenuating retinal ischemic damage, increasing liveliness of sperm and ameliorating glomerular function and social interaction in autism are also suggested. As a result, astaxanthin may be a promising in usage of it as adjuvant to prevention and treatments of renal, cardiovascular, neurologic and diabetes mellitus diseases. Accordingly, it has been reported to be needed more studies.

KEYWORDS

Astaxanthin, chronic diseases, antioxidative, anti-inflammatory, antiapoptotic.

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Poster Session 7

Submission ID: 923

MIYTHS RELATED TO MEDICAL PLANT OLIVE IN THE AEGEAN REGION

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ABSTRACT

In recent years there have been many studies on the effects of medicinal and aromatic plants on human health. Turkey has an important place in the world with its geographical features and unique culture in terms of medical plants. The richness of the Aegean region has also been noticed in ancient times. There are many legends and mythos, which are quoted daily before the history, and various plants are mentioned. Mythos have played an important role for the daily use of these plants for their medical use. The history of medical plants is as old as human history. Plants are considered to be the most precious gift of the gods to mankind. Hippocrates is known as the father of medicine and has produced about 400 medicinal plant classifications in his books. The great Turkish Islamic scientist Ibni Sina mentioned various plants used as medicines in his book "The Law" written in the 11th century. In later years, Ibni Sina's books have been used as resources for many years in medical education in Europe. In this study, the use of olives (*Olea Europaea*) for medical purposes throughout the history and related myths are mentioned. Our findings are the result of the literature search.

KEYWORDS

Medicinal plant, myth, olive, olea europaea

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Poster Session 7

Submission ID: 927

WATER SOLUBLE FLUORESCENT CALIX[4]ARENE AS NARINGENIN CARRIER: ENHANCED SOLUBILITY, CYTOTOXICITY AND CANCER CELL IMAGING

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ABSTRACT

Flavonoids are micronutrients that are widely identified in foods of plant origin and have been recognized potent antioxidants, possessing bioactive potential to reduce cancer risk, prevent cardiovascular disease, and neurodegenerative disorders. Among flavanone, naringenin is regarded as a phytoestrogen with weak estrogenic and antiestrogenic activities that inhibits proliferation of colon cancer cells and melanoma cells. However, poor water solubility of this flavanone make it less bioactive. To tackle problem of solubility of this anticancer drug, different methods are being used in pharmaceuticals. Moreover, in recent years, supramolecular chemistry has gained large attention in drug delivery system and enhancement of solubility of the water insoluble drugs. In this connection, different macromolecules have been used as carrier. In this study we have synthesized water soluble calixarene containing fluorescent moiety at lower rim and formed the inclusion complex with naringenin. Different studies such as jobs plot, phase solubility and binding constant were determined. Cancer cell imaging were carried out to observe the movement of drug in cancer cells and IC₅₀ values were determined.

KEYWORDS

p-Sulphonatocalix[4]arene, Dansyl, Fluorescence, Flavonoid, Naringenin, Cell Imaging

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Poster Session 7

Submission ID: 928

MYTHOS CONCERNING DAPHNE AND ITS MEDICINAL USAGE

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ABSTRACT

Healing with medicinal plants is as old as mankind itself. The connection between human and his search for drugs in nature dates from the far past, of which there is ample evidence from various sources: written documents and legends. In recent years, with the growing interest of traditional medicine, many studies have been carried out on the effects of on the effects of plants on health. The ancient legends and myths occupies an important place for understanding the properties of medicinal plants. This information is transmitted orally and in writing illuminate still holds today. Turkey has a special precaution in terms of medical plants in terms of both its geographical features and the myths. The daphne tree is one of the important medicinal plants subject to the myths in Anatolia. Laurel leaves be obtained from the daphne tree . Turkey, the most important laurel leaves exporter country in the world, meets about 90% of the world bay requirement. In this study, it is mentioned about mythos and medicinal use areas related to Daphne / Laurel leaves (*Laurus nobilis*) plant.

KEYWORDS

Medicinal plant, myth, daphne, laurel leaves

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Poster Session 7

Submission ID: 931

**THE PHENOLIC PROFILE OF NEPETA CONGESTA VAR.
CONGESTA AND NEPETA CELIOTROPIFOLIA VAR.
CELIOTROPIFOLIA**

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ABSTRACT

The genus *Nepeta* is a member of Lamiaceae family and has a worldwide distribution with over 250 species which widely grow in Europe, Asia, North America, North Africa and in the Mediterranean region . In Turkey, *Nepeta* species are represented by 41 taxa (18 of them are endemic) and mostly distributed in East Anatolia and Taurus Mountains . Some *Nepeta* species have been traditionally used as diuretic, diaphoretic, antitussive, antispasmodic, antiasthmatic, febrifuge, sedative, spice and herbal tea . In this study, the chemical profile of ethanol extracts of *Nepeta congesta* var. *congesta* and *Nepeta celiotropifolia* var. *celiotropifolia* were determined using LC-MS/MS. A comprehensive LC-MS/MS method validation was developed for the qualitative and quantitative analysis of 37 phytochemicals including 15 phenolic acids, 17 flavonoids, 3 nonphenolic organic acids, 1 phenolic aldehyde and 1 benzopyrane. The powdered plant materials (stems, leaves, flowers, roots and mixed parts) were extracted three times with ethanol (50 mL each) at room temperature for 24 h. Afterwards, the extracts obtained were combined, filtered and evaporated under low pressure. Dry filtrates were reconstituted in ethanol at a concentration of 250 mg L⁻¹ and filtered through the 0.2 µm PTFE filter prior to LC-MS/MS analysis. These two species were found to be rich in rosmarinic acid. Especially, their flowers extracts possessed very high amount of rosmarinic acid and cosmosiin. Acknowledgements: The research was funded by grant: BYP-2016-20585 from Istanbul University

KEYWORDS

Nepeta, Phenolic, LC-MS/MS

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Poster Session 7

Submission ID: 932

THE ANTIBACTERIAL ACTIVITY OF LAUREL (*LAURUS NOBILIS*) ESSENTIAL OILS AGAINST *BACILLUS SUBTILIS*

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ABSTRACT

Medicinal and aromatic plants have been used since ancient times for their organoleptic characteristics, therapeutic and medicinal properties. There has been an increased interest in antimicrobial properties of essential oils and extracts from aromatic plants. *Laurus nobilis* L. is an aromatic plant, frequently used as a spice in Mediterranean cookery. Laurel commonly known as sweet bay, bay laurel, Grecian laurel, true bay, and bay. It belongs to Laureacea family and is native to warm regions of the world, particularly in the Mediterranean countries (Turkey, Greece, Spain, Portugal, Italy and France). The essential oil and extracts obtained from the leaves of laurel have been used to fungal and bacterial infections, to treat epilepsy, parkinsonism, hemorrhoid and rheumatic pains. Several studies show that essential oils of this plant can prolong the storage life of foods by their antioxidant and antimicrobial activities. Ropiness is bacterial spoilage of bread that is commonly caused by *Bacillus* spp., especially *Bacillus subtilis*. It is the most important spoilage of bread after mouldiness which occurs particularly in summer and initially occurs as an unpleasant fruity odor, followed by a discoloured, sticky and softbread crumb, caused by enzymatic degradation. The aims of this study was to determine antibacterial activity of essential oils of laurel against *Bacillus subtilis*. The essential oils were obtained from laurel leaves that collected from different locations of Turkey (Izmir, Denizli, Antakya-Hatay) and purchased commercially, were experimented for their antibacterial activity against *Bacillus subtilis*. Reference bacteria used in the study was *Bacillus subtilis* ATCC 11774. Disc diffusion method was employed for the determination of antibacterial activity of the essential oils and the inhibition zone diameters were measured in millimeters. The essential oils of laurel (Izmir, Antakya-Hatay, Denizli and commercial) showed antibacterial activity against tested reference bacteria *Bacillus subtilis* with different inhibition zones of 37.90±3.89, 17.50±0.43, 7.60±0.84 and 37.95±0.63 mm, respectively.

KEYWORDS

Laurel, Laurus nobilis L., Essential Oils, Bacillus subtilis, Antibacterial Activity

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Poster Session 7

Submission ID: 933

ANTIOXIDANT ACTIVITIES OF THE EXTRACTS FROM DIFFERENT PARTS OF ENDEMIC SALVIA CERINO-PRUINOSA VAR. CERINO-PRUINOSA AND SALVIA ROSIFOLIA

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ABSTRACT

The genus *Salvia*, with about 900 species, is one of the most widespread members of the Lamiaceae family plants. An unusually large number of useful secondary metabolites, belonging to various chemical groups, such as terpenoids, flavonoids, and other compounds, have been isolated from the genus, which features prominently in the pharmacopeias of many countries throughout the world for wound healing and alleviating stomach, liver, and rheumatism pains and for treating the common cold in the form of infusion. Some *Salvia* (Sage) species have been used as medicinal plants to treat bronchitis, tuberculosis, menstrual and digestive disorders. They are also being used as spices and tea throughout the world since ancient times. They possess antioxidant, antibacterial, antitumor, cardioactive and antidiabetic activities. Antioxidant activities of Lamiaceae (Labiatae) plants which are widely grown in Turkey were also investigated by our group. In this research, antioxidant activities of extracts obtained from various parts of (roots, leaves, stems, flowers and mixed) *Salvia cerino-pruinosa* var. *cerino-pruinosa* and *Salvia rosifolia* were compared (DPPH, Beta Caroten Cuprac, ABTS). While petroleum ether and chloroform extracts of both species have shown low antioxidant activity, ethanol extracts of both species have shown well antioxidant activity. When comparing both species various parts each other, ethanol extracts of leaves of both species have shown high activity, especially. It can be said that both endemic *Salvia* species have potential of antioxidant. Acknowledgements: The research was funded by grant : KBAG 114Z801 from TUBITAK, The Scientific and Technological Research Council of Turkey.

KEYWORDS

Salvia cerino-pruinosa var. *cerino-pruinosa*, *Salvia rosifolia*, antioxidant.

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Poster Session 7

Submission ID: 935

ENZYME INHIBITORY PROPERTIES OF DIFFERENT SOLVENT EXTRACTS FROM COLUTEA CILICICA

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ABSTRACT

Enzyme inhibitory properties of ethyl acetate, methanol, and water extracts from *Colutea cilicica* (Fabaceae) were investigated with spectrophotometric methods. Enzyme inhibitory effect were evaluated against cholinesterase, tyrosinase, α -amylase and α -glucosidase. The methanol extract exhibited the strongest cholinesterase inhibitory activity with 1.326 mgGALAE/g extract in AChE and 0.682 mgGALAE/g extract in BChE. However, the water extract was not active on cholinesterases. The best tyrosinase inhibitory effect were observed in the ethyl acetate extract with 54.70 mgKAE/g extract. Similarly, the ethyl acetate extract exerted the strongest amylase and glucosidase inhibitory effect. These findings suggest that the *C. cilicica* could serve as an important natural source of biologically active agents for using in food and pharmaceutical industry. Acknowledgements: This work was supported by The Scientific and Technological Research Council of Turkey (TUBITAK), Turkey, Project No: 113Z892.

KEYWORDS

Colutea cilicica, enzyme inhibitory properties, natural products

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Poster Session 7

Submission ID: 936

ENZYME INHIBITORY EFFECTS OF DIFFERENT SOLVENT EXTRACTS FROM EBENUS HIRSUTA

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ABSTRACT

Enzyme inhibitory capacities of ethyl acetate and water extracts from *Ebenus hirsuta* (Fabaceae) were investigated with spectrophotometric methods. Enzyme inhibitory effects were evaluated against cholinesterase, tyrosinase, α -amylase and α -glucosidase. The ethyl acetate extract has the highest cholinesterase inhibitory effects as compared to water extract. However, the water extract exhibited the strongest anti-tyrosinase effect with 55.06 mgKAE/g extract. Also, the ethyl acetate extract had the best anti-diabetic effects with the highest amylase inhibition. Our findings suggest that the *Ebenus hirsuta* could serve as a valuable source of natural enzyme inhibitors. Acknowledgements: This work was supported by The Scientific and Technological Research Council of Turkey (TUBITAK), Turkey, Project No: 113Z892.

KEYWORDS

Ebenus hirsuta, enzyme inhibitory effect, natural products

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Poster Session 7

Submission ID: 938

**ANALYSIS OF MEDICINAL AND AROMATIC PLANTS
CONSUMPTION OF HOUSEHOLDS IN URBAN AREA: THE CASE OF
IZMIR-TURKEY**

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ABSTRACT

Medicinal and aromatic plants play a significant role in the life of people and are present in innumerable forms. Medicinal and aromatic plants constitute a major segment of the flora, which provides raw materials for use in the pharmaceuticals, cosmetics, and drug industries. The main aim of this study is to analyze consumer structure, consumption trends and preferences with data obtained by survey from households in urban area of Izmir. For this aim, 96 surveys by proportional sampling have been carried out with members of households in center of Karşıyaka district of Izmir. Study was carried out on households of dwellings located at six distinct streets of 16 quarters. As a results of the study, a large part of household, medical and aromatic plants does not recognize under the name. In their natural environment, the additives include, delicious foods, and they have to be protective, immune system booster due to the properties of the products are preferred. Consumer preferred the kind, quantity and product production with the right group of consumers as a result of the determination, the process from production to marketing for effectiveness and sustainability will be provided.

KEYWORDS

medicinal and aromatic plant, consumer analysis, consumer attitudes and behaviors, consumer preferences

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Poster Session 7

Submission ID: 939

**INVESTIGATION OF ANTIOXIDANT ACTIVITIES OF ESKTRAKTS
OBTAINED FROM LALLEMANTIA CANESCENS (L.) FISCH. & C.A.
MEY. AND LALLEMANTIA PELTATA (L.) FISCH. & C.A. MEY.
SPECIES**

AHMET SAVCI¹, YUSUF ALAN², MURAT KURŞAT³, SIRAÇ TOPDEMİR⁴

ABSTRACT

There are three species of *Lallemantia* (Lamiaceae) genus in Turkey. In our work, plant material was collected in Bitlis province. The collected plant samples of *Lallemantia canescens* (Topajadarbaşı) and *Lallemantia peltata* (Kalkanbaşı) were dried and extracted with the soxhalat method. The antioxidant activities of the extracts obtained were investigated. Antioxidant activities of plant extracts were examined using different in vitro methodologies such as total antioxidant activity by ferric thiocyanate, total reducing power by potassium ferricyanide reduction method, reduction capacity of cupric ions (Cu²⁺) by the Kuprak method, 1,1-diphenyl-2-picryl-hydrazyl (DPPH•) free radical scavenging, 2,2'-azino-bis(3-ethylbenzthiazoline-6-sulfonic acid) (ABTS) radical scavenging activity. Compared with the standard antioxidants BHA, BHT and α -tocopherol, reduction capacities for *L.canescens* and *L. peltata* plants are as follows; BHA > *L.peltata* > BHT > α -tokoferol > *L.canescens*. According to the results of the study, % inhibition was 70.77% for BHT, 66.35% for BHT, 62.11% for α -tocopherol and 61.86% for extraction. When we look at the results of ABTS•+ radical scavenging activity, we can say that all of them are close to each other and show very good activity. ABTS radical activities of plants and standards are listed as follows: BHT (%96,16) \geq α -tocopherol (%96,15) \geq BHA (%96,04) \geq *L.peltata* (%95,86) \geq *L.canescens* (%95,50).

KEYWORDS

Lallemantia canescens, Lallemantia peltata, Extract, Antioxidant Activity

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Poster Session 7

Submission ID: 940

ANTIOXIDANT AND ANTIINFLAMMATORY EFFECTS OF CURCUMIN

EMEL AKTAŞ¹, HILAL YILDIRAN²

ABSTRACT

Throughout the history of humanity, plants have been used for treating many diseases. This information, obtained through trial and error, has reached to day with some changes and developments in the manner of use throughout the ages. Recently, interest in antioxidant and antiinflammatory products and consumption of natural foods and nutritional bioactive components has been increasing steadily. Curcumin is found in turmeric spice which is a popular member of the ginger family. It gives the curry bright yellow color and is used as a herbal medicine in China and India for thousands of years. In humans, curcumin is known to be safe, but not toxic, and turmeric is classified as an additive in the E100 category. Curcumin has been reported to have various pharmacological properties such as antimicrobial, antiviral, antifungal, anticarcinogenic and wound healing. However, it has radical scavenger, iron chelator and antiinflammatory properties in different tissues. Antiinflammatory and antioxidant properties are two important mechanisms underlying the majority of the pharmacological effects of curcumin.

KEYWORDS

curcumin, antioxidant, antiinflammatory

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¹KARABÜK ÜNİVERSİTESİ SAđLIK BİLİMLERİ FAKÜLTESİ, BESLENME VE DİYETETİK ANABİLİM DALI

²GAZİ ÜNİVERSİTESİ SAđLIK BİLİMLERİ FAKÜLTESİ, BESLENME VE DİYETETİK ANABİLİM DALI

Poster Session 7

Submission ID: 941

**INVESTIGATION OF ANTIOXIDAN ACTIVITIES OF EXTRACTS
OBTAINED FROM NEPETA TRANSCAUCASICA GROSSH. VE
SCUTELLARIA ALBIDA L. SUBSP. CONDENSATA (RECH.F.)
J.R.EDM. TAXA**

AHMET SAVCI¹, YUSUF ALAN², MURAT KURŞAT³, SIRAÇ TOPDEMİR⁴

ABSTRACT

Lamiaceae family in Turkey is represented by 46 genera, 577 species and 755 taxa in total. In our work, plant material was collected in Bitlis province. The collected plant samples of *Nepeta transcaucasica* (Kaf pisikotu) and *Scutellaria albida* L. subsp. *condensata* (Kırk kaside) were dried and extracted with the soxhalat method. The antimicrobial activities of the extracts obtained were investigated. Antioxidant activities of plant extracts were examined using different in vitro methodologies such as total antioxidant activity by ferric thiocyanate, total reducing power by potassium ferricyanide reduction method, reduction capacity of cupric ions (Cu²⁺) by the Kuprak method, 1,1-diphenyl-2-picryl-hydrazyl (DPPH•) free radical scavenging, 2,2'-azino-bis(3-ethylbenzthiazoline-6-sulfonic acid) (ABTS) radical scavenging activity. Compared with the standard antioxidants BHA, BHT and α -tocopherol, reduction capacities for *L.canescens* and *L. peltata* plants are as follows; BHA > BHT > α -tokoferol > *N. transcaucasica* > *S. albida* subsp. *condensata*. According to the results of the study, % inhibition was 70.77% for BHT, 66.35% for BHT, 62.11% for α -tocopherol and 61.86% for extraction. When we look at the results of ABTS•+ radical scavenging activity, we can say that all of them are close to each other and show very good activity. ABTS radical activities of plants and standards are listed as follows: BHT (%96,16) \geq α -tocopherol (%96,15) \geq BHA (%96,04) \geq *S.albida* subsp. *condensata* (%96,04) \geq *N. transcaucasica* (%95,98).

KEYWORDS

Nepeta transcaucasica, *Scutellaria albida* L. subsp. *condensata*, Extract, Antioxidant activity

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Poster Session 7

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THE ANTIOXIDANT ACTIVITIES OF THE ESSENTIAL OILS OF SOME SALVIA SPECIES FROM TURKEY

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ABSTRACT

The *Salvia* L. genus belongs to the subfamily Nepetoideae in Lamiaceae family. The genus consists of about 900 species. Many *Salvia* species are used as herbal tea and for food flavoring, as well as in cosmetic, perfumery and the pharmaceutical industries throughout World. *Salvia* species are generally known for their multiple pharmacological effects including their antibacterial, antiviral, antioxidative, antimalarial, anti-inflammatory, antidiabetic, cardiovascular, antitumor and anticancer activities. Also, some studies showed that a part of these activities depended on their essential oil composition. The essential oils of four *Salvia* species were tested for antioxidant (β -Carotene-linoleic acid test system, DPPH free radical scavenging activity, ABTS cation radical decolorisation and cupric reducing antioxidant capacity) activities in this study. Essential oil samples were obtained by a Clevenger apparatus from the whole parts of plants which were crumbled into small pieces and soaked in distilled water for 3 h. Then, these samples were dried over anhydrous Na₂SO₄ and stored at +4°C for a sufficient period of time. The antioxidant activities of essential oils of four *Salvia* species were found to be medium and low, generally. The essential oils of *S. multicaulis* and *S. montbretii* showed good activity (IC₅₀: 436,632±36,32 and 374.753±34,97, respectively) with ABTS cation radical decolorisation method.

KEYWORDS

Salvia multicaulis, *Salvia pinnata*, *Salvia spinosa*, *Salvia montbretii*, Essential Oil,
Antioksidant

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Poster Session 7

Submission ID: 946

A HEALING HERB IN KARSNIYA...CINCAR

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ABSTRACT

Ardanuç is a district which had hosted rooted and rich civilizations. Karsniya village of Ardanuç is located in eastern of Black Sea, left slope of Çoruh valley where is founded neolithic age human evidence BC 10-8 thousand years. Excavations exposing metallic and especially various kitchen equipment demonstrate that prehistorical ages are lived respectively. Karsniya which is a high mountain village is not convenient for agriculture and farming. Not only vegetable, fruit and cereal production but also farming is made traditional procedures in Karsniya and the obtained products are not satisfactory. Vegetable requirement in Karsniya is obtained from herbs called greens. The main herbs that provides emerging a rich nutrition style and grows itself in nature are: cincar herb, flutter herb, gumi herb, crowbar, gelin parmagi, pampara and sorrel. The aim of this study is to present various herbs and declare benefits of cincar soup and its ingredients and making processes which is made of cincar herb which is believed to be healing. Cincar herb blooms in may- october, reaches 20-60 cm, is located in bottom of walls and roadsides and causes severe blushing and itching when leaves are exposed to skin. Herbs roots are dried up in spring and autumn, leaves are dried up in may and july, seeds are dried up in july and august by collecting. Even though the belief of herbs healing property is came across in Middle Europe, the women in Karsniya observed that touching this herbs heals skin wounds, boiling the herb's water inhibits hair loss and consuming the herb cures stomach and intestinal diseases. As a conclusion it is detected that cincar herbs is used in various meals and especially cincar soup is believed to be a healing meal by village women. Recording making processes of cincar soup is considered to bring Turkish Culture richness by generalizing formation of it.

KEYWORDS

Cincar soup, healing herb, kitchen culture, Karsniya

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Poster Session 7

Submission ID: 948

CYTOTOXIC EFFECTS OF NATURALLY OCCURRING FLAVONOIDS ON HUMAN COLON CANCER CELLS

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ABSTRACT

Colon cancer is the third leading disease of death in the world. The resistance against drugs used in colon cancer treatment and elevated side effects of those drugs leads investigators to find new strategies. Up to now, about 500 different polyphenols have been isolated and reported in foods and beverages of plant origin. In this study, we focused on to investigate effects of quercetin (Q) and rutin (R) against human colon cancer cells. DLD1 cells and HT-29 cells were grown in Leibowitz's L-15 medium and McCoy's 5a medium respectively supplemented with 10% fetal bovine serum and 2 mM glutamine. Optimum cell number and growth time of cells were determined spectrophotometrically and effect of Q and R on the viability of DLD1 cells and HT-29 cells were determined with Alamar blue and IC₅₀ values were calculated from the sigmoidal graph. The IC₅₀ values of Q were calculated as 144 μ M and 44 μ M in DLD-1 and HT-29 cells, respectively. On the other hand, R was found less toxic on both cancer cells with IC₅₀ of 213 μ M and 552 μ M for DLD1 cells and HT-29 cells, respectively. The data obtained from this study will supply valuable information about the usage of these flavonoids in the treatment of colon cancer since quercetin and rutin are found plenty amounts in vegetables and fruits.

KEYWORDS

Colon Cancer, Cytotoxicity, Proliferation, Quercetin, Rutin.

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Poster Session 7

Submission ID: 949

A CURE ALL ST.JOHN'S WORT

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ABSTRACT

St.John's wort is a herb that grows by itself in nature and it is believed to be healing as its usage area varies progressively. The aim of this study is to specify St.John's Wort's properties, usage areas and side effects. This herb is also called as 'kanotu, yaraotu, kılıřotu, mayasılotu, binbirdelik otu' among public and its flower and roots are used for benefit. St.John's Wort includes tannin, volatile oils, flavon species (rutin, guercitin, guercitrin), hipericin (hypericin), hyperin (substance that gives colour to herb), caroten, bitter materials, rosin, pectin and colic, gum, vitamin c and resin as substances. This herb is usually consumed as tea or its oil is used externally. According to studies accomplished with this herb, quick recovery is observed with depression, lack of attention, bone diseases, irritabl bowel syndrome, wound healing, skin diseases and burn. It is reported that long term usage of this herb as treatment might cause unfavourable effects on health. This herb's content and dosage may differ due to its vegetative region. Although St.John's Wort is known with various benefits, in order to generalize its usage areas it is thought that more studies might be beneficial about its habitat, dosage level, duration and side effects.

KEYWORDS

St. John's wort (Hypericum perforatum), health, herb

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Poster Session 7

Submission ID: 950

THE USE OF ESSENTIAL OILS AS ANTIMICROBIAL SUBSTANCES IN SEAFOOD

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ABSTRACT

Seafood is a food product that is rapidly spoiled due to microbial activity during cold storage. This is an important issue both economically and in terms of human health. There are several methods in traditional and long-term conservation to prevent or delay the growth of pathogenic and spoiled microorganisms during the storage of seafood. In addition, the storage period can be extended by adding antimicrobial or antibacterial agent to seafood. These substances added to protect of foods can be synthetic or natural additives. Today, consumers are choosing to reduce the use of synthetic chemicals in order to increase the shelf life of foods. Essential oils, which offer an alternative to chemical use, are natural antimicrobials prolonged shelf-life of seafoods and can be used alone or in combination with other preservation methods. Volatile oils, also called essential oils, are obtained from plants or parts of these plants by distillation or pressing. It has been revealed by researchers that essential oils with antimicrobial and antiseptic properties are effective on microorganisms cause deterioration and poisoning in food. Phenolic compounds in volatile oils cause sensitization of the phospholipid layer in cell membranes and increase the permeability of this membrane. Thus, they inhibit microorganisms by causing intracellular components to leak out of the cell or to degrade enzyme systems. The composition, structure and functional groups of essential oils play an important role in the effectiveness of these antimicrobial activities. The oils of plants such as carnations, thyme, rosemary and sage are the most effective oils against microorganisms. Antimicrobial effects of thyme, oregano, lemon, rosemary, laurel, clove, orange and mandarin peel essential oils have been investigated in seafood. In this study, the use of essential oils as antimicrobial substances in seafood will be compiled.

KEYWORDS

Essential oils, Seafood, Antimicrobial, Shelf life, Food additive

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Poster Session 7

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NUTRITIONAL QUALITY AND HEALTH BENEFITS OF LUPIN

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ABSTRACT

Legumes are important especially in regions where the economic status is not good due to the fact that it can be obtained more and cheaper. Lupin, which belongs to the Leguminosae (or Fabaceae) family, includes 450 *Lupinus* species. Only four species are cultivated; *Lupinus albus* (white lupin), *Lupinus luteus* (yellow lupin), *Lupinus angustifolius* (blue lupin, narrow-leaved lupin), and *Lupinus mutabilis* (tarwi, Andean lupin). Lupin is used as soy substitute, gluten free flour, emulsifier, a bread, biscuits, cakes, pasta and snack in the world. The lupine, which has 2-3 times more protein than grains, is also rich in vitamins and minerals such as calcium and iron. *L. mutabilis* is rich in complex oligosaccharides, fiber and omega 3 fatty acids. Lupin flour increase the nutritional quality and potential health benefits of bread by increasing protein, dietary fiber and carotenoid content, levels of the protein γ -conglutin. Consuming lupin compared to wheat bread and other baked products reduce chronic disease risk markers. Protein γ -conglutin improves glucose transport and elevates pancreatic insulin content. Lupin have positive effects on hyperglycemia and insulin release. Furthermore, treatment with lupin improved insulin resistance in subjects with glucose abnormalities. Lupin shows hypolipidemic effect in individuals who have diet-induced hypercholesterolemia, by decreasing in plasma total cholesterol, triglycerid, very low density lipoprotein (VLDL-C) and low density lipoprotein (LDL-C). Increased dietary fibre may have a favourable influence on blood pressure decrease. Lupin has also positive effects on the energy balance by suppressing appetite. Higher satiety and lower energy intake of Lupin affects appetite-regulating hormone called ghrelin. However; long term effects on energy intake and body weight in obese is not clear yet. Lupin and their products may effects on human body positively. Therefore, they begin to offer in shops with other legume species. Consequently; increases in lupin products in the diet may have a beneficial role in chronic diseases, but additional data from human intervention studies are needed.

KEYWORDS

hypercholesterolemia, insulin resistance, lupin

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Poster Session 7

Submission ID: 952

EFFICIENCY OF A HERBAL LIQUID EXTRACT MIXTURE FOR PREVENTING OF SALMONELLA GROWTH IN WHIPPED CREAM

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ABSTRACT

Pastry products with cream are commonly used in the food and confectionery industries¹. Desserts and cakes containing milk or cream which are milk-based products are suitable media with high nutrient content for microbial growth^{1,2}. Besides, pastry creams tend to contamination with several pathogenic microorganisms because of their ingredients and production methods like using raw cream^{1,2,3,4,5}. Therefore; pastry cream is the main cause of food poisoning among humans¹. Salmonella is one of the major pathogenic microorganisms in the pastry cream^{1,3,4}. The most common recorded cause of diarrheal illnesses is Salmonella contamination in industrialized countries⁵. In addition to that, the Ministry of Health in Italy was reported that Salmonella was the most important reason of the outbreaks⁶. Salmonella is found in the environment such as water, soil, sewage and gastrointestinal tract of animals and humans^{3,7}. Meat, poultry, fish, egg, milk, dairy products, fruits and vegetables are transmission vector of Salmonella^{3,5,7,8,9,10}. While Salmonella infection (Salmonellosis) is prevented with lots of different methods, including adding antimicrobial or antibiotic compounds^{8,9}, last studies have been focused on using spice liquid extract for preventing Salmonella growth^{11,12,13,14,15}. In this study, a herbal liquid extract mixture containing sorrel extract (*Rumex acetosella*), millfoil extract (*Achillea millefolium*), ribwort plantain extract (*Plantago lanceolata*) (ASATİM® ST 1412; recommended for milk-based product and whipped cream by company, Kayseri, Turkey) was used to exhibit the inhibitory effect on Salmonella Enteritidis ATCC 13076 growth in whipped cream (prepared with milk as the company proposed). For this aim, 8 different groups were designed which were only pastry cream as K1, cream with Salmonella as K2, cream added herbal liquid extract mixture at 0.1%, 1% and 10% ratio as K3, K4, K5 respectively, cream added Salmonella and herbal liquid extract mixture of 0.1%, 1%, 10% to the samples were left 1 to 3 hour at room temperature. Then, these samples were inoculated to Plate Count Agar in two parallel for each group with regard to Dropping Plate Technique at the end of the 1st, 2nd and 3rd hours. The inoculation amount of Salmonella was selected as 0.4 (O.D.600) which equal to 106cfu/ml. After inoculation, the plates were incubated at 37°C for 24 hours and then colonies were counted. As a result of this study, number of the bacteria of K1 was calculated as 4x10⁴cfu/g at the end of 1 hour and then 2 logarithmic unit increasing was observed and the colony number has reached to 1.7x10⁷cfu/g, at the end of 3rd hour. This means that, whipped cream has microbial risk when it is waited in room temperature. The other remarkable result was observed in the sample containing 10% herbal liquid extract mixture and 106cfu/g Salmonella as well. The amount of bacteria was calculated as 3.8x10⁴cfu/g, 2.68x10⁵cfu/g and 1.3x10⁵cfu/g at the end of the 1st, 2nd and 3rd hours respectively. Thus, it can be reported that 10% ratio of herbal liquid extract mixture in whipped cream has an inhibitory effect on the bacteria when the result compared with the control sample. The producing

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company of the herbal liquid extract mixture proposes that the herbal liquid extract mixture should be added from 0.2% to 1% ratio to milk-based product and whipped cream. This approach is acceptable, so that in this study, high level of Salmonella was inoculated to the samples at the beginning which is an unusual situation. In conclusion, the study has shown that the herbal liquid extract mixture is an alternative and useful method for precluding Salmonella growth in whipped cream. REFERENCES 1. Sharifzadeh A, Hajsharifi-Shahreza M, Ghasemi-Dehkordi P. Evaluation of Microbial Contamination and Chemical Qualities of Cream-filled Pastries in Confectioneries of Chaharmahal Va Bakhtiari Province (Southwestern Iran). *Osong Public Heal Res Perspect.* 2016;7(6):346-350. doi:10.1016/j.phrp.2016.09.004. 2. Al M, Sancak YC, Akkaya L, Bol CEL. Baz > Sütlu Tatlı > lar > n Mikrobiyolojik Kalitelerinin Belirlenmesi *. 2002;26:975-982. 3. Ray B. *Fundamental Food.*;2004 http://books.google.com/books?hl=en&lr=&id=zYPFZby2wtcC&oi=fnd&pg=PA1&dq=Fundamental+Food+Microbiology&ots=qvHkiBdUCb&sig=WtdhhPDq1al7P_S_jcef1xLo9t8.. 4. Hamedan EF. *Microbial Contamination of Pastry Cream*: 2016;5(3):207-213. 5. Kotzekidou P. Microbiological examination of ready-to-eat foods and ready-to-bake frozen pastries from university canteens. *Food Microbiol.* 2013;34(2):337-343. doi:10.1016/j.fm.2013.01.005. 6. team EC for DP and C (ECDC)-HCU-E editorial. An outbreak of Salmonella enteritidis infection associated with iced cake. 1999. <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=75>. Accessed March 26, 2017. 7. Mahmoud BSM. Salmonella - A Dangerous Foodborne Pathogen.; 2012. doi:10.5772/1308. 8. Paião FG, Arisitides LGA, Murate LS, Vilas-Bôas GT, Vilas-Boas LA, Shimokomaki M. Detection of Salmonella spp, Salmonella Enteritidis and Typhimurium in naturally infected broiler chickens by a multiplex PCR-based assay. *Brazilian J Microbiol.* 2013;44(1):37-41. doi:10.1590/S1517-83822013005000002. 9. Kavaz Yüksel A, Yüksel M. Determination of Certain Microbiological Quality Characteristics of Ice Cream, Detection of Salmonella by Conventional and Immunomagnetic Separation Methods and Antibiotic Susceptibility of Salmonella spp. Isolates. *J Food Saf.* 2015;35:385-394. doi:10.1111/jfs.12186. 10. DG, Koopmans M, Verhoef L, et al. Food-borne diseases - The challenges of 20years ago still persist while new Newell ones continue to emerge. *Int J Food Microbiol.* 2010;139(SUPPL. 1):S3-S15. doi:10.1016/j.ijfoodmicro.2010.01.021. 11. Amrutha B, Sundar K, Shetty PH. Spice oil nanoemulsions: Potential natural inhibitors against pathogenic E. coli and Salmonella spp. from fresh fruits and vegetables. *LWT - Food Sci Technol.* 2017;79:152-159. doi:10.1016/j.lwt.2017.01.031. 12. Bernbom N, Ng YY, Paludan-Müller C, Gram L. Survival and growth of Salmonella and Vibrio in som-fak, a Thai low-salt garlic containing fermented fish product. *Int J Food Microbiol.* 2009;134(3):223-229. doi:10.1016/j.ijfoodmicro.2009.06.012. 13. Mahgoub SA, Ramadan MF, El-Zahar KM. Cold Pressed Nigella sativa Oil Inhibits the Growth of Foodborne Pathogens and Improves the Quality of Domiati Cheese. *J Food Saf.* 2013;33(4):470-480. doi:10.1111/jfs.12078. 14. Perumalla AVS, Hettiarachchy NS. Green tea and grape seed extracts — Potential applications in food safety and quality. *Food Res Int.* 2011;44(4):827-839. doi:10.1016/j.foodres.2011.01.022. 15. Sanchez C, Batlle R, Nerin C. Enhanced antimicrobial vapour-phase effect of natural extracts in active packaging. Is total protection reached? <http://i3a.unizar.es/datos/publicacion/enhanced-antimicrobial-vapour-phase-effect-of-natural-extracts-in-active-packaging.-is-total-protection-reached.-20889?idioma=en>. Published 2006. Accessed March 26, 2017.

KEYWORDS

Salmonella, whipped cream, herbal liquid extract mixture

Poster Session 7

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PROBIOTICS: THE EFFECTS ON GUT MICROBIOTA AND OBESITY

HATICE BÖLÜKBAŞI¹, GAMZE AKBULUT¹, NILÜFER ACAR TEK¹, YELİZ SERİN¹

ABSTRACT

Pathogenic and non-pathogenic microorganisms are in balance in healthy individuals. When this balance deteriorates, the barrier-building function of the mucosa deteriorates and inflammation begins. The changes in the microbiota increase the intestinal permeability and alter the functions of the brain, pancreas, liver, muscle and fat tissue. As the permeability increases, there is also an increase in the level of plasma lipopolysaccharides, which leads to rise in inflammatory cytokines. The risk of metabolic disease increase due to inflammation. In obese individuals with insulin resistance there is also an increase in the ratio of firmicutes / bacteroides on the basis of changes in the intestinal microbiota. Diet is one of the most important factors contributing to the composition and diversity of the intestinal microbiota. It is accepted in the society to think of protecting and improving the healthiness of the foods other than providing the metabolic requirements. The use of probiotics is increasing by the determination of the importance of the microbiota. According to the Food and Agricultural Organization of the United Nations and the World Health Organization, probiotics are defined as 'living microorganisms, which when administered in adequate amounts confer health benefits on the host'. Several different species of bacteria are used as probiotics. The most common species are Bifidobacterium (adolescentis, animalis, bifidum, breve and longum) or Lactobacillus (acidophilus, casei, fermentum, gasseri, johnsonii, paracasei, plantarum, rhamnosus and salivarius). Antimicrobial molecules produced by the probiotic inhibits growth of pathogenic microorganisms. Metabolites such as short-chain fatty acids produced by probiotics are found to inhibit the growth of bacterial pathogens as a result of lowering intestinal pH. Many Lactobacilli strains increase barrier function by increasing mucus layer and increase barrier function by preventing apoptosis of intestinal epithelial cells. Probiotic Lactobacillus strains enhance the integrity of the intestinal barrier, decreased translocation of bacteria across the intestinal mucosa. The lowest amount needed for beneficial effects probiotic in humans remains is unknown. Generally the lowest proposed dose is 10⁶-10⁷cfu/mL ; sufficient dose is 10⁷-10⁸cfu/mL. Probiotics may be beneficial in the prevention and treatment of obesity by enhance microbiota. Recently it is indicated that 8 to 12 weeks of probiotic supplementation may confer benefits such as decreased body weight, body mass index (BMI), as well as decreased body weight gain, fat accumulation, and prevention of insulin resistance. Anti-obesity effects of probiotics are the regulation of lipid and glucose metabolism, reduction of adipose cell size and inflammation in adipose tissue, and reduction of inflammation in the liver. Probiotics is also gaining wide attention because of increasing evidence of the role of gut microbiota.

KEYWORDS

Probiotics, Gut Microbiota, Obesity

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Poster Session 7

Submission ID: 954

FUNCTIONAL CHARACTERISTICS AND PHYSIOLOGICAL EFFECTS OF LEGUMES

ZELİHA ÖNÇİRAK¹, MÜNİR ANIL¹

ABSTRACT

For many years legumes have been regarded as high nutrients because of their high protein content and the many functional components they contain. In the world, 22% of plant proteins and 7% of carbohydrates in human nutrition are provided from the edible legumes. Legumes, which have very high nutritional values, are rich in basic amino acids such as lysine, threonine, leucine, phenylalanine, tryptophan and aspartic acid. At the same time the digestibility of legume proteins is between 70-94%, which is quite high. The fat content of legumes being generally low and often from polyunsaturated fatty acids, especially linoleic acid (omega-6) increase nutritional value. The linoleic acid contained plays a role in regulating the physiology of reproduction and lactation, the cholesterol distributor in arteriosclerosis, the regulation of cardiovascular system, vision systems and mental activities, and the prevention of the formation of nitrosamines in nitrate-nitrite poisoning. In addition, soluble raffinose, which are carbohydrates found in legumes, are prebiotics that support the development of probiotics selectively and progressively to the colonic without digestion. These substances support the development of beneficial bacteria in the field, especially Bifidobacterium species. Since these carbohydrates can not be digested in the small intestine, they are fermented by colon microflora in the large intestine. The products of fermentation products are gas and short chain fatty acids. The resulting short chain fatty acids promote beneficial colon mucosal health and have beneficial physiological effects. Phenolic compounds, which are important compounds in legumes, also have important effects on human health. Of these compounds, especially isoflavones have biological properties, including broad-spectrum protection against hormones associated with certain types of cancer. Nutritional isoflavones are known to protect against the oxidation of LDL particles. At the same time, isoflavones have protective properties against osteoporosis by regulating calcium exchange on the cell membrane. It is known that isoflavones inhibit the development of many diseases such as cancer, atherosclerosis, diabetes and chronic inflammation, which act as antioxidants besides these effects and inhibit free radical formation and accumulate in the organism. The most important nutritional factors in legumes are nutritional fibers in the organic structure that come from the colon without being digested. While nutritional fibers reduce sugar, lipid and cholesterol content in blood, it also shortens the duration of solid waste, allowing rapid release of toxic substances from the colon. Often monosaccharides and sugar acids (mannuronic, galacturonic, glucuronic and 4-o-methyl glucuronic acid) are the major compounds that form nutritional fibers. The nutritional fibers in legumes have many important physicochemical properties such as solubility, water and oil retention capacity, ion exchange capacity. It is known that the fiber in the legume plays a role in strengthening the colonic function and lowers the level of cholesterol in the high level fiber. Legumes are also protective against many diseases that can be overcome by using dietary treatments such as diverticular diseases, colon and rectal cancers, appendicitis, varicose veins and hemorrhoids, coronary heart diseases, gall stones and diabetes. The

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physiological effects of nutritional fiber and the benefits of health are stated to be shortening transit time and increasing the amount of waste, binding bile acids, breaking up into short-chain fatty acids in the large intestine, increasing viscosity, slowing digestion and absorption. In addition, clinical trials have shown that postprandial blood sugar, insulin levels, lipid levels in blood serum are reduced, which is useful for the second type of diabetes. Therefore, with the dissemination of legumes consumed, society will be fed healthy and as a result, treatment expenditures and labor loss will be reduced and comfort periods in human life will be increased. For this purpose, it is necessary to increase the production of legumes and to expand the usage areas of the food industry.

KEYWORDS

Legume, nutritional fiber, functional property, prebiotic

Poster Session 7

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THE ANTIOXIDANT AND ANTICARSINOGENESIS EFFECT OF ROSEMARY

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ABSTRACT

Antioxidants; have protective effects against the oxidation that occur during the preparation and consumption of foods and maintain product quality. The determination of the toxic effects of synthetic antioxidants on human health, the use of herbal products began to gain importance. It has been highlighted on the use of aromatic plants rosemary that has antioxidant activity due to essential fatty acids. Rosemary (*Rosmarinus officinalis* L.) from the Lamiaceae (Labiatae) family is an important medicinal and aromatic plant species. The aromatic plant rosemary has been used for medicinal purposes due to its antioxidant, antiinflammatory, chemoprotective and antiadipogenic affects. It is also known that rosemary extracts have antioxidant activity similar of synthetic antioxidants. The potent antioxidant properties more than 90% of rosemary have been mainly attributed to its major compounds; rosmanol, carnosol and carnosic acid. Rosemary extracts highest antioxidant properties are also due to the presence of phenolic diterpenes. Terpenes are recognized for various benefits especially in the prevention and treatment of a wide range of cancer types. Rosemary extract is also modulate the alteration of signaling pathways and molecules directly related to tumor initiation and development. Rosmanol acts as a strong anti-inflammatory agent and inhibite tumor development. Carnosol may induce apoptosis through the intrinsic pathway; purified carnosol and carnosic acid are powerful inhibitors of lipid peroxidation in microsomal and liposomal systems. Carnosol and carnosic acid could contribute to the chemopreventive, antitumoral and antimetastatic activities of rosemary extracts . Oral administration of carnosol is well tolerated and mean intake is estimated to be between 500 and 1500 mg/ day of carnosol and carnosic acid for adults. Rosemary extract is a potential may be included in the anti-cancer diet. It is suggested that carnosic acid alone or with the anticancer drugs preferable as a good practise for the treatment of many typies of cancers that are resistant to chemotherapy.

KEYWORDS

Antioxidant, Carnosol, Rosemary

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Poster Session 7

Submission ID: 958

HEALTH EFFECTS OF NUTS

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ABSTRACT

Nuts are on the diet of human beings since pre-agriculture times. The word "Nut" is rooted in the words "nutrient, nutriment, nutrition" which are also nutritional and nutritious. Today the most consumed nuts are almond, hazelnut, walnut and pistachio. Nuts are rich sources of saturated, unsaturated fatty acids (MUFA, PUFA), vegetable protein, fibre, phytosterols, polyphenols, vitamins and minerals. Nuts are also rich in vitamins and minerals such as niacin, B6, folic acid, magnesium, zinc, copper and potassium. The Adventist Health Study 1992 found that the consumption of nuts, reduced the risk of coronary heart diseases. With these study, the number of studies on the health effects of nuts has increased steadily. However, four points have to be noted regarding the consumption of nuts. They may lead to possible weight gain, increase fat tissue in the body, cause metabolic complications such as metabolic syndrome and diabetes, and allergic reactions. The idea that nuts have high energy content and that the consumption of these foods can cause obesity are the negative perception about nuts. However, studies have reported that consuming a certain amount of nuts within the diet helps body to lose weight. In one study, the participants who consumed nuts had lower BMI and waist circumference than those who did not consume or consumed less nuts. In addition, nuts play a role in the regulation of blood sugar because of its rich magnesium content. In one study, the prevalence of diabetes was found to be 25% lower in women consuming nuts more than 5 days a week than those who never consumed. In another study, a decrease in HbA1C levels was observed in those who consumed 28 g nuts 5 days a week for 12 weeks. In a different study, when a standard healthy diet was compared to a healthy diet enriched with walnuts, a healthy diet containing walnuts was found to lower serum cholesterol levels more than the other diet at the end of the study. Clinical and observational studies have demonstrated that the consumption of nuts reduces risk of cardiovascular diseases. U.S. Food and Drug Administration (FDA) has indicated that there is a significant effect of the consumption of nuts in reducing cardiovascular diseases risk. Moreover, the American Heart Association emphasized that nuts must be found in a healthy dietary within the context of 2020 health promotion and development. On the other hand, it is stated that excessive consumption of nuts may lead to atherosclerosis due to high fat content, an increase in the body weight and adipose tissue. In the last 20 years, with the increase in research on nuts, the importance of nuts has become even more pronounced. By means of this situation, the macro and micronutrients contained in the nuts are indispensable for nutrition. In addition, the relationship of nuts between mortality, cardiovascular diseases, serum lipid levels, diabetes have been studied and they were found to have positive effects on them in many studies. However, as with any nutrient, it must be consumed in the amounts specified in the diet on nuts. Therefore, it is recommended that nuts are consumed as much as the recommended daily amount 28 gr / day.

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KEYWORDS

Nuts, nutrition, body weight

Poster Session 7

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CUPRIC REDUCING ANTIOXIDANT CAPACITY (CUPRAC), DPPH FREE AND ABTS CATION RADICAL SCAVENGING ACTIVITIES OF ETHANOL EXTRACT FRACTIONS OF ENDEMIC SALVIA CERINO PRUINOSA VAR. ELAZIGENSIS

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ABSTRACT

The genus *Salvia* L. includes more than 900 species and is mostly found in both subtropical and temperate parts of the world; the two largest gen centers of the *Salvia* are in America and SouthWest Asia. In Turkey, endemism ratio of *Salvia* is 48 %, so Turkey is a major gen centre for the *Salvia* genus. This genus is named “*Salvia*”, derived from latin “*Salveo*”, which means to “save, to recover”. *Salvia* taxa is used in folk medicine from ancient times and find application in many commercial and medicinal products, particularly in essential or volatile oils and flavoring agents manufacture and is widely used in the food and cosmetic industries. 73 fractions were gained from ethanol extract from the aerial parts of *S. cerino pruinosa* var. *elazigensis*. And also 37 fractions were gained from the roots ethanol extract of this plant. According to the applied thin layer chromatography results, totally 12 fractions from ethanol extract of aerial parts and 11 fractions from the root extract by combining similar fractions. And also antioxidant activities were studied. In the DPPH free radical scavenging activity it was determined that 41-44,45-48 numbered fractions from the extract of *S. cerino pruinosa* var. *elazigensis* plant’s aerial part, showed higher activity than BHT and α -TOC used as standarts. And also 17-18, 21-26 fractions gained from root of *S. cerino pruinosa* var. *elazigensis* extract, showed higher activity than BHT used as standart. In the ABTS cation radical scavenging activity, it was determinated that the 41-44, 45-48, 49-56, 61-64, 65-69 ve 70-73 fragments which were gained from the of the aerial part’s ethanol extract, showed higher activity than BHT and α -TOC compounds used as standarts. When looked at the result of CUPRAC-Copper(II) reduction capacity, aerial parts ethanol extract’s 41-45 numbered fractions showed higher copper(II) reduction capacity than the standarts was determined. According to the activitiy results generally the aerial parts activities was higher than the root fractions activities was shown. Acknowledgements: The research was funded by grant : KBAG 114Z801 from TUBITAK, The Scientific and Technological Research Council of Turkey.

KEYWORDS

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Salvia cerino pruinosa var. elazigensis, Ethanol extract, DPPH, ABTS, CUPRAC



Poster Session 7

Submission ID: 960

DETERMINATION OF ANTIOXIDANT PROPERTIES OF INULA HELENIIUM ROOTS AND COTINUS COGGYGRIA LEAVES

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ABSTRACT

Inula helenium L. (Family: Asteraceae) is a widely occurring perennial herb in East Asia particularly China, North American and Europe. The roots of *I. helenium* are used as versatile medicine against fever, lung disorders, bronchitis, indigestion, chronic enterogastritis, and infectious diseases. *Cotinus coggygria* Scop. (Family: Anacardiaceae) is a shrub or a tree usually growing up to 5 m. It grows mainly in South and Central Europe, South Russia, Crimea, Caucasia, Latakia and Turkey. The leaves of this species have been used in Balkan and Anatolian folk medicine as antipyretic, antiseptic, antihemorrhagic, treatment of diarrhoea and wound healing. The leaves and young branches from naturally growing trees are utilized in producing an essential oil with terpenic odour. The composition and antimicrobial activity of *C. coggygria* oils have been reported in different studies. Antioxidants are substances that have the ability to delay, remove, or prevent the oxidation processes occurring to other compounds. The measurement of the antioxidant capacity of plants has become very important for researchers because it may provides information about resistance to oxidation, quantitative contribution of natural antioxidant substances. Natural antioxidants are substances that may protect human cells against the effects of produced free radicals. Free radicals can damage cells, and may play a role in heart disease, cancer, and other diseases. Therefore, the antioxidant compounds may play an important role in the prevention of certain diseases. The extracts of the plants were obtained in methanolic, acidic methanolic and ethanolic, acidic ethanolic media using ultrasonic-assisted extraction. The total phenolic contents of extracts were determined by Folin-Ciocalteu method and also total antioxidant capacities of extracts were determined by ABTS and CHROMAC methods. Phenolic compounds such as phenolic acids and flavonoids were analyzed in the extracts using high-performance liquid chromatography-diode array detection (HPLC-DAD). The chlorogenic acid, ferrulic acid in *Inula helenium* roots and myricetin, rutin, quercetin in *Cotinus coggygria* leaves were determined. According to the results of these assays the extracts were showed to have good antioxidant properties.

KEYWORDS

Inula helenium, *Cotinus coggygria*, antioxidant, phenolic compounds, HPLC

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Poster Session 7

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BOTANIC ORIGIN AND ANTIOXIDANT ACTIVITIES OF THE PROPOLIS FROM REFAHIYE (ERZINCAN) AS NUTRITIONAL SUPPLEMENTS

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ABSTRACT

Propolis is a resinous, sticky gum and used by bee as versatile material. In addition, biological properties of propolis are potential for the improvement of new drugs and nutritional supplements. Pollen analysis, antioxidant activities, total phenol and total flavonoid contents were studied at the first time propolis sample from Refahiye (Erzincan). Mellisopalynological analysis was made according to the relevant literature and botanic origin of sample, mainly from the Fabaceae (38.4%), Asteraceae (20.2%) and Fagaceae (11.2%) families. The antioxidant capacity of propolis extract was assessed by the hydrogen peroxide scavenging activity (in terms of SC50), ferric reducing antioxidant power capacity (FRAP), DPPH radical scavenging activity (in terms of SC50), metal-chelating activity (%), total phenol content (TPC), and total flavonoid content (TFC). The values were found as 25.86 µg/mL, 72.25%, 52.15 µg/mL, 41.51%, 3163.85 mg GAE/100g and 118.59 mg CAE/100g, respectively. For comparison of these results, Butylated Hydroxy Anisole (BHA), Butylated Hydroxy Toluene (BHT) and α-Tocopherol (TOC) were used as standard antioxidant compounds. The high activity of propolis could be related with their different pollen composition. It could be beneficial for human health.

KEYWORDS

Antioxidant capacity, health, pollen, propolis, Refahiye(Erzincan)

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Poster Session 7

Submission ID: 962

PHENOLIC COMPOUNDS AND ANTIOXIDANT ACTIVITY OF BUCKWHEAT POLLEN OF KONYA REGION

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ABSTRACT

Pollens are male reproductive organs of flowering plants and are accepted as a food balanced with proteins, sucrose, vitamins and minerals. Pollen is an essential nutrient for raising brood after honeybee larvas and also for improving tissues, muscles, secretory glands and other organs sufficiently during youth. Buckwheat is a species of wheat produced commonly in countries such as North America, China, Europe, Poland, Holland and Russia and is not much well-known in Turkey. Buckwheat, which started to be produced recently in our country in Konya plain as a pilot area, gives a yield twice per year. Buckwheat, an important source of protein for the celiac patients, its honey and pollen are also valuable products. In this study total phenolic content, total flavonoids, antioxidant capacity (FRAP), and some phenolic compounds of the buckwheat pollens obtained from Konya region were investigated. Phenolic compounds were determined by HPLC-UV. In a study performed on three different pollens, the average total phenolic content, the average total flavonoid and total antioxidant capacity were determined as 762 mg gallic acid /100 g fresh pollen, 75 mg quercetin/100 g fresh pollen and 490 mikromol Trolox/100 g, respectively. It was found out that pollens were rich in catechin, coumaric acid, ferulic acid and cinnamic acid.

KEYWORDS

Buckwheat pollen, phenolic compounds, antioxidant activity

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Poster Session 7

Submission ID: 963

THE IMPORTANCE OF CARNATION (*SZYGIUM AROMATICUM*) AND CASTOR OIL (*RICINUS COMMUNIS L.*)

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ABSTRACT

Throughout history, people have used plants as the most important food ingredient. However, healing plants have been evaluated for the treatment of diseases in all parts of the world and in all cultures. In ancient cultures, the use of herbal plants and herbal medicines continues to be preserved by being transmitted to them. Herbal treatments, which are among the alternative treatments and have very effective results, are increasing in our country as well as in the whole world. All plants present in the world are used for herbal medicines according to their contents and structures. Therapeutic features in any disease have been discovered and are known to be herbal plants are proven. Carnation and castor oil are also used by people for healing. Clove is one of the most used and useful plants with its strong aroma and strong smell. Carnation oil obtained from carnation is extremely rich in terms of phosphorus, sodium, potassium, calcium, hydrochloric acid, iron and vitamin C. It is good for complaints such as indigestion, nausea, stinging, earache, cough, sputum, bronchitis, sinusitis, asthma, colds in the treatment of infections of the throat and gums, wounds, cuts, mushrooms, rashes, insects and infections. With the blooming of Indian flower seeds, Indian oil is obtained, which is a colorless, slightly yellowish, clear and dark oil. It acts on small intestines to relieve constipation. Avoids hair and eyelash pouring, especially in the hair curler is very useful. Antiseptic properties help fight infections. It has excellent antioxidant properties that allow the body to fight harmful free radicals. Anti-inflammatory properties help relieve inflammation in various parts of the body. Carnations and castor oil, which are very important for human health, are also used as an anesthetic agent for fish in the aquaculture sector worldwide. The use of these oils as an anesthetic increases the use of vegetable sources.

KEYWORDS

Carnation oil, castor oil, herbal treatment, medicinal herbs, anesthetic

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Poster Session 7

Submission ID: 964

POTENTIAL EFFECTS OF CAFFEINE CONSUMPTION ON ENERGY BALANCE, WEIGHT CONTROL AND TYPE 2 DIABETES

OSMAN BOZKURT¹, NILÜFER ACAR TEK¹

ABSTRACT

Obesity is an important public health problem throughout the world and its prevalence is 30.3% in Turkey. There are two important ways to prevent obesity. These are to reduce energy intake or to increase energy expenditure. The aim of this review is to examine the mechanisms of action of caffeine on energy balance and the possible effects on obesity. The thermogenic effect of the catecholamines from extracts of some plants is present. From catecholamines whose effects on energy balance are indicated, caffeine; especially in tea and coffee varieties, capsaicin; red pepper and chili pepper, ephedrine from ephedra is contained. Recently, it has been reported that approximately 80% of the world's population consumes products containing caffeine. The effects of caffeine on the energy mechanism are through the sympathetic nervous system. Even if the amount of caffeine taken in the body is small, it stimulates the sympathetic nervous system. Fat oxidation and thermogenesis in the control of the stimulated sympathetic nervous system are effective on the basal metabolic rate (BMR), increasing energy expenditure for a certain period of time. Caffeine that may stimulate thermogenesis and fat oxidation through inhibition of phosphodiesterase, an enzyme that degrades cyclic AMP and through the antagonism of the negative modulatory effect of adenosine on the increased noradrenaline release. Studies have also reported that caffeine increases thermogenesis, as well as the effect of reducing nutrient intake. It was also observed that the intake of caffeine between 200-300 mg increased the metabolic rate between 2% and 12%. It has been reported that regular consumption of coffee has been studied in epidemiological studies and animal models that prevent weight gain and increase glucose tolerance and is particularly effective in the prevention of type 2 diabetes. However, the mechanisms that create these potentially beneficial effects are not fully explained. In a study conducted in obese individuals, it was observed that the patients that were given caffeine and ephedrine combination lost more body weight and fat than the ones just given placebo and only ephedrine. On the other hand, it is known that excessive caffeine intake results in dehydration, insomnia, hypercalciuria and hypertension. The European Food Safety Association (EFSA) recommends up to 400 mg of daily caffeine intake and a single dose of 200 mg of caffeine do not raise safety concerns for adults. As a result, it can be said that a moderate caffeine intake (daily <400 mg) is beneficial in the prevention of obesity and in the maintenance of health, such as fat oxidation, thermogenic effect and increased glucose tolerance in the body.

KEYWORDS

Caffeine, Energy expenditure, Thermogenesis

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Poster Session 7

Submission ID: 965

IN VITRO CYTOTOXIC ACTIVITY OF SALVIA KURDICA FROM ANATOLIA

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ABSTRACT

Salvia L. (Lamiaceae) species consists of about 900 species distributed throughout the world. In Turkey, this genus is represented by 100 species, 53 (53%) of which are endemic. The genus is named "Salvia", derived from latin "Salveo", means "save, or recover". Many of Salvia species are named "adaçayı" in Anatolia, Turkey, and used as herbal tea due to their antiseptic, stimulant, diuretic and wound healing properties. Salvia species are generally known for their several pharmacological effects including antibacterial, antituberculous, antiviral, cytotoxic and cardiovascular activities. In this study, the cytotoxic activity of chloroform and ethanol extracts of Salvia kurdica was determined by MTT method. In this study, human-derived cancer cell series and the Primary Dermal Fibroblasts series were used. For this purpose, the breast cancer cell line (MCF-7), the colon cancer series (HT-29) and the Primary Dermal Fibroblast Series (PDF) were provided. Preliminary work has been done to optimize the number of cells to be placed in the plates for each cell series. 22,000 for MCF-7, 20,000 for HT-29, 12,000 cells for PDF were placed in a 96-well plate and the cells were allowed to sit for 24 hours at 37 ° C and 5% CO₂ in a humid environment to adhere to the plate. After 24 hours, the cells were treated with prepared extracts at 10 [mu] of different concentrations for 48 and 72 hours. After 48 and 72 hours of treatment, the cells were incubated with 10 [mu] MTT solutions for 4 hours. After incubation, a dark blue colored formazan was formed. After adding 100µl solubilization buffer to the cells and incubating overnight at 37 ° C in 5% CO₂ humidified atmosphere, the absorbance of formazan at 570 and 690 nm was measured with a plate reader. Measurements at 690 nm were used as reference absorbances. Ethanol and chloroform extracts of S. Kurdica showed cytotoxic effect only at high concentrations against HT29 and MCF7 cell series was determined. But it was determined that the extracts in these high concentrations showed cytotoxic effect on healthy fibroblast cell series. Acknowledgements: The research was funded by grant : KBAG 114Z801 from TUBITAK, The Scientific and Technological Research Council of Turkey.

KEYWORDS

Salvia kurdica, MTT, MCF7, HT29

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Poster Session 7

Submission ID: 967

THE POSSIBLE FUNGAL PATHOGENS LIMITING BASIL PRODUCTION

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ABSTRACT

Basil (*Ocimum basilicum* L.), belonging to the family of Lamiaceae is an important medicinal and aromatic plant. It is used as a raw material in the food and perfumery industry and in the control of a wide range of plant disease with antimicrobial effect as well as used as a spice. There are many significant plant pathogens that cause yield and quality losses in the basil growing areas in the world. However, there is little information on the biology and control methods of these disease agents. Fusarium wilt caused by *Fusarium oxysporum* f.sp. *basilicum* is the most destructive disease in the basil growing areas worldwide. Also, gray mold (*Botrytis cinerea*), root rot (*Rhizoctonia solani*, *Pythium* spp.), white rot (*Sclerotinia sclerotiorum*), mildew (*Peronospora belbahrii*), leaf spot (*Colletotrichum* spp., *Cercospora ocimicola*) are common fungal pathogens, restricting basil production. This study provided the detailed information on symptoms, morphology and disease management of especially, Fusarium wilt and the other pathogens that may cause problems in basil production of Turkey.

KEYWORDS

Basil, plant diseases, fungal pathogens, Fusarium wilt

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Poster Session 7

Submission ID: 968

ESSENTIAL OIL CONSTITUENTS OF THE LEAVES AND FRUIT OF MALABAILA DASYANTHA (K. KOCH) GROSSH. FROM TURKEY: A TRADITIONAL MEDICINAL HERB

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ABSTRACT

Members of Apiaceae usually possess a characteristic pungent or aromatic smell which is due to the occurrence of essential oil or oleoresin in their different organs. Therefore, volatile oils of Apiaceae plants have a wide application in aromatherapy. The essential oil composition of the leaves and fruit of *Malabaila dasyantha* (K. Koch) Grossh. collected from natural habitats in Tunceli (Turkey) were determined by hydrodistillation in 0.7% (weight/weight) yields. The essential oils were analysed by gas chromatography and gas chromatography/mass spectrometry. A total of 25 compounds have been identified constituting 96.7% in fruit and 97.8% in leaves of the essential oils of the taxon. The predominant compounds were spathulenol (22.5%), palmitic acid (17.6%), stearic acid (10.5%) and oleic acid (9.8%) in the oils from the fruit. The main constituents in leaves of the essential oils of the taxon were found as germacrene D (34.8%), Iso spathulenol (11.3%) and bicyclogermacrene (9.8%). Quantitative and qualitative variations were determined in the essential oil composition of different parts of the studied plant. In the present study, the chemical essential oil composition of the leaves and fruit of *Malabaila dasyantha* is determined and examined to indicate the source of particular essential oils for flavour, fragrance and other potential usefulness.

KEYWORDS

essential oils, gas chromatography/mass spectrometry, Malabaila dasyantha

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Poster Session 7

Submission ID: 969

ENDOPLASMIC RETICULUM STRESS IN PLANTS AND NEW THERAPEUTIC APPROACHES TO PLANT DISEASES

SERKAN ŐEN¹, MERVE ŐEN², SEFA ŐELİK³

ABSTRACT

In eucaryotic cell, the Endoplasmic Reticulum (ER) is the major organelle in the synthesis of proteins and in the modifications after synthesis. As a result of physiological events such as cell differentiation or adaptation to certain environmental conditions, protein production capacity increases in the ER organelle. If this condition becomes chronic, the balance between the rates of production and folding of proteins in the ER organelle deteriorates and a so-called ER stress presentation emerges. Since viruses that infect plant cells induce plant cells to produce hyperactive proteins in an abnormal manner, consequences that lead to ER stress are encountered in such circumstances. For instance, it was found that the transcription factor basic-region leucine zipper 60 (bZIP60) protein, which is one of the ER stress markers in plants, was expressed when Potato Virus X (PVX) was infected with tobacco (*Nicotiana benthamiana*) plant. Similarly, it was found that Bip3 (Heat Shock Protein 70-Hsp70) and bZIP60 proteins as ER stress indicators were expressed together when the same plant was infected with Garlic virus X (GarVX). The fact that the silencing of the genes of ER stress markers resulting from the viral infections in plants using siRNA enables physiological changes that allow plants to tolerate the viral attack by restricting the virus infection is included in the literature data. Since ER stress plays a key role in virus replication and pathogenesis in plant cells in this regard, ER stress-mediated signaling pathways in the development of broad-spectrum potent antiviral therapeutic agents emerges as the target pathways for new generation antiviral treatments.

KEYWORDS

ER stress, Antiviral therapy

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Poster Session 7

Submission ID: 970

THE ANTIMICROBIAL EFFECT OF POMEGRANATE PEEL, APPLE PEEL AND ARTICHOKE LEAF EXTRACT

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ABSTRACT

Introduction Synthetic antimicrobial agents are widely used to prevent the development of pathogenic bacteria in foods, but concerns about the safety of these chemicals are increasing from day to day. Because of the resistance of these microorganisms to these chemicals, fruits, vegetables, spices, plants or their extracts have begun to be used in the preservation of raw or unprocessed foods, pharmaceuticals, alternative medicine and natural therapies. Therapeutic use of plants is as old as human history and there are many plant species that are used as traditional medicines. In this study, it was aimed to determine the antibacterial effect of pomegranate peel extract, apple peel extract and artichoke leaf extract against food pathogens by disk diffusion method. **Material and method** Preparation of the extract The pomegranate peel, apple peel and artichoke leaves used in the study were dried in drying oven at 50 oC. The dried samples were triturated in a blender. 20 gr sample was weighed and placed in 100 ml of solvent (80% ethanol). It was kept in a shaking water bath for 6 hours at 50 oC. Then the filtration was done with filter paper. 100 ml (80%) of solvent were added on it again and this process was repeated 4 times. After the final filtration phase, the ethanol in obtained solution was evaporated using a rotary evaporator. **Preparation of bacterial inoculums** The stock cultures of *Listeria monocytogenes*, *Escherichia coli*, *Escherichia coli* O157: H7, *Bacillus cereus*, *Salmonella enteritis* and *Staphylococcus aureus* that are in liquid form were stored at -20 ± 2 oC on glycerol containing (20%; v/v). For the experiments, 100 μ L of stock cultures were transferred to 10 mL TSB medium, and the bacteria were activated by incubation at 30 oC for 24 hours. The activated bacterial cultures were transferred to centrifuge tubes that each of them is 10 mL, and after centrifuged at 5000 rpm for 10 minutes, bacteria inoculums to be used in experiments were prepared by adding 0.85% physiological saline on obtained pellet part and by being adjusted the cell densities according to 0.5 MacFarland (108 CFU / mL) haze. **Disk diffusion method** (Kirby-Bauer method) 24 hour cultures of *L. monocytogenes*, *E. coli*, *E. coli* O157: H7, *B. cereus*, *S. enteritis* and *S. aureus* strains were made into the standard density of 0.5 McFarland by diluting with sterile physiological saline. 0.1 ml of bacteria from the bacterial inoculums prepared in this way was planted in petri dishes containing MHA according to the spreading plate method. 25 μ l (0.25%, 0.50%, 1%, 1.5%, 2.5%, 5%, 7.5%, 10% concentrations) of plant extracts were soaked into sterile empty discs placed in petri dishes in which planting was made. The Petri dishes in which planting was made were left to the incubation process at 30 oC for 24 hours. After the incubation, the zone diameters composed were measured and thier antibacterial activities were determined. **Conclusion** While, different concentrations of pomegranate peel extract have antibacterial effect against *L. monocytogenes*, *E. coli*, *E. coli* O157: H7, *B. cereus*, *S. enteritis* and *S. aureus* only 7.5% and % 10 concentrations of apple peel extract and artichoke leaf extract have antibacterial effects on the *B. cereus*, *E. coli*, *S. aureus*. Antibacterial properties of apple

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peel and artichoke leaf extracts were found to be lower than pomegranate peel extract. It was also found that the antibacterial activity increased as the extract concentration increased.

KEYWORDS

The Antimicrobial Effect of Pomegranate Peel, Apple Peel and Artichoke Leaf Extract

Poster Session 7

Submission ID: 971

MUSHROOMS OF NATURE

ÖYKÜ PEREN TÜRK¹, YAHYA ÖZDOĞAN¹, LALE SARIYE AKAN¹

ABSTRACT

Natural mushrooms have been known with its nutritional and medical properties in many cultures by people for many years. Different types of mushrooms are considered as functional foods because of their effectiveness in preventing and treating many diseases. The aim of this research is to examine the benefits of mushroom species that grow in the nature spontaneously for the community. Edible mushrooms contain variable bioactive components with high level of protein, fiber, vitamins and minerals. Mushrooms are used medically as well as consumed as food. The medical effects of mushrooms have been stated as immunomodulatory, cardiovascular protective, detoxifying, antiviral, antioxidant, antibacterial and antidiabetic. At the same time, natural mushrooms which are collected by local people in Turkey, is a cultural interest for the individuals. Our country has a rich macrofungus flora. It is expressed that “mor, kanlıca (çıntar), tellice, ebe, kavak, kuzugöbeği, bolet, kıtış (karnıkara), dobalan, doru, kayışkan” etc. mushrooms are collected in Ankara at Kızılcahamam, Elmadağ, Çubuk, Işık Mountain, Çamlıdere Plateau regions by the public. For example the mushroom named “kuzugöbeği” has a place in most important mushroom species both in our country and in the world in terms of its nutritional and economic value. Collected natural mushrooms can be used for commercial purposes and also it is a demand as food. In Turkish culinary culture, it is prepared and consumed in various ways like roasting and drying. It is thought that exports of the natural edible mushrooms may be increased further with the incentives and arrangements which can be made. For contribution to country economy and nutrition of the individuals, ways for identification and best usage of edible mushroom species should be found.

KEYWORDS

mushroom, gathering, culture, nutrient, economy

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Poster Session 7

Submission ID: 973

**COMPOSITION OF ESSENTIAL OIL TWO MEDICINAL PLANTS
(EUCALYPTUS CAMALDULENSIS DEHNH. AND VIBIRNUM
OPULUS L.)**

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ABSTRACT

Eucalyptus is one of the world's important and most widely planted species belongs to the family Myrtaceae. Several species of Eucalyptus are used in folk medicine as an antiseptic and against infections of the upper respiratory tract, such as cold, influenza and sinus congestion. The essential oil of Eucalyptus species showed a wide spectrum of antimicrobial, antifungal, anticandidal, antibacterial, expectorant and cough stimulant activity. In this study, the chemical composition of the essential oil from the leaves and fruits of Eucalyptus camaldulensis Dehnh. and aerial parts of Vibirnum opulus L. grown in Mersin (Turkey) were analyzed by using GC and GC/MS techniques. The yields of essential oils were 1.2% in leaf and 1.0% (v/w) in fruit of E. camaldulensis and identified representing 93.8% and 99.0% of the total oils, respectively. The major constituents of leaves were p-cymene (42.1%), eucalyptol (1,8-cineole) (14.1%), α -pinene (12.7%) and α -terpinol (10.7%), and in fruit were eucalyptol (1,8 cineole) (34.5%), p-cymene (30.0%) and α -terpinol (15.1%). Our results showed that both oils has rich in terms of monoterpene hydrocarbons and oxygenated monoterpenes. Viburnum opulus is from Adoxaceae family and it is reported that has anticancer, antiaging and antioxidant activity. This species used for renal stone reduction. The yields of essential oil of V. opulus was 0.5% (v/w) and 6 compounds identified representing 97.0% of the total oils. The α -pinene (27.3%), α -pinene (27.2%) and butanoic acid (15.8%) were the main compounds identified in the oil of Vibirnum opulus.

KEYWORDS

Eucalyptus, Vibirnum, Essential Oil, Turkey

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Poster Session 7

Submission ID: 974

ESSENTIAL OIL COMPOSITION OF ANACYCLUS CLAVATUS (DESF.) PERS. (ASTERACEAE) FROM TURKEY

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ABSTRACT

Anacyclus clavatus (Desf.) Pers is a medicinal plant, belonging to the Asteraceae family. This plant used as food, in various treatments and applications. *Anacyclus clavatus* can be used in many ethnopharmacological applications, equally against upset stomach and treat gastric ulser. The essential oil of the aerial parts of this plant was obtained by hydrodistillation and analyzed by GC and GC-MS. The essential oil yields of *A. clavatus* were determined as 0.3(v/w). Twenty six constituents were identified and comprised 85.3 percentage of the total essential oil from *A. clavatus*. Palmitic (27.0 %), linoleic acid (14.5%), 2-pentadecanone (6.6%) were determined as main compounds. The medicinal importance of the plant and essential oil composition were discussed in the genera patterns.

KEYWORDS

Anacyclus clavatus, Essential oil, Palmitic acid, Linoleic acid

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Poster Session 7

Submission ID: 975

MACRO ALGAE: HEALTHY FROM SEA

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ABSTRACT

Algae, called seaweed, is one of the important living resources of the sea. These aquatic creatures of plant origin are evaluated in many industrial areas such as food, phycocolloid, agriculture, pharmacy, medicine and energy because of their rich contents. According to the size of the algae are divided into two as micro algae and macro algae. Micro algae are in microscopic size and macro algae are in sizes ranging from 1 - 2 cm to 40 - 50 m. Far East and South Asian countries, as well as naturally collected, cultures are made, and seas are planted like black lands. Algae include bromine, iodine, organic acids, monosaccharides, polysaccharides, agar, alginic acid, sterols, proteins and vitamins. Algae was first used as color material in the cosmetics industry and in the Roman empire during the time of Virjil and Heros. Macro algae is one of the foods that should be consumed on a daily basis because it contains the nutrients needed by the human body. The use of macroalgae as an additive, and even in medicine, is increasing. Compounds that are responsible for antibiotic activity are commonly found in macroalgae. The most important of these are; Halogenated compounds, alcohols, aldehydes, terpenoids, hydroquinones and Ketones. Minerals such as calcium, magnesium, sodium and potassium are also preferred in thalassotherapy centers due to trace elements and vitamins such as iron, copper, zinc and manganese. Macro-algae agar gels are also used in various products such as perfumed underarm creams, sun creams and dermatological creams containing zinc oxide or penicillin. It has also been noted that alginates used in creams have a feeling of freshness and relaxation due to the rapid evaporation effect on the skin. In soaps and shaving foams, sodium alginate is used as a lubricant, to impart an oily property to foam-free shaving creams, and to provide foaming continuity in foams. In medicine and cosmetics industry, carrageenans are also frequently used because of their fluid properties. They are used as stabilizers in shampoos, hair balms to protect foam in shaving foams and soaps, and as absorption enhancers in products such as facial masks. Carrageenic subdermal deodorants prevent the development of bacteria responsible for their relative degradation and ultimately leading to unwanted sweat odors. In this study, the use of macroalgae in areas such as health and cosmetics will be compiled.

KEYWORDS

Macro algae, algae, health, cosmetics, seaweed

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Poster Session 7

Submission ID: 976

EFFECTS OF OREGANO (ORIGANUM SYRIACUM) ESSENTIAL OIL ADDITION ON THE SHELF LIFE EXTENTION OF RAINBOW TROUT (ONCORHYNCHUS MYKISS, WALBAUM, 1972) FILLETS

AYŞE ÖZYILMAZ¹, ABDULLAH ÖKSÜZ², GÜLSÜN AKDEMİR EVRENDİLEK³

ABSTRACT

Effects of oregano essential oil (*Origanum syriacum*) at the concentrations of 0 (control), 5, 20 and 35µL/g on rainbow trout (*Onchorhynchus mykiss*) fillets stored on ice at 2°C for 19-day of storage were measured by the means of chemical, microbiological and sensory analyses. At the beginning of the storage, pH values of the fillets were close to neutral (6.61±0.01) whereas it increased to 7.68±0.01 towards the end of the 19 days of storage. Furthermore, initial TVB-N value of 18.9 mg TVB-N/100 g reached to 39 mg TVB-N /100 g in control group (A), 33 mg TVBN-N /100 g in group B (treatment with 5µL/g), and 38.9 mg TVBN-N /100 g in group C (treatment with 20µL/g) and 43.1 mg TVBN-N /100 g in group D (treatment with 35µL/g) when fillets were rejected by panelists. The spoilage of fillets was fastest both in control group and group B, while the spoilage of group C was slower than group B during storage. Sensory evaluation was taken as the most important criteria for the determination of shelf-life. The results have shown that oregano essential oil extended shelf-life of rainbow trouts fillets. It was found out that the higher concentration of oregano essentialoil (35µL/g) provided the longer shelf-life of fillets up to 11 days at 20C compare to other treatments.

KEYWORDS

Fish fillet, essential oil, oregano (Origanum syriacum), rainbow trout (Onchorhynchus mykiss), shelf-life

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Poster Session 7

Submission ID: 978

**ESSENTIAL OIL COMPOSITION OF LALLEMANTIA PELTATA (L.)
FISCH. ET MEY. (LAMIACEAE) FROM TURKEY**

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ABSTRACT

The genus *Lallemantia* is represented by three taxons in the Flora of Turkey. *Lallemantia peltata* (L.) Fisch. et Mey. is a widely used plant and has antifungal and antibacterial activities, colloborating the traditional therapeutic uses, it can be used in the therapy of infectious diseases as well as an antimicrobial additive in foods. The essential oil composition of *Lallemantia peltata* obtained by hydrodistillation and analyzed by gas chromatography (GC) and gas chromatography - mass spectrometry (GC-MS). The essential oil yields of *L. peltata* were determined as 0.2 (v/w) in aerial part. 13 constituents were identified and comprised 94.7% of the total essential oil. Germacrene-D (26.1 %), caryophyllene oxide (14.3%), 1H-Siklopro[e]azulen-7-ol (13.0%) and 2- pentadecanone (9.1 %) were determined as main compounds of *L. peltata*. The results has shown that the parts of the plant and essential oil may be used as source of natural product.

KEYWORDS

Lallemantia peltata, Essential oil, Germacrene-D, Caryophyllene oxide

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Poster Session 7

Submission ID: 982

DATE PALM AND ITS ANTIOXIDANT EFFECT

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ABSTRACT

Date palm has an important place in many ways in history of humanity. Several components of date palm have positive effect on health. Date palm specifically involves components that have antioxidant effects. This review aims to show date palm's antioxidant components and conditions that effect these components. Along with various phenolic compounds such as; p-coumaric, ferulic and synaptic acids, date palm provides its antioxidant feature from carotene, flavanoid, procyanidin and anthocyanin. Besides, date palm involves lutein, betacarotene, neoxanthin and as the largest phytochemical, carotenoid. Date palm is rich in selenium which is an antioxidant mineral. However, there are several apprehensions about date palm's rich selenium amount (average 0.31 mg/100g) is close to daily toxic level (0.85 mg). Date palm's antioxidant content is influenced by many factors. Dehumidification process affects date palm's antioxidant components. During dehumidification, carotenoid loss is detected when dried and fresh date palms' carotenoid levels are compared. Again, there are considerable amount of total polyphenol loss in dried date palm. Storage conditions are affecting date palm's antioxidant ingredient as well. Increase in total phenolics and flavonoids is being occurred when date palm stored in +4°C. Eventually, storage in refrigerator for a long time (until six months) may be recommended in order to gain more antioxidant value from date palm. As a result date palm is an important antioxidant source thanks to various antioxidant compounds that it is containing. Consumption of 100 g of date palm (approximately 6-7 pieces) provides 80400 µmol/100 g antioxidant and it compensates 50-100% of fiber and 11-15% of an adult's daily energy requirement. Contained antioxidant components may vary due to storage conditions and whether date palm is dried or fresh.

KEYWORDS

date palm, antioxidant, nutrition

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Poster Session 7

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NUTRITIONAL COMPOSITION AND HEALTH BENEFITS OF EDIBLE MUSHROOMS

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ABSTRACT

Mushrooms and other fungi are special because of being neither plant nor animal. They have been position in a place of their own, called Myceteae. In the world, there are more than 2000 species of mushrooms. But less than 25 species are widely accepted as food. Mushrooms have a great nutritional value since they are quite rich in protein, with an important content of essential amino acids and fiber, and poor in fat. Edible mushrooms also provide a nutritionally significant content of vitamins (B1, B2, B12, C, D and E). The crude protein content of edible mushrooms varies ranges from 15% to 35% of dry weight. The protein quality of mushrooms is higher compared to most plant proteins. The proteins of mushrooms are relatively rich in threonine, valine, glutamic acid, aspartic acid, and arginine but are poor in methionine and cysteine. Mushrooms' carbohydrate content ranges from 35% to 70% of dry weight. Mushrooms' carbohydrates include oligosaccharides such as trehalose and cell wall polysaccharides such as chitin, β -glucans and mannans. Because of these cell wall components including non-digestible carbohydrates, mushrooms are also rich in dietary fiber. High fiber intake is recommended for constipation. Fiber supplements containing ear mushrooms which have the highest dietary fiber improves constipation related symptoms without serious side effects in patients with functional constipation. The polysaccharides in mushrooms' composition have immunomodulatory characteristics such as the improvement of lymphocyte proliferation, antitumorpromoting activities and antibody production. Mushrooms show antitumor activity due to their β -glucan content. β -glucan content also demonstrates a hypoglycemic effect. They perform it via a direct interaction with insulin receptors on target tissues. Mushrooms influence LDL and HDL cholesterol, triacylglycerol, homocysteine and blood pressure that are generally accepted biomarkers of cardiovascular diseases. When fat composition of mushrooms is examined, trans isomers of unsaturated fatty acids which increase serum total cholesterol and high density lipoprotein ratio are not detected. Dietary fibers of mushrooms also contribute this effect. In conclusion edible mushrooms have beneficial effects on health with its rich nutrient and fibre composition. Also edible mushrooms are called as functional foods because of their beneficial effects.

KEYWORDS

Mushrooms, Health Benefits, Nutritional Composition

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Poster Session 7

Submission ID: 985

THE USE OF STEVIA POWDER (STEVIA REBAUDIANA) AS A SWEETING IN TURKİSH DELİGH T PRODUCTION

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ABSTRACT

One of the most fundamental objectives of the food industry is to guide efforts to meet conscious consumer demands. Food industry workers are aiming at lowering the amount of sugar in the diet (due to diabetes, obesity, chronic illnesses, etc.) in parallel with general tendency. In this study, the sweetener for this problem was aimed at the production of stevia (*Stevia rebaudiana*) (sugar plant, sugar candy) plant which is 250-300 times more sugar than normal sugar and which is traditionally produced and used in the production of Turkish delight, which does not increase the level of glucose. According to the results of the research, the sensory control of Turkish delight containing 0.03% stevia powder was found to differ from the Turkish delight in terms of taste and general taste. It can be said that the obtained values are higher than the average, and that the use of stevia powder in the production of Turkish delight is positive. When the color parameter was examined, samples of stevia dusted with the lightest color were obtained. In terms of tackiness values; There was a significant difference between control and Turkish delight samples in stevia Turkish delight samples ($p < 0.05$).

KEYWORDS

Sweetener, Stevia, Turkish Delight, Diabetes

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Poster Session 7

Submission ID: 986

GREEN SYNTHESIS OF LAUROCERASUS OFFICINALIS ROEMER (CHERRY LAUREL) FRUIT EXTRACTS BASED NANOFLOWER WITH IN VITRO AMOEBICIDAL AND CATALYTIC ACTIVITY

AYŞE BALDEMİR¹, ÜLKÜ KARAMAN², SADI YUSUFBEYOĞLU¹, AYŞE EKEN¹, NILAY İLDİZ¹, CEMİL ÇOLAK², GAMZE ŞAHİN², İSMAIL ÖÇSOY¹

ABSTRACT

The pathogenic *Acanthamoeba* often causes *Acanthamoeba* keratitis, which is an opportunistic protozoan infection, related with soft contact lens wear. If not treated quickly, it is a type of infection that can result in corneal ulceration, visual loss or even blindness. While there are many chemotherapy options available in the treatment of *Acanthamoeba* infections, they are tough treatments and have limited efficacy [1-3]. Hydrogen peroxide is a commonly used contact lens disinfectant and is effective against *Acanthamoeba*. However, it is toxic to the cornea and must be rapidly neutralized before the lens wears to avoid corneal damage. The single-stage hydrogen peroxide systems applied for the rapid neutralization have very few cysticidal effects [4]. For these reasons, new, more efficacious treatments are required for *Acanthamoeba* infections. *Laurocerasus officinalis* Roem. (Cherry laurel) belongs to the Rosaceae family and is a popular fruit, commonly distributed in the coasts of the Black Sea region of Turkey and is locally called "Taflan", "Laz kirazı" or "Karayemis". Besides its use for food, in Turkey both fruit and seeds of cherry laurel are have been used for many years for the treatment of stomach ulcers, digestive system complaints, bronchitis, skin diseases (especially eczemas) and haemorrhoids [5]. In particular, there is information about the use of seeds against parasites in this region. In previous studies it was determined that the fruits were rich in phenolic components [6,7]. In present study, the effects on the proliferation *Acanthamoeba castellanii* of methanol extracts prepared from endocarp, mesocarp and seeds of the cherry laurel fruit and nanoflowers (NFs) structures which is synthesized from these extracts were investigated [8]. Thus, for the first time, novel organic-inorganic nanobio-antiparasitic agents called NFs were produced and the increase in the amoebicidal activity of the NFs was elucidated. The NFs were characterized with several techniques such as Scanning Electron Microscopy (SEM), Fourier Transform Infrared Spectrometer (FT-IR), Energy-Dispersive X-ray (EDX) and X-ray Diffraction Analysis (XRD). In addition, the catalytic activity of fruit extracts and the NFs were measured against guaiacol in the presence of the H₂O₂. The viability test of *Acanthamoeba castellanii* cysts for amoebicidal activity was performed using 4% trypan blue. Methanol extracts and NFs were prepared at concentrations of 32, 16, 8, 4, 2 and 1 mg / mL in 0.9% saline and distributed in 200 µl of tubes. 200 µl added to 98% viable *A. castellanii* cysts (20X10⁶ parasite/mL) were incubated at room temperature. In the statistical analysis, the Kruskal-Wallis, Friedman and Conover tests were used to analyze significant differences between the mean values. A p value of <0.05 was considered statistically significant. As a result, NFs synthesized from fruit extracts were demonstrated about 5 times more effective than extracts alone for Ameobicidal activity. This can be explained as an increase in the amobisidal activity of a new nano-

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KEYWORDS

Laurocerasus officinalis; *Acanthamoeba castellanii*; Nanoflower; Catalytic activity; Amoebicidal activity

Poster Session 7

Submission ID: 987

ANTIBACTERIAL ACTIVITIES OF CALENDULA OFFICINALIS CALLUS EXTRACT

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ABSTRACT

The use of *Calendula officinalis* Linn. (Asteraceae) preparations for, topical application, is widespread both in dermatology and in cosmetics and one of the relevant pharmacological activities for this use is the anti-inflammatory one. It grows in the forests of India, China, Central Europe, and some tropical areas. Plant tissue culture techniques enable the production of plant tissue or cells in sterile environments under controlled conditions. By one of these methods, callus cultures, pharmacologically active molecules could be produced at the desired amount and constant quality at any time in laboratory conditions. This technique is an alternative method for obtaining the raw material source required for the food, pharmaceutical and cosmetic industries. In this study, the antimicrobial activity of *C. officinalis* callus derived from cotyledon explants were determined. The seeds were immersed in 70% ethyl alcohol for 3 min, followed by surface sterilization with 0.5% NaOCl solution for 5 min and rinsed with sterile double-distilled water. Later on, they were germinated in jars containing 30 mL MS (Murashige and Skoog, 1962) medium without plant growth regulators. Cotyledons excised from in vitro germinated seedlings were used as explants. They were transferred on MS medium supplemented with benzil amino purine (BAP; 2 mg/l), α -naphthalene-acetic acid (NAA; 2 mg/l) for callus studies. The cultures were maintained on the same media compositions and sub-cultured at an interval of four weeks. Callus cultures were harvested at the end of the 16th week. Callus were dried at 40° C in the dark for antimicrobial studies. *Calendula officinalis* callus extracts were tested for their antibacterial activities by using agar well diffusion method. Ethanol and chloroform extracts from these callus were assayed against nine bacteria species (*Staphylococcus aureus* ATCC 6538, *Escherichia coli* ATCC 25922, *Bacillus cereus* ATCC 7064, *Bacillus subtilis* ATCC 6633, *Salmonella typhimurium* CCM 5445, *Proteus vulgaris* ATCC 6896, *Enterococcus faecalis* ATCC 29212, *Enterobacter cloacae* ATCC 13047, and *Kocuria rhizophila* ATCC 9341). The test antibiotics penicillin G, novobiocin, ampicillin, chloramphenicol and erythromycin were used for comparison. *Calendula officinalis* seeds were germinated without any plant growth regulator on MS medium in one week. Callus formation was observed at the end of the 5th week on cotyledon explants. The extracts were prepared from 16-weeks-old callus. *C. officinalis* callus extracts showed 38 mm inhibition zone against *S. aureus*, and chloroform extracts showed 32 mm inhibition zone against *B. cereus*. These results are very close to the test antibiotics used and *C. officinalis* was found more effective on gram positive bacteria.

KEYWORDS

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Calendula officinalis; Callus; Antibacterial activity; BAP, NAA



Poster Session 7

Submission ID: 991

**SOME ECOLOGICAL AND PHYTOCHEMICAL PROPERTIES,
USAGE AREAS AND DISTRIBUTION OF JUNIPERUS COMMUNIS
VAR. SAXATILIS PALL. IN ERZURUM**

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ABSTRACT

Juniperus communis var. *saxatilis* Pall. is a species belonging to the *Oxycedrus* section in the *Juniperoideae* subfamily of the *Cupressaceae* family. This species is 1-7 m high and is an evergreen shrub in winter. It is grown in Bursa, Bolu, Kastamonu, Amasya, Sivas, Gümüşhane, Rize, İzmir, Kayseri, Tunceli, Bitlis and Denizli in Turkey. This study was carried out to determine some ecological and phytochemical characteristics of this species with usage area and some data of inventory in Erzurum province. In addition, the *in vitro* α -glucosidase enzyme inhibition assay of methanol extract of fruits of *J. communis* var. *saxatilis* plant was also evaluated in our study. Enzyme inhibition activity of fruit extract was investigated using α -glucosidase enzyme obtained from *Saccharomyces cerevisiae* and *p*-nitrophenyl- α -D-glucopyranoside as substrate. The results are compared according to the Acorbose. This species has been identified in the study area between 2000-2600 m elevations and spreads to about 4635 hectares. The species is mixed with pure or other tree and shrub species on the north, north-east and north-west slopes. It is a tolerant plant. It grows in light and semi-shaded environments. It grows well in coarse textured, well-aired and quickly warming soil. It can grow up slightly acidic, neutral and slightly alkaline soil. Methanol extract showed enzyme inhibition at 90% (IC₅₀: 0.0525 mg / ml) at 1000 μ g / mL concentration; the standard substance Acorbose showed enzyme inhibition of 26.10% (IC₅₀: 4.5629 mg / ml) at the same concentration. In previous phytochemical studies, flavonoids, polyprenols and monoterpenic hydrocarbons were isolated from different parts of *J. communis* var. *saxatilis*. This species has been reported to have abortus potential as well as anti-infertility, antioxidant, antibacterial and anti-diabetic activities. It is known that the fruits of the plant are effective in rheumatic diseases and gout diseases in addition to the urine-boosting, sweating use among the people. Various organs used in medicine and cosmetic industry is as skin diseases, worm-reducing, stimulant, antiseptic, sedative, antispasmodic. They also provide a place for nutrition and welfare for wildlife. It is also a preferred plant species in landscape arrangements.

KEYWORDS

Juniperus communis var. *saxatilis* Pall., Inventory, Soil, Ecology, α -glucosidase inhibition

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Poster Session 7

Submission ID: 992

GASTROPROTECTIVE EFFECTS OF ZIZIPHUS JUJUBA FRUIT EXTRACT AGAINST ETHANOL-INDUCED GASTRIC MUCOSAL HEMORHAGIC LESIONS IN RATS

MEHMET RAMAZAN BOZHÜYÜK¹, MUSTAFA CAN GÜLER², AYHAN TANYELİ², ERDEM TOKTAY³, ERSEN ERASLAN²

ABSTRACT

Purpose: Gastric ulcer is a common worldwide disease. The most common causes of gastric ulcer are the consumption of alcohol, *Helicobacter pylori*, and the use of non-steroidal anti-inflammatory drugs (NSAIDs). Excessive alcohol consumption usually increases the risk of gastric mucosal damage. Thus, the experimental model of ethanol-induced gastric injury in rats is generally used to investigate alcohol-induced gastric ulcer in humans and the main compounds involved in the antiulcer activity. The underlying mechanisms of ethanol-induced gastric ulcer have not been fully identified. In this study, it was aimed to investigate gastroprotective effects of extract of *Ziziphus jujuba* fruit (Jujube), on ethanol-induced gastric ulcer by histopathological method. **Method:** In this study, 32 Wistar albino female rats weighing 257±4.3 gr were used and 4 groups were formed (n=8). Nothing was applied to the control group. Purified water, 4ml/kg and 8ml/kg jujuba extract were respectively administered intragastrically for 10 days in the groups treated with ethanol and jujuba extract. On 11th day, 5 ml/kg ethanol was administered intragastrically to the rats and they were sacrificed after 90 minutes. The gastric tissues were obtained. Macroscopic imaging was first performed and then they were stored in 10% formalin until histological studies to be performed. **Findings:** Histopathological evaluation was performed by comparing the mucosal images of the control group. In evaluation of hematoxylin and eosin (H&E) staining, there was no degradation in the gastric tissue in the control group. In the group with ulcer, it was observed that there were degenerative changes in the surface epithelial cells and dilated gastric pit and gland structures and neutrophil infiltration. In the group treated with 4 ml/kg jujuba extract, it was seen that there were the partial irregularities in the gastric pits and the decrease in neutrophil infiltration. In the group treated with 8 ml/kg jujuba extract, it was seen that the gastric pits were regular, the mucosa generally appeared like that of the control group and there was the significant reduction in neutrophil infiltration and the number of necrotic cells. In immunohistochemical evaluation of nuclear factor kappa B (NF-κB) and caspase-3 immunopositivity, the group with ulcer had higher immunopositivity compared to the control group. Moreover, it was seen that the groups treated with jujuba extract had lower immunopositivity due to its dosage dependent effect compared to the group with ulcer. In order to better understand the histopathological evaluation, histopathological damage was scored as - (none), + (little damage), ++ (medium damage) and +++ (severe damage) according to the regularity of the

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gastric mucosa, the depth of the mucosal injury, and the presence of hemorrhage and necrotic cells. Result: Jujube extract showed gastroprotective effects on ethanol-induced gastric damage in a dose-dependent manner.

KEYWORDS

Jujube (Ziziphus jujuba), Gastroprotective effect, Ethanol-induced gastric ulcer

Poster Session 7

Submission ID: 995

CARDIOPROTECTIVE EFFECTS OF THE QUERCETIN AND RUTIN IN 5-FLUOROURACIL-INDUCED CARDIOTOXICITY IN THE RATS

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ABSTRACT

Introduction and aim: 5-Fluorouracil (5-FU) is widely used in the solid tumors such as lung, breast and gastrointestinal cancers. 5-FU causes cardiotoxicity and hepatotoxicity. In this study, in the 5-FU-induced cardiotoxicity has aimed investigations of the cardioprotective effects of Quercetin (Q) and Rutin (RU) Method: In this study, 50 piece male Sprague Dawley rats (250±25 g) were used. Rats were divided randomly into eight group, which there was 10 rats in each group. The group control was given intragastric (ig) corn oil (1 ml) for 14 days. The group 5-FU rats were given ig corn oil for 14 days and eleventh day injected intraperitoneal (ip) a single dose (50 mg/kg) of 5-FU. Group Q50+5-FU and Q100+5-FU were given ig 50 mg/kg and 100 mg/kg Q for 14 days, respectively. These groups were injected 5-FU (50 mg/kg) single dose on the 11th days of Q application. The group Q100 was given Q (100 mg/kg-i.g) for 14 days. Group RU50+5-FU and RU100+5-FU were given ig 50 mg/kg and 100 mg/kg doses of the RU for 14 days, respectively. Also, these groups were injected the single dose of 5-FU (50 mg/kg) in the 11th days of RU application. The group RU100 was given RU (100 mg/kg-i.g) for 14 days. In the end experimental applications, the blood sample were collected from anesthetized rats and rats were scarified. Sera were separated by centrifugation and utilized for the evaluation of various cardiac marker enzymes (CK, CK-MB, AST, ALT, LDH, cTnI). The cardiac tissues used for biochemical and histopathological analysis. The data were analyzed by Tukey test in the one-way ANOVA. Results: When data are showed compared among groups that in the MDA level was significantly higher in the 5-FU group than control group and decreased significantly RU100+5-FU and Q100+5-FU groups. SOD and GSH levels were markedly decreased in the 5-FU group compared with control, RU100+5-FU and Q100+5-FU groups. AST, CK, CK-MB, ALT, Troponin I and LDH levels were significantly increased in the 5-FU group when compared to other groups. In the histopathological examination of cardiac tissue was determined that in the 5-FU group had markedly degenerated cells and cardiac myofibril. Intensity of β -MHC positivity was higher in the 5-FU group sections compared to the control, RU100+5-FU and Q100+5-FU groups sections. Conclusion: In the present study was determined that especially high doses of the Q and RU have protective effects on 5-FU-induced cardiotoxicity.

KEYWORDS

5-FU, Cardiotoxicity, Quercetin, Rutin, Rat

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Poster Session 7

Submission ID: 996

THE EFFECT OF STORAGE ON SOME PROPERTIES OF 3 DIFFERENT GROUND POPPY SEED FATS

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ABSTRACT

The poppy seed is a traditional product in Afyon. There are three types of poppy seed. These are white poppy seed, yellow poppy seed and gray poppy seed. The objective of this study is to investigate the effect of storage at 15-20⁰ C for several times (0, 7, 15, 30, 45 and 60 days) on some properties of 3 different poppy seed fats. In this study, fats were obtained from white poppy seed (TMO1), yellow poppy seed (TMO2) and gray poppy seed (Afyon-95). Then free fatty acid amount (%), peroxide value (meq O₂/g) and iodide number of these fats were analyzed. Free fatty acid amount, peroxide value and iodide number at these fats were increased with increasing of storage time, but this increase was little. The results of 3 different poppy seed fat were found as similar. It was concluded that three different poppy seed fats were stable for long times at 15-20⁰ C. It was investigated the effects of storage on L*, a*, b* color values of three types of poppy seed fats and total phenolic contents of these fats were determined. The fat contents of three types of poppy seeds were found as 53.85 % (white poppy seed), 49.85% (yellow poppy seed) and 49.17 % (gray poppy seed). L* and b* color values of white poppy fat and gray poppy seed fat were decreased when storage time was increased, while a* color values of those were increased. L* and a* color values of yellow poppy seed fats were increased when storage time was increased, whereas b* color value of that was decreased.

KEYWORDS

fat, phenolic, poppy seed, storage, stability

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Poster Session 7

Submission ID: 999

**EFFECT OF ACCELERATED SOLVENT EXTRACTION (ASE)
SYSTEM TEMPERATURE ON THE AMOUNT OF PHENOLIC ACIDS
IN THE METHANOLIC EXTRACT OF CHAMOMILE (MATICARIA
CHAMOMILLA L.)**

TIMUR TONGUR¹, SERPİL KILIÇ¹, TANER ERKAYMAZ¹, MURAT KILIÇ¹

ABSTRACT

Chamomile (*Matricaria chamomilla* L.) is one of the preferred hot beverage as herbal tea. The aim of this study was to determine effective methanolic extraction temperature of chamomile (*Matricaria chamomilla* L.) for phenolic acids by using accelerated solvent extraction (ASE). In the study a commercial chamomile tea was used as a testing material. Detection of phenolic acids were done with LC-ESI-MS/MS. The study was performed at 5 different temperatures; 40°C, 50°C, 60°C, 80°C and 100°C. 1.0 g chamomile tea sample and 1.5 g diatomaceous earth weighed to the 10 ml ASE extraction cell. Extraction time was 25 minutes for one sample. Nitrogen flow was used for drying extract. Hydrolysis step were implemented to dried samples. Phenolic content of hydrolysed chamomile samples were determined with LC-ESI-MS/MS. Caffeic acid, p-coumaric acid, rosmarinic acid, ferulic acid, quercetin, chlorogenic acid, isorhamnetin, luteolin, syringic acid, and apigenin were analysed in the study. For chromatographic separation Hypersil Gold 50 mm x 2.1 mm x 1.9µm C18 column was used with gradient flow. Analysis time was for 8 minutes for one sample. LC-MS/MS method was found to be selective, linear ($r^2 > 0.99$) and precise for all of interested phenolic compounds. The results showed that phenolic compounds were sensitive to temperature. The methanolic extract which obtained at 40°C had a highest phenolic acid values comparing to other temperatures. The extraction yield was better at 40°C for methanolic ASE extract.

KEYWORDS

Chamomile, Phenolic Compounds, Accelerated Solvent Extraction, LC-MS/MS

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Poster Session 7

Submission ID: 1002

GASTROPROTECTIVE EFFECTS OF PERSIMMON (*DIOSPYROS KAKI L.*) AGAINST ETHANOL-INDUCED GASTRIC ULCER IN RATS

MUSTAFA CAN GÜLER¹, MEHMET RAMAZAN BOZHÜYÜK², AYHAN TANYELİ¹, ERSEN ERASLAN¹, ERDEM TOKTAY³

ABSTRACT

Aim: Gastric ulcers are a major problem worldwide with no effective treatment. Ulcer is caused by an imbalance between two factors: aggressive factors in the lumen (physical, chemical or psychological) and protective mechanisms. Aggressive factors include acid, pepsin, *Helicobacter pylori*, stress, alcohol, and use of non-steroidal anti-inflammatory drugs (NSAIDs). Protective mechanisms include mucus, bicarbonate, prostaglandin, blood flow, antioxidant system, nitric oxide, and cell proliferation. Current treatments are not always effective. They also have side effects and are expensive. Therefore, the protective effect of herbal medicines is important. Persimmon (*Diospyros kaki L.*) is widely used in the treatment of various diseases. Previous studies have shown that *Diospyros kaki L.* has anti-oxidant activity. Our study aimed to investigate gastroprotective effects of persimmon (*Diospyros kaki L.*) on ethanol-induced gastric ulcer by histopathological method. **Method:** In our study, 32 Wistar albino male rats weighing between 250-300 gr were used. We formed 4 groups each containing 8 rats. Group 1 was the control group and was placed on a normal diet. Group 2 was the ethanol group and purified water was administered by oral gavage for 10 days. Low dose (4 ml/kg) and high dose (8 ml/kg) persimmon extract were administered by oral gavage for 10 days in Group 3 and 4, respectively. In our study, we used Japanese persimmon (*Diospyros kaki L.*) harvested in the ninth month in Mersin Province, Turkey. At the end of the 10th day, ethanol (absolute ethanol 99%, 5mL/kg) was administered by oral gavage in order to produce gastric ulcer in Group 2, 3 and 4. The animals were sacrificed at the end of the experimental period (90 min). The gastric tissues obtained from animals were investigated by histopathological methods. **Results:** Hematoxylin-eosin staining results; Histopathological evaluation was performed based on the gastric mucosa. Accordingly; In the control group, it was seen that the gastric pits were regular and the mucosal cells were in normal size and shape. In the group with ulcer, it was seen that the gastric pits lost their normal appearance. However, it was remarkable that the mucosal cells were necrotized in both the superficial and deep layers of the mucosa and there was an increase in the number of lymphocytes. In the group treated with low dose (4 ml/kg) persimmon extract, it was seen that the gastric pits were regular and the surface mucosal cells had hypertrophic changes. In the group treated with high dose (8 ml/kg) persimmon extract, it was seen that the gastric pits were regular and the mucosa was generally similar to that of the control group. In order to better understand the histopathological evaluation, histopathological damage was scored as - (none), + (little damage), ++ (medium damage) and +++ (severe damage) according to the regularity of the gastric mucosa, the depth of the mucosal injury, and

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the presence of hemorrhage and necrotic cells. The results of immunohistochemical evaluation In order to better understand the results of immunohistochemical evaluation, NF- κ B and caspase-3 immunopositivity was scored as - (none), + (little damage), ++ (medium damage) and +++ (severe damage). In immunohistochemical staining performed with NF- κ B and Caspase-3 antibody, while the group with ulcer showed severe immunopositivity, the control group, the group treated with low dose persimmon extract and the group treated with high dose persimmon extract showed mild immunopositivity. Conclusions: It has been shown that persimmon (*Diospyros kaki L.*) may have protective roles against ethanol-induced gastric ulcer. Persimmon (*Diospyros kaki L.*) can be considered as a new potential natural method in gastric ulcer treatment. This study was supported by Atatürk University SRP (Project no: 2016/051).

KEYWORDS

Gastric ulcer, Diospyros kaki L., Gastroprotective effect, Histopathological evaluation

Poster Session 7

Submission ID: 1003

GASTROPROTECTIVE EFFECTS OF PYRUS COMMUNIS AGAINST ETHANOL-INDUCED GASTRIC MUCOSAL HEMORRHAGIC LESIONS IN RATS

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ABSTRACT

Aim: Gastric ulcer is one of the most common diseases in the world and is a global problem. Excessive alcohol consumption usually increases the risk of gastric mucosal damage. Herbal medicines are used in the prevention of many diseases. In this study, an extract of pear fruit which belongs to the Rosaceae family was used. Pear extract contains a large number of flavonoids, acids and antioxidants. In this study, gastroprotective effects of pear extract on ethanol-induced gastric ulcer in rats were investigated by histopathological methods. **Method:** In the study, 4 groups were created by using 32 male wistar albino rats (n=8). Nothing was applied to the control group. Purified water, 4ml/kg and 8ml/kg pear extract were respectively administered intragastrically for 10 days in the groups with ulcer and treated with pear extract. On 11th day, 5 ml/kg ethanol was administered intragastrically to the rats and they were sacrificed after 90 minutes. The gastric tissues were obtained. Macroscopic imaging was first performed and then they were stored in 10% formalin until histological studies to be performed. **Results:** Histopathological evaluation was performed based on the gastric mucosa. In evaluation of hematoxylin and eosin (H&E) staining, there was no degradation in the gastric tissue in the control group. It was clearly seen that gastric pits lost their normal appearance in the group with ulcer. However, it was remarkable that mucosal cells were necrotized in both the superficial and deep layers of the mucosa and there was an increase in the number of lymphocytes. In the group treated with 4 ml/kg pear extract, it was seen that there were the partial irregularities in the gastric pits and the necrotic cells on the mucosal surface. In the group treated with 8 ml/kg pear extract, it was seen that the gastric pits were regular, the mucosa generally appeared like that of the control group and the necrotic cells were rarely found on the mucosal surface. In immunohistochemical evaluation of nuclear factor kappa B (NF- κ B) and caspase-3 immunopositivity, the group with ulcer had higher immunopositivity compared to the control group. Moreover, it was seen that the groups treated with pear extract had lower immunopositivity due to its dosage dependent effect compared to the group with ulcer. In order to better understand the histopathological evaluation, histopathological damage was scored as - (none), + (little damage), ++ (medium damage) and +++ (severe damage) according to the regularity of the gastric mucosa, the depth of the mucosal injury, and the presence of hemorrhage and necrotic cells. **Conclusion:** Pear extract showed gastroprotective effects on ethanol-induced gastric damage in a dose-dependent manner. This study was supported by Atatürk University SRP (Project no: 2016/051).

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KEYWORDS

Gastric ulcer, Pyrus communis, Gastroprotective effect, Histopathological evaluation

Poster Session 7

Submission ID: 1004

MEDICAL BENEFITS OF BLACK CUMIN (NIGELLA SATIVA) PLANT

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ABSTRACT

Nigella sativa Ranunculaceae family of flowers, 20-30 cm high, with a bluish-green plant. For this plant in our country names such as blackcurrant, black cumin and black cumin seeds are used. It grows in western and central parts of the country (Afyon, Burdur, Isparta) while our country is grown in countries like Southern Europe, Russia, Sudan, Ethiopia, Syria, Iran, Afghanistan and India. The homeland is the Eastern Mediterranean countries, Eastern and Southern Europe. The seeds of the plant are black and cornered, carrying essential oils. The seeds of this plant are used in the food industry due to its aromatic nature, in some decorations (biscuits, muffins, etc.) and as a flavor in foods such as overalls and sediment. They are also used as medicines for the treatment of various diseases. *N. sativa* seeds are used in many countries for bronchial asthma, rheumatism, allergic diseases, various digestive disorders and parasitic infections, and it is reported that there is no side effect when used correctly and in the right dose. *N. sativa* seeds increase interleukin-3 (IL-3) secretion from T lymphocytes. It has also been reported that *Pseudomonas aeruginosa*, *Escherichia coli*, *Bacillus subtilis*, *Streptococcus faecalis* and antibacterial activity against various bacteria causing dental caries. It can also be used as a preservative in the storage of certain foods by taking advantage of this antibacterial property of *N. sativa*. *N. sativa* has been reported to contain over 100 substances in its chemical content, 38% of these substances are reported to be carbohydrates (glucose, xylose, arabinose), 0.38-0.49% essential oil, 30-40% fixed fat, 20-30% protein, saponin, melanin, nigellin and tannin. Çörekotu is used in the treatment of many diseases in Far East and Middle East countries over 2000 years. It has been reported that *N. sativa* proteins have antioxidant effect and regulate immunological response.

KEYWORDS

Çörekotu, Nigella sativa, medical plant

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Poster Session 7

Submission ID: 1397

PHYTOCHEMICAL STUDIES OF NIGELLA SATIVA IN SYRIAN AND BURDUR SPECIMENS

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ABSTRACT

Çörek otu are the Latin name *Nigella sativa* which is known to be 12 species in the family of wedding flowers (Ranunculaceae) and especially in Turkey. It is also grown in most parts of the world. The leaves that grow in Turkey such as Isparta, Konya, Burdur are fine and have a small seed of black seeds about 35-40 cm in length. Syrian and Burdur plants' seeds were initially stored at 1:1 in MeOH and CH₃Cl solvent mixtures and extractions were carried out. The same plants' seeds specimens were then crushed in the air and kept in the same solvent mixture in the same manner and the extraction procedure was repeated for four times. *Nigella sativa* seeds extracts obtained from Burdur and Syrian were primarily esterified and then fatty acids analysis was performed using GC-MS method. In the obtained results, the main component was identified as linoleic acid in both samples. The second and third major components were identified as oleic and palmitic acids. These three acids were found to be more than 90% of total fatty acids. Also, in this study, isolation and esterification techniques of fatty acids will be discussed. In particular, the effects of saturated and unsaturated fatty acids on activity will be presented. Analyzes and effects of essential oils and especially anti-cancer properties will be presented. In addition to this, the amount of the volatile contents will be also presented.

KEYWORDS

Nigella sativa, essential oil, fatty acids

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Poster Session 8

Submission ID: 1006

INVESTIGATION OF ANTIMICROBIAL EFFECT OF SUMAC AND CINNAMON EXTRACTS ON PARSLEY

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ABSTRACT

It is very important to consume healthy foods during healthy growth and development. It is possible for people to grow up and to continue their lives by consuming healthy ingredients, starting from raw materials. Foodborne microorganisms, which contaminate the food and food raw materials at various stages, can lead to food poisoning and infections. Today, various processes (low temperature or heat treatment application, packaging methods, etc.) and additives such as salt, sugar and antimicrobial additives are used in order to prolong the shelf life and preservation of food. Consumers' skepticism towards these additives has increased because some of the additives used are unhealthy and can be carcinogenic and toxic depending on the usage rate. So, the acquisition and use of natural and reliable additives has become very important. Nowadays, there is increasing interest in the using of various plant extracts as antimicrobial agents to prevent microbial degradation and prolong shelf life. In this study antimicrobial properties of *Rhus L.* (sumac) and *Cinnamomum L.* (cinnamon) were investigated. Parsleys, obtained from the district bazaar, was washed with sumac and cinnamon extracts prepared in different concentrations. In the study, 6 applications (control (unwashed), 1%, 2.5% and 5% sumac and cinnamon extracts) were performed. Total aerobic mesophilic bacteria, coliform group bacteria, coagulase positive *Staphylococcus* bacteria, *Lactobacillus* spp. bacteria, yeast and mold counts, *Listeria* bacterium and *Salmonella* spp. were investigated in the obtained samples.

KEYWORDS

Rhus L., *Cinnamomum L.*, parsley, extract, antimicrobial

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Poster Session 8

Submission ID: 1007

EVALUATION OF SPICE USE, STYLES AND FREQUENCY OF ADULTS

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ABSTRACT

Aim: This research was conducted to evaluate the spice use, styles and frequency of adults aging between 18 and 64. **Material and Method:** The research was conducted on total 1125 (244 males – 781 females) adults aged between 18 and 64. Participants were asked to fill out a questionnaire form by means of face to face interview in order to determine their general characteristics of the participants and their spice use, consumption styles (adding to dishes, making tea or consuming in powder form) and frequency of consumption (every day, once a week, twice a week, three times a week). **Results:** 91.1% of the participants indicated that they use red pepper and add the spice to their dishes (98.9%) mostly. 54,7 of the participants use red pepper (1.37 ± 0.74 tea spoon) every day and 20.5% of them three times a week. 43.8% of the participants use black pepper (1.16 ± 0.61 tea spoon) every day, 24.0% of them three times a week and 14.8% of them twice a week. 99,1% of the participants using black pepper (85,8%) stated that they add the spice to their dishes. 97.0% of the participants using isot (Urfa pepper, 29.7%) add the spice to their dishes and 2.7% of them consume isot in powder form. Frequency of isot consumption is as follows: every day (23.1%), once a week (21.6%) and once a month (18.9%). On the other hand, thyme consumption frequency is 69.6% and participant generally add thyme (89.4%) to their dishes. Thyme is often consumed once a week (28.9%) and its average consumption amount is 1.22 ± 0.68 tea spoon. 54.8% of the individuals use cinnamon and 57,8 of cinnamon users prefer it in powder form. Additionally, cinnamon consumption (1.23 ± 0.60 tea spoon) frequency is once a month (33.0%), once a week (26.8%) and twice a week (12.7%). Locust consumption frequency of the participants is 3.6% and they consume the tea of locust mostly (55.0%). 10.4% of the participants mostly add rosemary to their dishes (50.4%) and make tea of it (4.5%). Rosemary is usually used once a month (29.4% - 1.35 ± 0.75 tea spoon). Fennel use frequency of the participants is 7.9%. In addition, fennel consumption frequency is once a month (38.2%), once a week (18.0%) and twice a week (13.5%). 12.2% of the participants use basil and mostly add it to their dishes (85.2%) and consume in powder form. Basil is monthly consumed once a month (40.1% - 1.68 ± 0.99 tea spoon). 58.5% of the participants using coconut (33.4%) consume it in powder form. The participants consume mostly once a week (33.0%) and average consumption amount is 1.60 ± 1.18 tea spoon. 71.4% of the participants consume mint (1.58 ± 1.16 tea spoon) by adding the spice to their dishes (90.2%), using it in powder form (7.2%) and making tea of the ground mint (2.6%). **Conclusion:** This research showed that most of the spices are consumed in dishes and consumption style, frequency and amount of each spice differs from each other.

KEYWORDS

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¹GAZİ ÜNİVERSİTESİ SAĖLIK BİLİMLERİ FAKÜLTESİ BESLENME VE DİYETETİK BÖLÜMÜ



spice, nutrition, adults

Poster Session 8

Submission ID: 1008

DRUG INTERACTIONS WITH ST JOHN'S WORT

GAMZE YURTDAS¹, EFSUN KARABUDAK¹

ABSTRACT

St. John Wort (*Hypericum perforatum* L.) is a perennial plant belonging to the family Hypericaceae, which grows in Europe, Asia, North Africa and the United States and has golden blossoms of 30-90 cm height. In Turkey, it is known with the names such as union herb, sword herb, lamb shredder, yellow centaur, wing herb (1). St. John's wort is indicated to have sedative and astringent properties, and has been used traditionally for the treatment of excitability, neuralgia, brositis, sciatica, menopausal neurosis, anxiety, depression and as a nerve tonic, and in topical preparations for the treatment of wounds (2). It contains different groups of compounds such as hypericin, hyperforin and flavonoides. Hypericin and hyperforin are suggested to be responsible for its pharmacological activity (1, 2). Hyperforin induces cytochrome P450 3A4 (CYP3A4) and hypericin induces the intestinal drug transporter P-glycoprotein (P-gp). These mechanisms might dramatically affect the bioavailability of most of currently marketed drugs (3). St. John Wort has been shown to lower the plasma concentration (and/or the pharmacological effect) of a number of drugs including alprazolam, amitriptyline, cyclosporine, digoxin, fexofenadine, indinavir, irinotecan, methadone, nevirapine, simvastatin, tacrolimus, theophylline, warfarin, phenprocoumon and oral contraceptives (4). Induction of P-glycoprotein and/or cytochrome P450 (CYP) enzymes (particularly CYP 3A4) by St. John Wort could explain such pharmacokinetic interactions. Combining St. John's wort with serotonin selective re-uptake inhibitors and other antidepressants can cause serotonin syndrome and therefore should be avoided (4). As a result, St. John Wort represents a herbal medicine with a high potential for drug interactions. Some of such interactions may have serious clinical consequences. Therefore, clinicians and patients should be conscious of possible reductions in systemic bioavailability of conventional drugs when taken together with St John's wort. More research is required to ensure reliable information to guide clinical practice. 1. Hışıl Y, Şahin F, Omay S. Kantaronun (*Hypericum perforatum* L.) bileşimi ve tıbbi önemi. *International Journal of Hematology and Oncology*. 2005;4(15):212-8. 2. Barnes J, Anderson LA, Phillipson JD. St John's wort (*Hypericum perforatum* L.): a review of its chemistry, pharmacology and clinical properties. *Journal of pharmacy and pharmacology*. 2001;53(5):583-600. 3. Gordon RY, Becker DJ, Rader DJ. Reduced efficacy of rosuvastatin by St. John's Wort. *The American journal of medicine*. 2009;122(2):e1-e2. 4. Gezmen-Karadağ M, Türközü D, Kapucu DT. Bitkiler ve ilaç etkileşimleri.

KEYWORDS

Drug interaction, St. John's Wort, Hypericum perforatum

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Poster Session 8

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VOLATILE OIL COMPOSITION OIL OF SCANDIX AUCHERI BOISS. (APIACEAE) FROM TURKEY

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ABSTRACT

Genus *Scandix* L. genus belonging to Apiaceae family is represented by nine taxons while eight of them are species. The analysis has led to the identification of 39 components comprising 98.0% of the oils. The essential oil yield was determined as 0.4 (v/w) and the main constituents of the essential oil were germacrene-D (22.3%), spathulenol (11.5%), 1,5-epoxy-salvial-4(14)ene (6.4%) and heptadecane (6.2%) and palmitic acid (5.7%). The essential oil *S. aucheri* has 40.2% sesquiterpenes, 33.8 % sesquiterpene hydrocarbons and 16.1% alkene and fatty acids. The results were compared with the results of the genus patterns and discussed in the Flora of Turkey. This study, reports the essential oils composition of the aerial parts of *Scandix aucheri* Boiss. From Elazığ/Turkey. The oil was extracted by using Clevenger apparatus and analysed by GC and GC/MS system.

KEYWORDS

Scandix aucheri, Apiaceae, 9,12-Octadecanoic acid, n-Hexadecanoic acid, Natural Product.

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Poster Session 8

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CHEMICAL COMPOSITION SCANDIX PECTEN VENERIS L. AND SCANDIX MACRORHYNCHA C.A. MEY (APIACEAE) ESSENTIAL OIL

AZİZE DEMİRPOLAT¹, EYUP BAĞCI¹

ABSTRACT

The *Scandix pecten veneris* L. commonly known as Shepherd's needle and *S. macrorhyncha*, which belongs to Apiaceae. The *S. pecten veneris* leaves showed highest to moderate activity against the studied microbial strains and anti-inflammatory. The present study revealed that the *S. pecten-veneris* leaves could be the potential sources of balance diet with significant biological potentials. The chemical composition of different parts of *S. pecten veneris* L. and *S. macrorhyncha* C.A. Mey. essential oils naturally grown in Turkey were analyzed by GC and GC-MS system. The qualitative and quantitative essential oil variation were also determined. The essential oil yields of *S. pecten veneris* were found as 0.3(v/w) in aerial part and 0.2 (v/w) in fruits. 19 constituents were identified and comprised 89.6 percentage of the total essential oil from *S. pecten-veneris* aerial parts, and identified 17 constituents comprised 87.7 % in fruit essential oil, respectively. The predominant compounds of the aerial part oil of *S. pecten-veneris*, palmitic acid (28.2%), spathulenol (19.6%), 1,5-epoxy-salvial-4(14)ene (7.2%) and caryophyllene oxide (5.4%) were the the main compounds and 9,12, Octadecanoic acid (6.7%), α -curcumen (6.2%), caryophyllene oxide (5.4%) were the major compounds in fruit. On the other hand, 10 constituents were identified and comprised 87.8 % of the total essential oil of *S. macrorhyncha* aerial parts. The main compounds in oil were palmitic acid (31.5%), 1-heptadecanol (25.2%), pentadecanoic acid (13.4%) ve 9-octadecanoic acid (12.6%). Fatty acid, sesquiterpene and saturated hydrocarbons were determined as significant compounds for the characterization of *S. pecten-veneris* and *S. macrorhyncha* essential oil. The results were discussed in view of the chemotaxonomy and natural products.

KEYWORDS

Scandix pecten-veneris, *S. macrorhyncha*, Essential oil, palmitic acid, spathulenol, oleic acid.

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Poster Session 8

Submission ID: 1012

EFFECT OF NIGELLA SATIVE ON DYSLIPIDEMIA

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ABSTRACT

Dyslipidemia is a wide term covering diverse lipid and/or lipoprotein abnormalities [1]. The main findings of this disorder include elevated plasma concentrations of total cholesterol (TC), low-density lipoprotein cholesterol (LDL-C) and triglycerides (TG), and low concentrations of high-density lipoprotein cholesterol (HDL-C) [1]. Dyslipidemia is an important risk factor for cardiovascular disease, the leading cause for morbidity and mortality among patients [2]. There is growing interest in finding safe natural alternatives to common drugs used to treat dyslipidemia, specially in patients resistant to or intolerant of statins [3]. *Nigella sativa* (*N. sativa*), popularly known as black seed, is one of these safe plants used as an herb for more than 2000 years and has been shown to produce multi-systemic beneficial actions, including hypoglycemic, hypocholestermic, and antioxidant effects. It contains numerous biologically active constituents such as thymoquinone (TQ), flavonoids, sterols, and polyunsaturated fatty acids and the lipid-lowering effect is likely mediated by a synergistic action of its different components [3]. Several studies on *N. Sativa* demonstrated improvement in serum lipid levels including decrease in total lipids, TG, low-density lipoprotein (LDL) and increase in high-density lipoprotein (HDL) levels [4, 5]. For instance, dietary supplementation of *N. Sativa* seeds (400–600 mg/ kg) for 1, 2 or 4 weeks is useful in the prevention and treatment of the hyperlipidemia and hypercholesterolemia [5]. Bhatti et al. indicated that oral administration of powdered black seeds (1g/day) to hypercholesterolemic patients for 2 months significantly decreased the total cholesterol, TG, and LDL-C levels and increased the HDL-C level [6]. Bamosa et al. observed an important effect of six different doses of thymoquinone on blood lipids in rats [7]. The effects dyslipidemic of *N. sativa* and TQ may be related to the significant decrease in hepatic HMG-CoA reductase activity, increase in arylesterase activity, regulatory effects on genes that influence cholesterol metabolism, as well as antioxidant mechanisms [4]. As a result, *Nigella sativa* and thymoquinone appear as effective and safe natural treatments for patients with dyslipidemia.

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KEYWORDS

nigella sativa, dislipidemia, black seed

THE BIOLOGICAL ACTIVITIES AND ESSENTIAL OIL COMPOSITION OF SALVIA KURDICA

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ABSTRACT

The genus *Salvia* L. (Lamiaceae) comprises about 900 species world-wide, while it is presented with 89 species and 94 taxa in Turkey, approximately half of which are endemic. Anatolia is the major gene center in Asia. *Salvia* species, known as “adacayi” in Anatolia, are used in folk medicine for the treatment of a variety of diseases, including infectious diseases. They are used as antiseptics, stimulants, diuretics and for wound healing in Turkish folk medicine and for herbal teas. *Salvia fruticosa* and *Salvia tomentosa*, which have similar chemical composition and effects with the medicinal species (*Salvia officinalis* L.), are preferred in Turkey beside of *S. officinalis*. The essential oil of *S. fruticosa* is used traditionally as carminative, stomachic, antiperspirant and diuretic. Due to several studies indicating antimicrobial, antifungal and antioxidant activities of *Salvia* species, especially *S. officinalis*, similar studies on these species increased gradually all over the world. The aim of this study was to determine the essential oil profile of *Salvia kurdica* by GC/MS. Additionally, the essential oil of this *Salvia* was tested for antioxidant (DPPH, Beta Caroten Cuprac, ABTS) and anticholinesterase activities. The main constituents of *S. kurdica* were identified as Linalool (26.4%), Geranyl acetate (22.4%) and trans-Linalool oxide (furanoid) (9.1%). The essential oil of *S. kurdica* exhibited moderate antioksidant and good anticholinesterase activities. Acknowledgements: The research was funded by grant : KBAG 114Z801 from TUBITAK, The Scientific and Technological Research Council of Turkey.

KEYWORDS

Salvia kurdica, Essential Oil, Antioksidant

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Poster Session 8

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THE ESSENTIAL OIL ANALYSIS OF SOME SALVIA SPECIES FROM ANATOLIA WITH CHEMOMETRIC APPROACH

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ABSTRACT

The genus *Salvia* L. a member of the Lamiaceae family grows naturally all over the world with more than 900 species. Lamiaceae family have been interested since many of the Lamiaceae species include essential oils which are used in perfumery and pharmaceutical industries. Medicinal plants having biological activity have been used in the treatment of a variety of diseases since ancient times. PCA is one of the best multivariate statistical techniques for extracting linear relationships among a set of variables. PCA is a set of widely used analytical techniques whereby a complex dataset containing variables is transformed to a smaller set of new variables, which maximize the variance of the original dataset. PCA provides information on the significant parameters with minimum loss of original information. This is achieved by transforming to a new set of variables which are uncorrelated, and which are ordered so that the first few retain most of the variation present in all of the original variables. The principal components are generated in a sequentially ordered manner with decreasing contributions to the variance, i.e. the first principal component (PC1) explains most of the variations present in the original data, and successive principal components account for decreasing proportions of the variance. In this study, Principle Component Analysis (PCA) and Hierarchical Clustering Analysis (HCA) were performed with 13 variables in 8 samples. As a result of the PCA analysis with 8 samples and 13 volatile oil components, the first three principal components explained the variance as 85.3%, 1st principle component as 44.6% and 2nd. principle component as 28.1%. Statistical calculations were performed using Minitab 16.2.1 statistical software (MINITAB Inc. 2010). *Salvia* species collected at different times in the study were evaluated with 13 volatile oil components.

KEYWORDS

Salvia, Chemometri, Essential Oil, PCA

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Poster Session 8

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DETERMINATION OF CONSTANT OIL COMPONENTS OF NIGELLA ARVENSIS VAR. GLAUCA SPECIES NATURALLY GROWING IN FLORA OF KAHRAMANMARAS

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ABSTRACT

Black sesame (*Nigella* sp.) is a one-year herbaceous plant belonging to the family Ranunculaceae (wedding flowers). Its origins are based on the Eastern Mediterranean, Southern Europe and West Asia. The genus *Nigella* is represented by about 20 species from the Mediterranean region to Western Asia and comprises about 13 species in Turkey. There is %32-40 fixed fat, %16-19.90 protein, %33.90 carbohydrate, %5.50 saponins, alkaloids and fibers, %1.79-3.44 tannins and minerals in the seeds of Turkey, as well as differences according to the regions. In fixed oil, unsaturated fatty acids include linoleic acid, oleic acid and linolenic acid while saturated fatty acids include palmitic acid, stearic acid and myristic acid. *N. arvensis* var. *glauca* is spreading naturally in Kahramanmaraş Sutcu Imam University Avşar Settlement. In this study totally twenty different fatty acid components was determined. Primarily fixed fatty acids components and ratios of the species *N. arvensis* var. *glauca*; linoleic acid (%68.11), oleic acid (%12.00), palmitic acid (%10.88), cis-11,14-eicosadienoic acid (%2.90), stearic acid (%2.36), gamma- linolenic acid (%1.59), myristic acid (%0.23) were detected.

KEYWORDS

Black sesame, Nigella, fixed oil, fatty acid components

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Poster Session 8

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SOME VEGETABLE OILS USED IN WOUND CARE AND THEIR EFFECTS ON WOUND HEALING

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ABSTRACT

Aromatherapy, a complementary treatment alternative, refers to use of essential oils derived from different parts of plants (leaf, flower, bark, seed, fruit etc.) for health and wellbeing purposes. These oils are applied through respiratory tract, skin and oral route. It is known that essential oils are utilized in mother and child health, pain management, care for cancer patients, treatment of skin, neurological, respiratory and gastrointestinal diseases, wound healing/care and mental health. It has been shown in the literature that essential oils used in wound care accelerates healing. Health professionals play an important role in development and use of wound care products containing essential oils which quicken wound healing. Purpose of this study is directed towards examination of essential oils which quicken wound healing and their uses, at the same time, to create awareness in this matter. It has been shown in the literature that essential oils (tea oil, lavender oil, canola oil, St. John's Wort oil, olive leaf extract, beeswax-olive oil) have effects on wound healing. Tea oil has antimicrobial features. Wound dressing with tea tree oil every day three times a week has been found to have effects on healing of MRSA positive wounds. Episiotomy is a surgical incision made during vaginal delivery. A study comparing bathing with 5-6 drips of lavender oil in 4-liter water and bathing with povidone iodine for 10 days did not reveal any differences in terms of wound healing complications, but showed less redness in episiotomy wounds exposed to lavender oil. In a study examining effectiveness of canola oil and lavender honey in wounds created in rats, canola oil applied through a syringe two times for the first four days was found to be more effective than lavender honey applied in the same way. In a study on effects of a wound care product containing beeswax, olive oil and alkanna tinctoria on the second-degree burns, wound dressing was made with the product every day and it was found to be effective. St. John's Wort is a plant used in treatment of several diseases. Applying St. John's Wort on wounds created on rats once daily was found to be effective in soft tissue defects. Olive leaves have tannin, essential oils, organic acids and resin. Using topical olive oil extract on diabetic wounds in rats for 21 days was shown to accelerate wound healing. Aromatherapy/essential oil use, a complimentary therapy, plays a part in improving health and wellbeing and influences nursing care having a key role in wound care. In studies conducted that essential oils have been found to have a beneficial effect on wound care. Studies have revealed that they have impact on wound healing. In light of the literature, it can be recommended that randomized controlled studies should be performed to evaluate effects of wound care products made from essential oils on types of wound in Turkey.

KEYWORDS

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Wound care, Herbal oil, Aromatherapy



Poster Session 8

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ANTICARCINOGENIC EFFECTS OF FERMENTED WHEAT GERM EXTRACTS

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ABSTRACT

Fermented wheat germ extract (FWGE) is a natural product obtained by fermentation of wheat germ and registered as a special nutrient in Hungary for cancer patients in 2002. According to some researches in recent years, quinones found as glycosides in wheat germ are thought to be responsible for some biological properties of FWGE. FWGEs production process includes fermentation of this extract by *Saccharomyces cerevisiae*, separation, drying and granulation of the fermentation liquid. FWGE is available without prescription from pharmacies and the effects are versatile. They are reported to show no toxicity, mutagenicity or genotoxicity. In particular, the role of cancer prevention and treatment has come to the forefront with its various aspects. Compared to normal tissues, cancer cells exhibit a hypermetabolic state with high amounts of glucose use while FWGEs inhibit cancer growth by inhibiting glucose uptake in cancer cells. In cell culture studies in which the antitumoral effect of FWGE is examined; It has been demonstrated that they have potential antitumoral activity in the colon, testis, thyroid, ovary, non-small cell lung, breast, gastric, head and neck, hepatoma, glioblastoma, neuroblastoma, melanoma, cervical cancer cell lines.

KEYWORDS

FWGE, cancer, antitumoral effect.

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Poster Session 8

Submission ID: 1019

THE ANTICHOLINESTERASE ACTIVITY AND TOTAL PHENOLIC CONTENT OF ESSENTIAL OILS OF SOME SALVIA SPECIES FROM ANATOLIA

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ABSTRACT

Salvia L. (Lamiaceae) species consists of about 900 species distributed throughout the world. In Turkey, this genus is represented by 100 species, 53 (53%) of which are endemic. The genus is named “*Salvia*”, derived from latin “*Salveo*”, means “save, or recover”. Many of *Salvia* species are named “*adaçayı*” in Anatolia, Turkey, and used as herbal tea due to their antiseptic, stimulant, diuretic and wound healing properties. *Salvia* species are generally known for their multiple pharmacological effects including their antibacterial, antiviral, antioxidative, antimalarial, anti-inflammatory, antidiabetic, cardiovascular, antitumor and anticancer. Also, some studies showed that a part of these activities depended on essential oil composition. The essential oils of some *Salvia* species were tested for anticholinesterase (Acetyl- and butyrylcholinesterase enzymes) activities and total phenolic content in our study. Essential oil samples were obtained by a Clevenger apparatus from the whole parts of plants which were crumbled into small pieces and soaked in distilled water for 3 h. Then, these samples were dried over anhydrous Na₂SO₄ and stored at +4°C for a sufficient period of time. The essential oils of studied four *Salvia* species were determined the similar results as total phenolic content. The acetyl- and butyrylcholinesterase enzyme activities of *S. macrochlamys* (88,68±3,60 and 104,34±4,25 respectively) were determined as high. The essential oils of *S. sclarea* and *S. palaestina* were showed a good activity in butyrylcholinesterase enzyme.

KEYWORDS

Salvia sclarea, *Salvia macrochlamys*, *Salvia hypargeia*, *Salvia palaestina*, Essential Oil, Anticholinesterase

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Poster Session 8

Submission ID: 1021

ANTIFUNGAL EFFECTS OF SOME PLANT EXTRACTS ON KASHAR CHEESE

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ABSTRACT

Cheese, which is a milk product rich in protein, fat and minerals, has had a significant place in the diet of all societies for centuries. A large number of varieties of cheese are produced and consumed in our country. One of them is the kashar cheese which is in the cake-filata class. In its production, there are production steps such as fermentation, coagulation, ripening of the clot, processing and salting. After these stages, it has a long ripening phase so that it can possess its sensory, physical and chemical properties until the consumption phase. During this ripening phase, the surface of the cheese is completely covered with mold. Mold growth on the surface causes quality loss, discoloration, bad odor and aroma disorders. Besides, due to the toxic metabolites, mycotoxins, which they develop on the surface, molds can lead to poisoning which can result in death when the cheese is consumed. Although these toxins are more dense in the 1-2 cm surface layer of the cheese, they can also migrate to the interior. For this reason, the problem of mold must be avoided. Various methods are used to solve this problem. One of these methods is to try to mechanically clean the crust layer by chewing with a brush and water and sometimes even with a knife while the cheese is being consumed. However, this process can not solve the health and quality problems caused by molds. Other methods of preventing molds are known to be the use of preservatives (antifungal) and special packaging methods. The use of antifungal agents is intended to prevent quality losses and deterioration reactions, prolong shelf life and maintain sensory properties. For this purpose various plant extracts are used as antifungal agents. Within the scope of the study, the fresh kashar cheese produced is covered with prepared sage, locust, thyme, cinnamon and ginger alcohol extracts. The study was carried out with 6 designation (control, sage, carob, thyme, cinnamon and ginger extracts x 3 time (day 0, day 7, day 15) trial design. At the end of storage, the number of yeast-molds on the surfaces of the samples was determined. According to the obtained data, it is thought that the plant extracts used prevent the growth of mold on the surface of kashar cheese and it is advisable to use vacuum packaging as an alternative packaging material for covering the natural plants with kashar cheeses.

KEYWORDS

Kashar cheese, molding, plant extract, coating

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Poster Session 8

Submission ID: 1022

SAGE (SALVIA OFFICINALIS L.)

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ABSTRACT

The *Salvia* species belonging to the Lamiaceae family consist of approximately 900 species that are common worldwide and exhibit significant morphological and genetic diversity relative to their geographical origins. In many studies, it has been reported that sage species have pharmacological properties such as antioxidant, antiinflammatory, analgesic, antipyretic, hemostatic, hypoglycemic and antitumor effects. *Salvia officinalis* L., which is called as medical sage, is a plant with fringing roots and a length of 60-100 cm. Leaves are whitish gray and silver colored and furry. This aromatic plant contains essential oil. Among people in our country; it is widely consumed in the form of herbal tea because it is thought to have some important medical effects such as cutting nausea, reducing abdominal pain, digestion regulation, relieving rheumatic pain, improving tongue and gingivitis, protecting liver, cleansing blood and lowering blood pressure. Apart from that, cosmetics, perfumery, pharmaceutical industry are in use. In food industry, besides giving flavor to products, it is a spice with widespread use as an alternative to synthetic and chemical antimicrobial and antioxidant substances.

KEYWORDS

Sage, Salvia officinalis L., antimicrobial, antioxidant

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Poster Session 8

Submission ID: 1023

USE OF OCIMUM BASILICUM L. IN FUNCTIONAL FOOD PRODUCTION

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ABSTRACT

The *Ocimum* genus contains over 150 species and is considered the largest genus of the Lamiaceae family. *Ocimum* spp. contains essential oils rich in phenolic compounds and other natural products in a wide range including polyphenols such as flavonoids. This genus *Ocimum basilicum* L. species is an important spice and essential oil plant that grows in various parts of the world. This medicinal and aromatic plant is originated from North East Africa, North West India and Central Asia. Among the people in our country is known as 'fesleğen' and 'reyhan'. The length of grown up basil is usually between 20-60 cm. It has soft leaves in the length of 1-5 cm, width of 1-3 cm. There are many basil varieties which vary according to leaf color (green or purple), flower color (white, red, purple) and aroma. There are oil glands forming characteristic aromatic smell in plant leaves and flowers. Basil contains 0.2-1% essential oil and the content of essential oils in different basil cultures is also different. Along with essential oil, it is reported that this plant contains 14% protein, 6.1% carbohydrates and high vitamin C and vitamin A content. Fresh flowering branches and seeds of this plant, which is cultivated and traded in our country, are used. Basil, which has high aromatic character, is widely used both as fresh and dried food spice in Turkish cuisine. Apart from this, the plant also finds use in food products, oral care products and cosmetic industry. Among people in our country; it is consumed for various purposes such as gas remover, appetizer, and digestion facilitator. In addition, in some studies, it has been reported that basil leaves have tonic, antiseptic and insecticidal properties and this plant has antiviral, antimicrobial and antioxidant activities. In addition to these mentioned properties, by examining the benefits of the proprietary aroma especially for human health; It is thought to be an alternative plant for the production of new functional food products. There are various studies on the use of basil in functional food products and it is considered that different studies should be done in the development of new functional food products.

KEYWORDS

Functional food, Ocimum basilicum L., spice, human health

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Poster Session 8

Submission ID: 1025

USE OF SOME PLANTS WITH ANTIBACTERIAL AND ANTIFUNGAL PROPERTIES IN THE CONSERVATION OF SUCUK

TESLİME EKİZ¹, OKTAY TOMAR¹

ABSTRACT

Meat is a valuable food material with its nutrients such as minerals, vitamins, essential fatty acids and its odor, taste and aroma properties. Thanks to these nutritious ingredients, it has an extremely important place among the elements of balanced nutrition in human life. Due to its high moisture content, nitrogenous nutrients, minerals and other growth factors, the meat becomes suitable for many microorganisms to grow rapidly and for deterioration in a short time. Since ancient times, various methods have been used, such as drying and fermentation processes, in order to impart different flavor and aroma to the meat and increase the period of preservation of the meat which is degradable in a short time. Thus, many meat products appeared in different flavor, structure, color and appearance. One of these products is 'sucuk'. Sucuk is an important meat product that has been produced and consumed in our country since ancient times. Various microbial spoilage can be seen in sucuks, because of the reasons like; having high pH and moisture content after production, not being transported under cold chain and not being kept in cold. Mold growth on sucuk surface, which is one of these microbial spoilages, is a serious problem in the industry. Chemical preservatives are frequently used in the food industry to prevent this problem. But, the consumer's skeptical attitude towards chemical additives and their interest in natural functional food products are increasing day by day. As a result, efforts are being made to search for natural antimicrobial agents that can be used to prevent microbial spoilage and extend shelf life. For this purpose, various plants such as *Thymus vulgaris* L., *Ocimum basilicum* L., *Cuminum cyminum* L., *Origanum majorana* L., *Foeniculum vulgare* Miller., *Terminalia chebula* Retz. extracts, extract mixtures, and essential oils have been investigated for their antibacterial and antifungal effects. The increasing demand for natural and healthy food reveals the necessity of carrying out more detailed scientific studies in the following period.

KEYWORDS

Antibacterial, antifungal, sucuk, chemical preservatives, food preservation

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Poster Session 8

Submission ID: 1026

NATURAL PHARMACY: CLOVE (SYZYGIUM AROMATICUM)

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ABSTRACT

Clove (*Syzygium aromaticum*) is one of the oldest and most valuable spices in the world and is among the most traded medical and aromatic plants. The clove which the Southern Philippines and the Molluk Islands are its mainland, are cultivated in all tropical countries today and are produced mostly in Indonesia, Tanzania's Zengibar and Pemba Islands. Clove has a strong aroma, sharp smell, burning, bitter pungent flavor; it contains 15-20 % volatile oil. The main component of this volatile oil is eugenol, which is present in about 75-90% of the main component in the phenolic structure, which gives the typical aroma of clove to its therapeutic properties. Eugenol in the clove is a phenolic substance giving antiseptic, bacteriostatic, bactericidal, analgesic, antifungal properties. Clove is mainly used in food, pharmaceutical and also widely used in the fields of perfumery and cosmetics fields. Many scientific studies have been conducted on cloves; they show that it is a medicinal and aromatic plant which is effective in various fields such as antiseptic, antifungal, antiviral, local anesthetic, antioxidant, antimicrobial, antithrombotic, antiinflammatory, anticarcinogenic, diarrhea, digestive system disorders. It is also used in the treatment of many diseases such as ulcers, wounds, arthritis, rheumatism, sprains, asthma, bronchitis, nausea, minor infections and antispasmodia in dental infections, mouth perfumes and toothpastes in folk medicine. In the past, clove has been used in the treatment of many diseases among the public, and also many medical features have been discovered today. It is thought that clove is a natural and effective alternative to synthetic drugs by carrying out more scientific studies on these properties of human health. It is also widely used in the food industry to enhance the flavor and aroma of food. On the other hand, there is a need for new research on cloves to ensure food safety in food production processes and to increase the functionality of food.

KEYWORDS

Clove, eugenol, medical, aromatic, human health

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Poster Session 8

Submission ID: 1027

ROSELLE (HIBISCUS SABDARIFFA L.): EFFECTS ON HEALTH

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ABSTRACT

About 300 species of the genus *Hibiscus* are used in various applications. Roselle belongs to the family Malvaceae and is one of the most consumed species of hibiscus. It is an important annual crop grown in tropical and subtropical climates, called 'kerkeda' in the local area. *Hibiscus sabdariffa* L. is used in food, animal feed, cosmetics, nutraceuticals and medicines. It is widely consumed in the form of herbal tea, jelly and jam. The bright red color and unique flavor make it a valuable product. The most important part of the plant is considered to be the sepals surrounding the fruit. Calyces, stalks and leaves have sour aroma. It is thought that fruit juice obtained from sepals is a healthy drink because of high vitamin C, anthocyanin and antioxidant content. Seeds are low in cholesterol, other phytosterols and tocopherols in β -sitosterol and γ -tocopherol. Pharmacological investigations of the *H. sabdariffa* L. line revealed the biological activity of this plant. Some of the therapeutic effects of consuming Roselle, especially in tea form are antioxidant, anticarcinogen, antipyretic, antidiarrheal, antiinflammatory, antitumor, antibacterial, antifungal, antiparasitic, anticholesterol effects, digestive regulator and support for kidney function. The fact that it is rich in anthocyanins makes gives this plant a good antioxidant source as well as gives it a good color appearance. Roselle plant's numerous medical applications are developing worldwide. The biological activity of anthocyanins such as antioxidant activity, which protects against atherosclerosis and anticarcinogenic activity, has been investigated and found to have positive effects on the treatment of diseases. Besides, it has been determined that the sepal extract of *Hibiscus sabdariffa* plant has therapeutic effect against leukemia due to high polyphenol content. The result of phytochemical and pharmacological studies is that Roselle has a positive effect on the treatment of many diseases, suggesting that the work to be done on this field will be carried out on a broader scale.

KEYWORDS

Hibiscus sabdariffa L., roselle, medical and aromatic, pharmaceutical, health

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Poster Session 8

Submission ID: 1028

AVOCADO'S COMPOSITION AND POSITIVE EFFECTS ON HEALTH

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ABSTRACT

Avocado (*Persea americana* Mill.) is a green and perennial plant belonging to the family Lauraceae, which is produced in about 50 countries, including the USA and Mexico. The avocado fruit is considered as 'functional food' because of its beneficial effects on health. Avocado's oil has great importance on the occurrence of its own flavor and aroma. It has a similar chemical composition with olive oil which has an important place in Mediterranean diet. Studies have shown that avocado oil contains higher levels of vitamin C, β -sitosterol and chlorophyll, and lower levels of squalene and polyphenol than olive oil. Avocado, an essential nutrient and serving as an exogenous antioxidant, contains more lipolytic extract, C and E vitamins than other fruits. In addition, it contains monounsaturated fatty acids, folate and B6 vitamins and phytosterols, which reduce the level of low-density lipoprotein cholesterol (LDL) in the blood. These and similar compounds obtained from avocado avocado oil and pulp are functioning as bioactive substances. Avocado, which is among the fruits that have the highest concentration of phytosterols, assumed as the major bioactive group, is especially rich in β -sitosterol, the main sterol. The most apparent effect of phytosterols on cardiovascular disorders has been determined to cause a decrease in cholesterol levels through the inhibition of intestinal fat. In vitro and in vivo studies have been found that increased consumption of avocado on a daily diet significantly reduce the risk of cardiovascular disease, osteoarthritis, cancer, obesity, and inflammation. In addition, it has been reported that D-Mannoheptulose (MH), which is contained in avocadonin, has an aging-retarding effect and is used as a potential treatment for hypoglycemia. Given the positive health effects of avocado-enriched diets, studies using avocado and avocado-derived products are predicted to accelerate significantly in the coming years.

KEYWORDS

Avocado, functional food, disease, cardiovascular, bioactive, health

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Poster Session 8

Submission ID: 1030

THE BENEFITS OF BLACKCURRANT (*RIBES NIGRUM* L.) FOR HEALTH

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ABSTRACT

Blackcurrant (*Ribes nigrum* L.) which is native to Europe and Northern Asia is a perennial plant with edible, small, dark purple (near-black) colorful fruits. Its fruits and leaves have been used for a variety of health problems in traditional plant medicine in Europe and Asia. Blackcurrant is a rich source of anthocyanins, which are vitamin C and natural food coloring. It is also known that it has a higher antioxidant capacity compared to other widely consumed berry fruits. Black currant seeds are rich in α -linolenic acid and γ -linolenic acid, which play an active role in growth, healthy bone development, development of normal brain function and regulation of metabolism. Blackcurrant fruits contain polyphenolic compounds with antioxidant, anticarcinogenic, antibacterial, antimicrobial and antiviral properties. Thanks to these properties of polyphenols, many functions of the organs and especially the nervous system, digestive system and circulatory system are protected and supported. Anthocyanins (delphinidin-3-glucoside, delphinidin-3-rutinocyte, cyanidin-3-glycoside and cyanidin-3-rutinocyte), the basic polyphenols of the fruit extract, are used in the treatment of eye defects and eye diseases. In addition, blackcurrant extracts inhibit the development of cardiovascular diseases, certain types of cancer, and chronic inflammation-related diseases. Quercetin derivatives found in black currant leaves have a range of activities including antimicrobial, anti-inflammatory, antiviral, antitoxic, antiseptic and antioxidant effects. Studies have shown that because the extracts from fruits, buds and leaves of blackcurrant destroyed the free radicals by fighting them and increased body resistance against many diseases, their use should be widespread and increased.

KEYWORDS

Blackcurrant, antioxidant, anthocyanin, vitamin C, health

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Poster Session 8

Submission ID: 1031

A HERB WITH AROMATIC TASTE AND PLEASANT ODOUR: COFFEE

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ABSTRACT

The coffee of the Rubiaceae family, first time seen in the Kaffa region of Abyssinia, it is mind stimulant and one of the most popular beverages in the world with an aromatic taste. There are over 90 different types of coffee. Coffee; until phase of consumption, it is passed from five stage such as the maturation of the seeds, the collection, the separation of the crusts, the roasting and the grinding. Coffee is a drink rich in antioxidants, phenolic and aroma components. The green coffee bean is rich in antioxidants and phenolic compounds and contains high levels of chlorogenic acid. But green coffee beans are very poor in flavor. Therefore, the green coffee beans are roasted at different times and temperatures to produce complex polytic reactions, thereby improving the taste and flavor of the desired coffee. The most important factor in the aroma and flavor of the coffee is the degree of roasting coffee beans. The roasted coffee has a very attractive and unique aroma. The most known bioactive component of coffee is caffeine. Coffee, contains many chemical components such as caffeine and chlorogenic acid. Due to these compounds, it has been stated that coffee have properties such as improving mental and physical performance, increasing alertness. It was also found that the chlorogenic acid in coffee is exhibited a high bioavailability and that 30% of the received chlorogenic acid is excreted as metabolites within 24 hours. Studies have shown that some of these metabolites at low μM concentrations have neuroprotective properties. Studies conducted on decaffeinated, roasted coffee have showed that coffee contain proadenosine, antimorphan and antioxidant compounds exhibiting activity in brain. Studies, which were conducted in recent years, have been reported to show a positive effect of coffee on diseases such as Parkinson's, Alzheimer's, etc.. Studies have shown that coffee may prevent the development of Alzheimer's disease because picolinat detected in coffee increases zinc absorption and L-rhamnose and fumarate in coffee show high antioxidant activity. Decaffeinated coffee has been shown to reduce the risk of diabetes. Chlorogenic acids affect the absorption and utilization of glucose. It has been also found that there are positive effects on liver health and liver function. Various studies are needed in this regard.

KEYWORDS

Coffee, caffeine, chlorogenic acid, alzheimer

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Poster Session 8

Submission ID: 1032

THE EFFECTS ON HUMAN HEALTH OF KIWIFRUIT

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ABSTRACT

There are a wide variety of species and forms of kiwifruit which are native to China. Among these species, *Actinidia deliciosa* ('Hayward') and *Actinidia chinensis* ('Hort16A') are the most significant two species with commercial importance. During fruit maturity, the fruit color of *Actinidia deliciosa* is green while the fruit color of *Actinidia chinensis* is yellow. At the beginning of the 1900's, the kiwifruit was not cultivated much outside of China, it was started to be grown in various countries after these years. The promotion and adaptation studies of kiwifruit were made in 1988 in our country. In 1994, our country entered agricultural statistics data. The largest share of the kiwifruit production area in our country is the Black Sea Region. Kiwifruit; in addition to consumption as fruit, it is also used in canned food, fruit juice, fruit yogurt, marmalade, jam, frozen or dried food, tea, cake sauces, ice cream, pudding, wine, shampoo, soap and cosmetics. Kiwifruit is determined that it is a fruit rich in phenolic compounds (anthocyanins and flavanoids), vitamins (vitamins C, B2, A and E), antioxidant components, minerals (potassium, iron, phosphorus, calcium, chromium, copper and magnesium) and carotenoids (xanthophyll, beta carotene and lutein). Kiwifruit; because of the high nutritional content, high vitamin C content and low calorie levels, it is expressed as a health fruit. The green kiwifruit fruit in 100 g fresh weight contains on average 85 mg ascorbate (vitamin C). Kiwifruit has 3 times more vitamin C than orange. Like most fruits, although the kiwifruit contains water at high concentrations, it contains vitamin E in higher concentrations than many other fruits. Vitamins C and E, which are from antioxidants and are highly present in the contents of kiwifruit, prevent blockage of arterial vessels. As a result of epidemiological, pharmacokinetic and metabolic studies, it has been reported that the intake of vitamin C contributes to prevent certain cancers, cardiovascular diseases, diseases related to upper respiratory tracts such as influenza and colds. Studies have determined that kiwifruit improves intestinal and digestive health, alleviates constipation, strengthens immunity, regulates lipid profile, improves iron uptake, improves DNA repair activity and reduces platelet aggregation. The proteolytic enzyme actinidin, found in green kiwifruit, has been shown to help digest food proteins, and kiwifruit consumption has been found to increase the number of appropriate probiotic strains. In addition, recent studies have been determined that the sleep-inducing properties of the kiwifruit are present. The most dense carotenoids found in the kiwifruit are β -carotene and lutein, which are considered as strong antioxidants. The lutein from the carotenoids is important in the maintain of the vision. Kiwifruit has the highest lutein content among commonly consumed fruits. Even though kiwifruit contains useful bioactive compounds, it contains some compounds such as allergens and oxalate that may be harmful to health. The actinidin enzyme found in kiwifruit is allergic to some people. The amount of oxalate present in the kiwifruit is not a concern for individuals who sustain a balanced diet.

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KEYWORDS

Kiwifruit, vitamin C, lutein, health

Poster Session 8

Submission ID: 1034

A-AMYLASE AND α -GLUCOSIDASE INHIBITORY ACTIVITIES OF THE EXTRACTS AND CONSTITUENTS OF FERULAGO BRACTEATA ROOTS

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ABSTRACT

Context: Ferulago species have been used since ancient times for the treatment of intestinal worms, hemorrhoids and as tonic, digestive, aphrodisiac and sedative. Apart from its medicinal uses, they have been used as salad or spice due to their special odors. Objectives: This study reports α -amylase and α -glucosidase inhibitory activities of extracts and bioactive compounds isolated from the roots F. bracteata. Material and methods: The structures of isolated compounds through in vitro bioassay-guided fractionation processes from the roots of F. bracteata were elucidated by detailed analyses of 1D and 2D NMR and ESI-MS data. Results: A new coumarin, peucedanol-2'-benzoate (1), along with nine known ones, osthole (2), imperatorin (3), bergapten (4), prantschimgin (5), grandivitol (6), suberosin (7), xanthotoxin (8), felamidin (9), umbelliferone (10), and a sterol mixture consisted of stigmasterol (11), β -sitosterol (12) was isolated from the roots of F. bracteata. Felamidin and suberosin showed significant α -glucosidase inhibitory activity with 0.42 and 0.89 mg/mL IC₅₀ values, respectively, when compared to the reference standard acarbose (IC₅₀ 4.95 mg/mL). On the other hand, none of the tested extracts were found to be active on α -amylase inhibition. Discussion and conclusion: The present study demonstrated that among the compounds isolated from CH₂Cl₂ fraction of F. bracteata roots, coumarins were determined the main chemical constituents of this fraction. This study aims to give first report on isolation and characterization of the bioactive compounds from root extracts of F. bracteata and to report α -amylase and α -glucosidase inhibitory activities of this species. Keywords: Ferulago bracteata; Apiaceae; α -glucosidase; α -amylase; coumarin; peucedanol-2'-benzoate.

KEYWORDS

Ferulago bracteata; Apiaceae; α -glucosidase; α -amylase; coumarin; peucedanol-2'-benzoate.

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Poster Session 8

Submission ID: 1037

ASSOCIATION OF PROBIOTIC AND PREBIOTICS WITH INSULIN RESISTANCE, INTESTINAL PERMEABILITY AND ZONULIN ASSOCIATED WITH POLYCYSTIC OVER SYNDROME

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ABSTRACT

Polycystic ovarian syndrome is the most common endocrine disorder of women in reproductive age in the world. According to the National Institute of Health (NIH) prevalence is reported as 6-10%, while prevalence according to Rotterdam criteria is reported as 15%. Insulin resistance, obesity, dyslipidemia are complications associated with PCOS. In particular, insulin resistance is one of the most important complications associated with PCOS. Many factors affecting insulin resistance are addressed in PCOS and also intestinal permeability is one of these factors. Disruption of the gut microbiota by various factors may lead to increased intestinal permeability, which may lead to lower levels of inflammation and the development of chronic inflammatory diseases. Increased intestinal permeability is associated with factors such as menstrual disorder, obesity, insulin resistance, and dyslipidemia. Zonulin is a parameter that shows the change in intestinal permeability. Intestinal permeability is associated with an increase in the level of zonulin. Individuals with PCOS have increased levels of zonulin and are linked to insulin resistance. Probiotics and prebiotics are shown in many studies in relation to obesity, insulin resistance and intestinal permeability. They may be effective on PCOS-related parameters. A number of studies are carried out on the effects of probiotics and prebiotics on insulin resistance, obesity and intestinal permeability, but there are few studies directly affect on polycystic over syndrome . Probiotic supplementation on women with PCOS significantly effect fasting plasma glucose, serum insulin concentration, insulin resistance, β -cell function, and serum triglyceride levels and may have beneficial effects on PCOS symptoms . Similarly, probiotics effective on intestinal permeability and zonulin. In addition to probiotics, prebiotics are affect gut microbiota, insulin resistance and intestinal permeability. In this way, both prebiotics and probiotics may be effective on PCOS-related symptoms. However, increasing the study done directly on individuals with PCOS will help to ensure that this relationship is shown.

KEYWORDS

polycystic over syndrome, insulin resistance, zonulin, probiotic, prebiotic

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¹GAZİ ÜNİVERSİTESİ SAđLIK BİLİMLERİ FAKÜLTESİ

Poster Session 8

Submission ID: 1038

FATTY ACID COMPOSITION OF CHLORELLA VULGARIS GROWN IN OPEN POND

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ABSTRACT

Microalgal species, especially those grown in outdoor cultivation systems need a wide tolerance to environmental conditions. Geographical location and climatic conditions, especially temperature and solar radiation are the main environmental factors affecting lipid productivity (Radolfi, 2009; Hindersin, 2014). Generally, high added value compounds can be extracted from microalgae, such as fatty acids (linolenic, arachidonic, eicosapentaenoic, docosahexaenoic acids, etc.), pigments (carotenoids and ficobiliproteins), biochemically stable isotopes and vitamins such as biotin, vitamins C and E; also some metabolites appear to have some pharmacological activities, among others the anticholesterolemic, antitumoral, immunomodulatory, antibacterial and antimycotic ones (Converti, 2009). Chlorella has been the oldest commercial application of microalgae. Green algae have the bulk of their fatty acids as saturated and unsaturated C18, a composition similar to that of vegetable oils (Benemann and Oswald 1996). *C. vulgaris*, a fresh-water, fast-growing green alga, has different lipid production capabilities (30–40% of dry weight) under stress conditions. In this study, *Chlorella vulgaris* were cultivated in 3-ton and 10-ton capacity open ponds with Bold's Basal medium and added sodium bicarbonat for the additional CO₂ source. Cells were harvested 6 weeks after cultivation and dried in the oven at 65°C. After that dried cells were powdered by using mortar. Total lipid was extracted with n-hexane (60C) for 6 h using a Soxhlet extractor and FAMES were prepared using boron trifluoride in methanol (20% of BF₃ in methanol) and extracted with n-hexane and then analyzed by GC-MS.

KEYWORDS

Chlorella vulgaris, fatty acid, soxhlet

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Poster Session 8

Submission ID: 1039

THE EFFECT OF GREEN COFFEE BIOACTIVE COMPONENTS ON OBESITY

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ABSTRACT

Obesity is a growing health problem worldwide. It is stated that nowadays about 600 million adults and 41 million children are overweight and obese. Obesity Type 2 DM is associated with many diseases, such as cardiovascular diseases, cancer, and non-alcoholic liver disease. There are many factors affecting obesity such as genetics, increased energy intake, culture, and inadequate physical activity. Depending on these factors, various treatments such as diet regimens, lifestyle modification, physical activity, surgery are applied in the treatment of obesity. However, since each treatment method has certain limitations, the use of functional foods in body weight control has become a research topic. Coffee is also one of these foods and it is a complex structure composed of chemical components. The chemical composition is influenced by the coffee bean species (*Coffea arabica* and *Coffea canephora*), roasting and infusion. Chemical composition of green coffee beans before roasting: 6.5-10% chlorogenic acid (CA), 1.2-2.2% caffeine, 10-16% lipids containing special diterpene (Cafestol and kahweol), 0.7-1.0% trigonellin, 45-52% carbohydrates, 11% protein and 4.2-4.4% mineral. The roasted coffee has a special aroma, taste and color due to the chemical reaction, and a large number of positive bioactive components are formed during the roasting process. Chlorogenic acids (CAs) are polyphenol compounds found in the seeds of *Coffea arabica* and *Coffea canephora*. In general, the amount of commercial ground coffee varies depending on the roasting degree and the percentage of *Coffea arabica* and *Coffea canephora* seeds in the mixture. Green coffee is a rich source of chlorogenic acid derived from unroasted coffee beans and a source of caffeine. Chlorogenic acids exhibit a variety of biological activities, including the ability to alter antioxidant enzyme activity, as well as high antimutagenic, anticancerogenic, anti-inflammatory and antioxidant properties. In addition to these features, there are both animal and human studies showing that body weight loss, fat tissue hormone regulation, triglyceride levels, body fat percentage are also effective. Possible effects on loss of body weight of green coffee, lipolytic effect on adipocytes, reduction of pancreatic lipase, inhibition of fatty acid synthesis, increase of hydroxymethyl glutaryl CoA reductase and acetyl CoA cholesterol acyl transferase, increase of AMP-active protein kinase-1 levels according to the results obtained from studies And reducing acetyl CoA carboxylase activity. However, the bioavailability and anti-obesity effect of coffee consumption with other foods, medicines and bioactive component requires further research.

KEYWORDS

green coffee, obesity, body weight, chlorogenic acid

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Poster Session 8

Submission ID: 1040

OPTIMIZATION OF HERBAL TEA FORMULATION PRODUCED FROM AROMATIC PLANTS

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ABSTRACT

Tea (*Camellia sinensis*) is a specie from Theaceae family grown in humid regions. Leaves and buds of tea are used as beverage after extraction in hot water. Tea is one of the mostly consumed beverage around the world due to its aromatic and refreshing properties. However, some people cannot consume tea due caffeine sensitivity. Therefore, these people consume herbal beverages obtained from different plants. Additionally, consumption of herbal tea increases progressively due to their health beneficial and immune regulation effects. Different plants such as hibiscus, lemon peel, mint and clove are used for production of herbal tea. Hibiscus, caffeine-free plant, supports immune system due to its high Vitamin C content. It decreases cardiovascular diseases risk, and regulates blood pressure. Lemon peel inhibits free radicals and supports immune system. Mint has also a lot of benefits on human health, especially on respiratory and gastrointestinal disorders. Clove is used for therapeutic purposes on mouth and dental health. In addition, clove is good for tiredness and used for cold cure. In the present study, hibiscus (*Hibiscus sabdariffa*), lemon peel (*Citrus lemon*), mint (*Mentha spicata*) and clove (*Syzygium aromaticum*) were used for production of mixed herbal tea with high content of phenolics and sensorial acceptability. A mixture design with 20 different experiments were created using Design Expert software. Total phenolic content and sensory properties of the tea produced using each mixtures were evaluated as response. Optimum herbal tea formulation were calculated as 0.380% of hibiscus, 0.472 of lemon peel and 0.148% of clove. The optimum formulation was produced in three replicates and total phenolic content and sensory properties (using hedonic scale) were determined. Taste, flavor and appearance point of optimum formulation were 6.07, 8.32 and 8.75, respectively. In addition, total phenolic content of herbal tea was determined as 558 mg GAE/g dm. Sensorial acceptability of optimum herbal tea produced in present research was found to be high.

KEYWORDS

Hibiscus, Clove, Mint, Lemon Peel, Mixed Herbal Tea, Total Phenolic Content

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FUNCTIONAL COMPONENTS OF RICE BRAN

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ABSTRACT

Rice (*Oryza sativa*) is one of the main grain crops and consumed by over half of the world's population, especially in Asia. It is emphasized that there is a relationship between white rice consumption and many diseases such as cardiovascular and diabetes, especially in low-middle income countries. On the other hand, it is stated that the brown rice had many components, which has the beneficial effect on human health, such as γ -aminobutyric acid, vitamins, phenolic substances, dietary fiber, and γ -oryzanol. Although brown rice has the high nutritional composition and beneficial physiological properties, brown rice consumption is very limited because of its undesired sensorial properties and poor cooking properties. The rice bran contains approximately 11-22% fat, 11-17% protein, 6-14% fiber, 10-15% moisture and 8-17% ash. It is also particularly rich vitamins (especially vitamin E, thiamine, niacin) and minerals (aluminum, calcium, chlorine, iron, magnesium, manganese, phosphorus, sodium, potassium, zinc). Additionally, the rice bran also contains important nutraceutical components such as tocopherols, tocotrienols, γ -oryzanol, ferulic acid, caffeic acid, tricin, coumaric acid. Because of this, the rice bran is one of the valuable by-products of the food industry. The aim of this review, to give an information about the biologically active compounds of rice bran and their beneficial effects on human health.

KEYWORDS

Rice bran, nutraceuticals, γ -oryzanol

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Poster Session 8

Submission ID: 1043

AS A PROTECTIVE AND THERAPEUTIC AGENT AGAINST ALZHEIMER'S: CURCUMIN

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ABSTRACT

Alzheimer's is a progressive and irreversible neurodegenerative disease that affects 27 million people worldwide. Alzheimer's may be developed according to many pathophysiological conditions. Studies that have been done over the last two decades are to understand underlying causes of Alzheimer's and to develop new protective and therapeutic methods. For this reason, recent studies have focused on spices that have flavor, coloring or protective properties as well as effects of reducing the risk of chronic diseases. In particular curcumin, a component of turmeric, is being investigated for its use in the treatment of Alzheimer's. In 2000, Ganguli et al. have reported a lower prevalence of Alzheimer's in India where people consume curcumin as part of the curry spice compared to the United States or Ng et al. have indicated that cognitive performance was better in elderly individuals who often consume curry. These studies pioneered in vivo and in vitro studies in order to investigate the protective effects of curcumin on Alzheimer's. For example, in a small study in Japan, 3 patients with Alzheimer's were treated with 100 mg/day of curcumin for 12 weeks. At the end of the study, the mini-mental status assessment scale score was significantly increased in only one of the patients. However, the patients began to remember their families within a year. Also in studies performed in different mouse models, curcumin supplementation at different doses decreased β -amyloid plaque formation, reactive oxygen species and proinflammatory factors. At the same time, an increase in cognitive performance after treatment was observed. Several mechanisms related to the protective and therapeutic properties of curcumin on Alzheimer's have been proposed. These: • Curcumin is a powerful antioxidant. With this feature, it protects against protein oxidation. • It is reported that it suppresses early growth response-1 (Egr-1) activation due to its anti-inflammatory effect. This may represent a potential therapeutic approach for Alzheimer's. • It has the ability to bind iron, copper and zinc effectively. This inhibits nuclear factor kappa (NF- κ) induction and plays a protective role against metal-induced neurotoxicity. • Because it has the ability to cross the blood-brain barrier, it binds directly to small β -amyloid oligomers, prevents β -amyloid accumulation and toxicity. • Curcumin reduces hypercholesterolemia, which can play an active role in Alzheimer's development, through upregulation of apolipoprotein A1, lecithin-cholesterol acyltransferase and low-density lipoprotein (LDL) -receptor genes. • It stimulates embryonic neuronal cell proliferation and hippocampal neurogenesis. • Curcumin, promotes neuronal protective effect in the brain by increasing expression of heat shock protein (Hsp). As a result, curcumin has the potential to be a protective and therapeutic agent for Alzheimer's. Although not in sufficient numbers, in most of the studies have been reported that curcumin have beneficial effects on Alzheimer's. It has also been recently tested for its utility as a diagnostic tool for Alzheimer's because of its natural fluorescence and affinity for binding to β -amyloid protein. In addition to the positive properties, low bioavailability of oral curcumin restricts its protective or therapeutic role. To increase curcumin's bioavailability, addition of components such as

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piperine to the formulations may interact with the drugs. Alternatively, the use of curcumin at high doses to achieve the desired effect may stimulate an increase in reactive oxygen species. For this reason, the acceptable intake quantity determined by The Joint FAO (Food and Agriculture Organization) and WHO (World Health Organization) Expert Committee on Food Additives (JECFA) should not exceed 0-3 mg/kg/day.

KEYWORDS

curcumin, alzheimer's, protective and therapeutic

Poster Session 8

Submission ID: 1044

TOTAL PHENOLIC CONTENT AND SENSORY PROPERTIES OF MIXED HERBAL TEA PRODUCED FROM DIFFERENT AROMATIC PLANTS

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ABSTRACT

Tea is a beverage produced by boiling or infusing of tea (*Camellia sinensis*) leaves. Tea is the mostly consumed beverage in the world after water. Herbal teas are also consumed frequently due to its aromatic properties and beneficial health effects. Herbal Tea can be described as "beverages obtained from processed fruit or plants". Those are also prepared in hot water via decoction or infusion. Demand of aromatic plants such as ginger, licorice, cinnamon and cardamom for production of herbal tea increases day by day due to their beneficial effects on human health. Ginger is an aromatic plant which is rich in carbohydrates, essential oils, Vitamin A and C. It is frequently used for treatment of stomach disorders. Additionally, it is good for throat ache and helpful for detoxication. Similarly, licorice is used in treatment of throat ache and cough for many years. Cinnamon is used for treatment diabetes mellitus due to its reducing effect on blood glucose level. It is also effective on the sniffles, cold and flu. Although cardamom is not known adequately in Turkey, it has a lot of beneficial effects on human health. Especially, it is used against digestion problems deodorization of bad breath. In addition, it is an appetizing plant and can be used for failure to thrive problems. In the present study, to produce a mixed herbal tea with high phenolic content and sensorial acceptability, ginger (*Zingiber officinale*), licorice (*Glycyrrhiza glabra*), cinnamon (*Cinnamomum verum*) and cardamom (*Elettaria serrula*) were used. A mixture design including 20 different herbal tea mix was created using Design Expert program. Total phenolic content and sensory analysis results were used as response of the mixture design. According to optimization results, 0.072%, 0.765% and 0.163% of licorice, cinnamon and cardamom were determined as optimum formulation, respectively. Total phenolic content and sensory analysis (with 9 points hedonic scale) were carried out for mixed herbal tea produced at optimum conditions. Sensory properties of taste, flavor and appearance were determined as 6.75, 7.69 and 7.44, respectively. Total phenolic content of the optimized formulation was determined as 369.95 mg GAE/g dm. The experimental values of the sensorial properties and total phenolic content of optimum formulation were in agreement with theoretical values. Herbal tea formulation determined in the present study was highly acceptable by consumers.

KEYWORDS

Licorice, Cinnamon, Ginger, Cardamom, Mixed Herbal Tea, Total Phenolic Content

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Poster Session 8

Submission ID: 1045

LAUREL REHABILITATION

OZAN ACUN¹

ABSTRACT

Any kind of vegetable (fruit, seed, flower, leaf, bark, root, shoot, onion, tuber, rhizome, mushroom etc.) that grow in the forests and openings and that people and other living beings use to supply their own needs or to provide income. (FOCUS). Can be defined as Non-Wood Forest Products (ODOÜ). Can be defined as Non-Wood Forest Products (ODOÜ). The main Asian homeland is in Asia Minor and in the Balkans, all green is a vegetation type. It is one of the characteristic plants of the Mediterranean and the Mediterranean is called the Lauretum zone of the Mediterranean region. Bay, one of the 40 genera of the Laureaceae family, grows naturally in the coastal waters of the Aegean, Mediterranean and Black Sea regions of our country. The leaves are in an elliptical structure and are tough or rough like the skin. They are 5-10 cm in length and 2-4 cm in width. The edges of leaves are slightly wavy. The number of shoots in the January is the leaf yield and the blockages of the shoots are made and animation sections are made and it is tried to determine how many shoots should be left in the shoot dilution process. The defoliation can be seen in almost all different environments of growth (wet creek, rocky rocky areas) within the area. Detections were made according to the Braun-Blanquet scale. After the necessary examinations, determinations and sample procurement were completed, firstly the cover against the area was cut off and lastly the animation section was applied on the treasure hobs. 2013 and 2015 were cleaned twice in the area. At the end of the project, deflaze leaf was produced and weighed in full area, in quarries. In the analysis of the data; Variance Analysis, Duncan Test and Kruskal-Wallis Test were used. As a result of the statistics, it is evaluated that the dropout process in the first group and the first one, which is located in the first rank, can be implemented.

KEYWORDS

Laurel Rehabilitation

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Poster Session 8

Submission ID: 1046

SUPERCritical CARBON DIOXIDE EXTRACTION OF SEA BUCKTHORN (*HIPPOPHAE RHAMNOIDES L.*) SEED AND FATTY ACID COMPOSITION

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MEVZULE YAZGAN¹, ESRA ÇAPANOĐLU²

ABSTRACT

Sea buckthorn (*Hippophae rhamnoides L.*) is a bush that grows wildly in the mountain regions of the middle and southeastern Asia and Europe. Its fruit are berries of orange to red colour and have an acid, lightly bitter taste. They contain many vitamins (B, C, E, K, provitamin A) and other biologically active substances. The main products obtained from the fruit are juice rich in vitamin C and oil rich in unsaturated fatty acids. Seabuckthorn berry oil having high nutraceutical, cosmeceutical, and therapeutic activity has been extracted from dried seabuckthorn (SBT) whole berry powder using supercritical carbon dioxide (SC-CO₂), a green process for extraction of bioactives. Wild Turkey berries of *Hippophae rhamnoides L.* were collected from twenty-one different locations. Seeds were isolated from berries. For each experiment, dried SBT berry seed was subjected to SC-CO₂ extraction. Fatty acid methyl esters in the sea buckthorn extract were determined by GC-MS. The dominating fatty acids in seed oils were oleic (18-33 %), linoleic (11-32%), alfa linoleic (9-21%). The seed of sea buckthorn berries are rich in lipid which is rare in the plant kingdom. The studied samples of sea buckthorn from Turkey have proven to be potential sources of valuable oils.

KEYWORDS

Sea buckthorn, Hippophae rhamnoides L., Fatty acids, Supercritical carbondioxide extraction

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Poster Session 8

Submission ID: 1047

THE IMPORTANCE OF CHIA (SALVIA HISPANICA L.) PLANT AND POSSIBILITIES OF CULTIVATION

UđUR TAN¹, OLCAY ARABACI¹, HATICE KÜBRA GÖREN¹

ABSTRACT

Salvia hispanica L. is a flowering plant that has edible seeds of the Labiatae family and known as chia. *Salvia hispanica* L. seeds are a traditional food of Central and South America. The 16th Century Codex Mendoza records indicate that the plant was cultured in pre-Columbian times and those seeds were used at that time. In addition that It has been reported that seed was used as a body moisturizer (medicine), varnishing of pottery etc. (oil) and edible in the form of mushes roasting or without roasting Chia seeds contain 15-25% protein, 30-33% fat (alpha-linolenic acid) (ALA), 26-41% carbohydrates, 18-30% fiber, 4-5% ash, 90-93% dry matter. Additionally, it contains high antioxidant. In recent years, heart and vascular diseases, diabetes and obesity have increased in the worldwide and in Turkey year after year. Malnutrition plays a major role in the occurrence of these conditions. People who have come to realize that have searched for healthier foods (Novel Food) than those traditionally ones for health. The interest on this plant has been increased due to conducted studies about Chia (*Salvia hispanica* L.) that proof that valuable resource for human health and nutrition. For that reason, it is necessary to include *Salvia hispanica* in the cultivation and breeding programs and produce it like other traditional field crops. Thus, new, nutritious, healthy and healing alternative food source that people can edible will be offered. In this article, importance and possibility of cultivation of chia plant were investigated.

KEYWORDS

Salvia hispanica L., Chia, nutritional value, breeding, cultivation.

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Poster Session 8

Submission ID: 1048

EFFECTS OF PROBIOTICS ON MENTAL HEALTH

BÜŞRA ATABİLEN¹, GAMZE AKBULUT¹, NILÜFER ACAR TEK¹, ELİF ÇELİK¹, YELİZ SERİN¹

ABSTRACT

Between the gastrointestinal system and the central nervous system, there is a two-sided and functional relationship involving anatomic connections such as the vagus nerve, the immune system, the hypothalamus-pituitary-adrenal axis (HPA axis). The other key component involved in this relationship is the intestinal microbiota. It has recently been thought that the microbiota-intestine-brain axis plays an important role in the neurodevelopmental phase. Therefore, microbial changes are associated with the development of diseases such as inflammatory bowel disease, obesity as well as neurodegenerative diseases such as anxiety, depression, alzheimer's, parkinsonism and autism. The increasing prevalence of these diseases, which affect mental health negatively, has accelerated the studies that study microbiota and the healing effect of probiotics on microbiota. Although studies on humans are still inadequate, the data obtained from these studies show that probiotics have therapeutic effects on depression and anxiety. It was also observed that probiotic supplementation in individuals with Alzheimer's disease significantly improved their mini-mental status assessment score. In addition to studies on humans, studies are also carried out in different animal models. According to the results of these studies, it has been found that supplements containing different probiotic species reduced anxiety and depression findings in animal models. Because each of the probiotic bacteria has different feature, many mechanisms have been proposed for the positive effects of probiotics on mental health: • Mental health-related diseases are associated with factors such as inflammation, oxidative stress, and increased release of inflammatory cytokines. Probiotics control glutathione levels by increasing glutamate-cysteine ligase activity. Thus, affecting the local and systemic antioxidant status; probiotics positively influence mental health. • Lactobacillus and bifidobacteria species on the gastrointestinal tract are important in the synthesis of gamma-amino butyric acid (GABA). Gamma-aminobutyric acid is an inhibitor-specific neurotransmitter that increases release in neuropsychiatric conditions such as anxiety and depression. At the same time, acetylcholine neurotransmitter, which is important in cognitive events such as memory, concentration is synthesized by subspecies of lactobacillus. Probiotics can affect mental health positively by providing the proliferation of beneficial bacteria that play a role in the synthesis of GABA and acetylcholine. • Approximately 90% of serotonin is expressed in enterochromaffin cells in the gastrointestinal tract. For this reason, intestinal microbiota, which controls the production of serotonin, can directly affect the functions of the central nervous system. Or the probiotics can increase the plasma level of tryptophan, the precursor of serotonin. The kynurenic acid resulting from the metabolism of the tryptophan has neuroprotective effect. • Probiotics regulate central nervous system functions by acting on intestinal barrier permeability. Because intestinal barrier permeability is essential for maintaining of the immunity and the nervous system. Increased permeability of insteinal barrier has been associated with diseases such as depression and autism. • Reducing corticosteroid response, it alleviates the HPA stress responses having an impact on emotional state and mood. • Improving carbohydrate malabsorption positively, probiotics can affect

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mental health. As a result, changes in intestinal microbiota may cause changes in the central nervous system. This information may provide to development of new strategies in the use of probiotics as an adjunct for development of cognitive and sensory aspects of mental health. At the same time, probiotics may enhance the efficacy of psychopharmacology because they influence expression of genes in the brain. This makes possible the use of pharmacological active ingredients at low doses and reducing the toxic side effects of the components.

KEYWORDS

probiotics, mental health, intestinal microbiota

Poster Session 8

Submission ID: 1050

MEDICINAL PLANT POTENTIAL OF BALIKESİR

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ABSTRACT

This study carried out between 2014 and 2016 was done to identify the medicinal plants spreading at flora of Balıkesir and to reveal the medicinal and aromatic plant potential of Balıkesir. For this purpose, herbariums of plant specimens collected periodically in different regions of Balıkesir were done. In the determination of medicinal plants; both Commission E, Pharmacopoeia and various Monographs were used, as well as species used local people with field studies were identified. As a result of the research; 144 genera and 179 taxa belonging to 61 families could be seen included in the potential medicinal plant class. The families to be the highest number of taxa are; Lamiaceae (33 taxa), Asteraceae (21 taxa) and Rosaceae (15 taxa), respectively. Also, 59 taxa are registered in Commission E and various Pharmacopoeia with Monographs. According to the results obtained in the study, it was seen that the plants were mostly used with the infusion method by local people. With this study, it is seen that Balıkesir has a quite rich medicinal plant potency and of this wealth could be seen contributed to the pharmaceutical sector by making a significant contribution to the country's economy.

KEYWORDS

Medicinal plants, Flora, Medicine, Balıkesir

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¹BALIKESİR ÜNİVERSİTESİ

Poster Session 8

Submission ID: 1051

HAVE ECONOMIC POTENTIALS WOODEN OUTDOOR PRODUCTS INTRODUCTION GUIDE

OZAN ACUN¹

ABSTRACT

Our country has diversity of genetic, flora, fauna and ecosystem to show continental character. Approximately 3,000 of these are endemic to my country, with a plant diversity expressed in approximately 12,000 taxa. Our forests are not only rich in biodiversity but also rich in wood products. It can not be said that the forestry sector has benefited from the non-wood forest products sufficiently. The purpose of preparing this work is; Identify the value of the country's economy by identifying the presentations, production, processing and marketing of non-wood forest products and the solutions to them. By applying this work to practice; The result of employment of forestry engineers, forestry industry engineers and similar technical personnel in the process of processing and improving the forest village, reducing the pressure on the forest, production of non-wood forest products and procurement, marketing and consumption of raw materials . In addition to creating added value to the country's economy, it may also be possible to provide foreign currency entry by exporting. With this book, the promotion and promotion of non-wood forest products which are not explained to this day is done. This work also has the feature of becoming a source in our educational times. Local people in Zonguldak, Bartın and Karabük earn these economies by collecting and selling these products which are grown at the end. Preliminary evaluations made are not as many as the number of people in this person. Losses of detected products. These provide the wrong collection, drying and storage conditions. The most important condition of a sustainable use is not to damage the resources. During this time we have to evaluate the eye contact in his time. The purpose of this guide is to introduce better forest products without Zonguldak, Bartın and Karabük. Sustainable production is essential.

KEYWORDS

*HAVE ECONOMIC POTENTIALS WOODEN OUTDOOR PRODUCTS INTRODUCTION
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Poster Session 8

Submission ID: 1052

ASSESSMENT OF ANTIMICROBIAL ACTIVITY OF BLACKTHORN (PRUNUS SPINOSA L.) EXTRACTS ON SOME SELECTED MICROORGANISMS

MUHAMMED ZEKİ DURAK¹, GULSUM UCAK¹, EZGİ METİN

ABSTRACT

Blackthorn (*Prunus spinosa* L.) generally grows wild in the Thrace region of Turkey. It is a deciduous large shrub or a small tree growing up to 5 meters in height. The extracts of fresh blackthorn contains high amount of polyphenolic compounds which can suppress the negative effect of free radicals in the organism. For this reason, they possess health benefits such as free radical scavenging, antioxidant, anti-inflammatory, antimicrobial, and anticancer activity. The aim of this study was to evaluate the antimicrobial action of aqueous extracts from *Prunus spinosa* L. fresh fruit on nine bacterial strains (*B. subtilis* ATCC 6633, *E.coli* ATCC 25922, *P.aeruginosa* ATCC 27853, *Salmonella Typhimurium* ATCC, *L. monocytogenes* ATCC 13932, *Klebsiella pneumoniae* ATCC 43816, *Bacillus cereus* ATCC 11778, *E.coli* O157:H7 ATCC 43888 and *S. aureus* ATCC 25923) and two fungal strains (*S. cerevisiae* ATCC 9763 and *Candida albicans* ATCC 10251). Blackthorn fruit was obtained from Çanakkale, Turkey. The stone of fruit was removed and the remaining material was grounded via a blender. Twenty (20) gram of sample was weighed and extracted with 200 mL of %75 ethanol at room temperature with shaker for 2 h. After filtering and centrifuging the resulting aqueous solution, the supernatant was evaporated at 50 °C in a rotary evaporator. The concentrated solution was dried at 50 °C for overnight in an oven and the initial concentration was designated with sterile distilled water as 1g/mL. Antimicrobial tests were carried out by disc diffusion method in which antibacterial activity was evaluated by measuring the zone of inhibition against test microbial strains. Ethanol fruit extract showed antimicrobial activity against all tested bacteria. The antifungal activity was tested against two organisms *S. cerevisiae* ATCC 9763 and *Candida albicans* ATCC 10251. The investigated extract exhibits antifungal activity against *S. cerevisiae* ATCC 9763. *S. cerevisiae* ATCC was more susceptible to the extracts than all tested microorganisms. *L. monocytogenes* ATCC 13932 was showed the highest antimicrobial activity among the others pathogen bacteria. These results showed that *Candida albicans* ATCC 10251 was found the most resistant among the microorganisms tested against blackthorn extract, followed by *Klebsiella pneumoniae* ATCC 43816. A long as the concentration of the extract decreased, the level of antibacterial activity and the size of inhibition zone alleviated directly. In general, the inhibition zones of microorganisms were ranged from 8.00 mm to 31.75 mm. On the basis of obtained results, we concluded that the investigated blackthorn (*Prunus spinosa* L.) fruit extract have significant antimicrobial activity.

KEYWORDS

Prunus spinosa L., Antimicrobial Activity, Disk Diffusion Method,

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Poster Session 8

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EFFECTS OF PHOENIX DACTYLIFERA ON MALE INFERTILITY

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ABSTRACT

Infertility is an important health problem which affects one in six couples. Male-originated factors cause infertility approximately 60%. Many factors such as physical activity, environmental pollution, using of certain drugs or alcohol and tobacco, and nutrition influence reproductive functions. Among these factors, the effects of nutrition on reproductive functions have been particularly noted in recent years. Consumption of some foods can cause sperm quality to increase or decrease in men. For example; decrease in the consumption of vegetables and fruits reduces the intake of antioxidants. Therefore sperm quality is affected negatively. Herbal antioxidants protect the sperm from oxidative stress and help to survive. The date palm (phoenix dactylifera) which has been grown in Southwest Asia and Northern Africa, has a high antioxidant composition. Composition of the date palm contains approximately 3942 mg/100 g of carotenoid and phenolic compounds and 80400 µg/100 g of antioxidant compounds. In studies, the administrations of date palm products with different doses cause an increase in FSH, LH, testosterone and estradiol hormone levels, a significant increase in weights of the testicle and epididymis of rats and have positive effects on spermatogenesis and sperm parameters such as an increase in sperm count and motility. It is observed an increase in Leydig cells which produce testosterone, sperm concentration in seminiferous tubules and a decrease in testicular DNA damage and adverse effect created by infertility agent on spermatogenesis. There is an association between sex hormones and sperm parameters. FSH hormone facilitates spermatogenesis in seminiferous tubules via binding sertoli cells. Decrease in testosterone levels causes lower sperm concentrations in the epididymis. Estrogen regulates reabsorption of the luminal fluid on head of epididymis that leads more concentrated sperms. Increase in sex hormones is an indicator for increase in secretory activity that causes an increase in weights of the testicles and epididymis. In conclusion, antioxidant factors within composition of the date palm have an efficient role on spermatogenic cells and may be useful to prevent and treat infertility.

KEYWORDS

Date Palm, Phoenix Dactylifera, Infertility

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Poster Session 8

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AMASYA REGIONAL DIRECTORATE OF FORESTRY RESEARCH ON POTENTIAL OF RUSCUS ACULEATUS

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ABSTRACT

There are significant deficiencies in the production studies of non-wood forest products work in our country's forestry. Problems arise about continuous and planned operation of non-wood forest products that meet the raw material demands of many industries such as food, medicine, cosmetics. One of the most important reasons of the problems is that the inventory studies of non-wood forest products have not been done sufficiently. Within this scope, inventory studies of non-wood forest product were started in 2013, Amasya Regional Directorate of Forestry. It is aimed that planned production and marketing with inventory of *Ruscus aculeatus* used in alternative medicine and pharmaceutical industry. In this study, the distribution areas, growth environment characteristics, production and marketing issues of the *Ruscus aculeatus* L which is naturally found in the Amasya Regional Directorate of Forestry, Bafra Forest Management Directorate, Ondokuzmayıs Enterprise will be revealed and application results will be evaluated.

KEYWORDS

Amasya Regional Directorate of Forestry, Ruscus aculeatus L.

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Poster Session 8

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THE USE OF BETALAINS AS NATURAL COLOR MATERIALS AND THEIR EFFECTS ON HEALTH

HÜSEYİN GENÇCELEP¹

ABSTRACT

THE USE OF BETALAINS AS NATURAL COLOR MATERIALS AND THEIR EFFECTS ON HEALTH Hüseyin GENÇCELEP Ondokuz Mayıs University, Faculty of Engineering, Department of Food Engineering Samsun Betalaines are structurally water-soluble nitrogenous pigments and contains a derivative of nitrogen, betalamic acid. Red beet is the only source approved and approved for use in food and pharmaceutical products for betalain coloring matter. Betalamic acid forms different structures as a result of biosynthesis with various molecules. These structures are generally called betaxanthin and betacyanin. Betaxanthin is yellow color pigment and betasiyanin are red-violet pigments. In the investigations conducted, about 50-70 betalaine were detected. 50% of these are betasiyanin; and 20% is the betaxanthins. It is known that many factors influence the stability of betalaines. The degree of glycosylation and acylation in the high affects positively the low water activity, the presence of antioxidant, the pH 3-7 range, the pigment content of the plant in the low temperature and dense nitrogen environment. On the other hand, it is suggested that temperature, light, oxygen, high water activity, low degree of glycosylation, low acylation and existence of metal ions negatively affects. The optimum pH for the enzymatic degradation of both betacillins and betaxanthins has been reported to be about 3.4. Red beet is quite rich in color pigment called betalaine. This color can be used as a coloring agent in food and pharmaceutical products by making pigment into a powder. Betalins have a wide range of biological activities including antioxidants, antiinflammatory, hepato-protective and anti-cancer properties. Antioxidant properties of betalaines and phenolic acids have been reported to prevent age-related diseases, cancer and cardiovascular diseases. It is also reported that antiviral and antimicrobial effects are present. The antioxidant betalaines found in the red beet are betanein and betanidine 5-O- β -glucoside. It has also been determined that betalaine in red beet showed potent health benefits such as strengthening the immune system and preventing cardiovascular diseases, neurodegenerative disorders and cancer, as well as free antioxidant and free radical scavenging properties. The fact that it is a good electron donor thanks to a phenolic group and a cyclic amine group implies the antioxidant property. Among the betalain components in the beet, attention has been drawn to recent studies that betacyanins are usually one of the most important anti-cancer compounds. Betaine, one of the most important components of betalain, has been identified as the primary and potent compound responsible for anti-cancer effects. Betaine, isolated from red beets, has been shown to exhibit a dose-dependent growth inhibition on human chest, lung, colon, abdominal and central nervous system tumors. In conclusion, studies on the health effects of red beet pigment betalaine and studies on the anticancer effects are at an early stage and have been used in combination with strong anticancer drugs currently used to provide synergistic effects with novel studies and particularly effective dose reduction potency and reduce drug toxicity related to treatment research is needed.

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KEYWORDS

Natural coloring material, betalaine, betaine

Poster Session 8

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EDIBLE WILD MUSHROOMS AS FUNCTIONAL FOODS

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ABSTRACT

EDIBLE WILD MUSHROOMS AS FUNCTIONAL FOODS Hüseyin GENÇCELEP Ondokuz Mayıs University, Faculty of Engineering, Department of Food Engineering Samsun Functional food "defines foods that provide a health benefit as well as stimulating nutrients. Another definition; food or food ingredients that provide additional benefits on human physiology and metabolic functions beyond the basic nutritional needs of the body so that they are effective in protecting from disease and achieving a healthier life. In addition to nutritional effects, one or more active ingredients have the effect of reducing the risk of disease-protective, corrective and /or disease risk, these effects being called scientific and clinically proven food functional foods. For centuries, macrofungi, a good source of food for human beings, as well as high protein and vitamin content, It is rich in fiber, carbohydrates and minerals and is a valuable food with a low fat content. Fungi are separated from other vegetables because they have easy digestible proteins. Important amino acids in the composition of edible fungi are vitamins B (thiamin, riboflavin, nicotinic acid, biotin) and vitamins C, D and K. Cooked or edible fungi processed by various methods are a good dietary component for vegetarians because of their superiority in nutrition. It is also suitable for the consumption of diabetics and heart patients. Since it is rich in folic acid, mushrooms are used to treat anemia. In addition, macrofungi are rich in minerals such as calcium, phosphorus, potassium, iron and copper. The dry matter content of fresh mushrooms is relatively low, ie around 10%, and predominantly consists of carbohydrate, protein, fiber and minerals. The composition of the mushroom contains 90.7% water, 3.5% protein, 0.3% fat, 4.5% carbohydrate and 1% mineral matter. In the production of ready-made soup and pizza raw materials, various sauces and baby foods, dried mushrooms are used as an auxiliary material. The quantities of important minerals generally found in wild growing fungi; Sodium 100-400, Potassium 20,000-40,000, Calcium 100-500, Chlorine 1000-6000, Magnesium 800-1800, Phosphorus 5000-10000 and Sulfur 1000-3000 mg/kg of arsenic are present. It also contains iron 30-150 and selenium 0.5-20 mg/kg. Mushrooms contain different secondary metabolites such as phenolic compounds, terpenes and steroids. Fungal phenolics are both an excellent antioxidant and a non-mutagenic active chemical component and it has been determined that there is a correlation between the antioxidant activities of some edible fungi and the total amount of phenolic compounds. Fungi are widely found in fat, carbohydrate, fiber, protein, essential amino acids and other amino acids, some minerals important for nutrition (P, K, Na, Ca, Mg, Fe, Mn, Zn, Cu). It contains substances such as thiamin, riboflavin, niacin, tocopherol, vitamin D, flavor and taste compounds, antioxidants as well as organic compounds (lectin, adustine, carboxymethyl) and toxic elements (As, Hg, Cd, Pb) and ribonuclease and nicotine. It is possible to find fungi containing toxic minerals in large quantities depending on the growing and sometimes growing medium. Minerals in fungi compositions are not available in fungal compositions unless they have toxic-acting minerals in their compost compositions prepared from the environment in which they are grown. In the compositions of

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the fungi, globulins, glutens, prolamins and other protein variants were also identified. The total free amino acid amounts of fungi in the dry matter content were determined to be between 1.5 and 72 g/kg. Glutamic acid was found in high amounts at 37.6 g/kg in dry matter, although methionine was determined to a very limited extent. Carbohydrates constitute half of the content of fungal dry matter. Carbohydrates are composed of various compounds: sugars (monosaccharides, derivatives and oligosaccharides) contain both reserve and building polysaccharides (glycans). As a result of studies on compositions of browned wild mushrooms, it has been determined that the compositions of the fungi vary widely depending on the medium they are grown, and that they contain very different substances in their composition. It has been shown that it is possible to produce foodstuffs with functional properties by joining alone or in combination with various foods, as it is possible to have a long shelf life with the operations to be carried out by drying.

KEYWORDS

Edible wild mushroom, functional food, mushroom composition

Poster Session 8

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NATURAL MEDICINE FOR THE TREATMENT OF OBESITY: SAFFRON (CROCUS SATIVUS L.)

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ABSTRACT

Plants have been used to treat many diseases throughout the history of humanity. The World Health Organization (WHO) reports that they have been using herbal drugs in the first place to eliminate the health problems of nearly 4 billion people (80% of the world population) in the world. Grown in very narrow areas in Karabük (Safranbolu) and Şanlıurfa (Harran plain) in Turkey, saffron (*Crocus sativus* L.) is a cormous plant with a high economic value among medicinal and aromatic plants in world markets. Saffron has three main metabolites: picrococins, responsible for the bitter taste of saffron; safranal, a volatile oil responsible for aroma; and crocins, from carotene family that responsible color of saffron. Saffron, especially its crocin and safranal components, has important pharmacological characteristics such as antioxidant, anti-tumor, anti-diabetic, anti-inflammatory, and anti-atherosclerotic. Despite the large number of studies investigating various medical characteristics of saffron and its components, its potential for anti-obesity has not been adequately studied. It is thought that saffron and crocin might have significant clinical effects in terms of treatment and prevention of obesity since they help lose body weight due to the anorectic effect they have. This study aims to evaluate the potential role of saffron and its components on the pathophysiology of obesity.

KEYWORDS

Saffron, Crocin, Obesity, Medicinal plants

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Poster Session 8

Submission ID: 1058

ETHNOPHARMACOLOGICAL FEATURES OF ROSA CANINA L. (ROSACEAE)

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ABSTRACT

ETHNOPHARMACOLOGICAL FEATURES OF ROSA CANINA L. (ROSACEAE)
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KEYWORDS

Ethnopharmacology. Rosa canina, Rosaceae

Poster Session 8

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ANTIMICROBIAL ACTIVITY OF ESSENTIAL OILS EXTRACTED FROM THYME, ROSEMARY AND LAUREL AGAINST FISH PATHOGENIC MICROORGANISMS

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ABSTRACT

In this study, the antimicrobial activity of thyme (*Thymus vulgaris* L.), rosemary (*Rosmarinus officinalis* L.) and laurel (*Lauris nobilis* L.) essential oils against *Yersinia ruckeri*, *Lactococcus garvieae*, *Pseudomonas fluorescens* and *Aeromonas sobria* were investigated. The essential oils were extracted by hydro-distillation using a Clevenger apparatus, and their antimicrobial activities were measured by paper disc diffusion method. All essential oils used in this study showed antimicrobial activity against test microorganisms. The highest antimicrobial activity against *Y. ruckeri*, *L. garvieae*, *P. fluorescens* and *A. sobria* was determined in thyme essential oil with zone diameters of 31.50, 29.50, 26.50 and 31.50 mm, respectively. The antimicrobial activity of rosemary and laurel essential oils against all test microorganisms (except *L. garvieae*) was similar. In general, *P. fluorescens* was less sensitive to the inhibitory activity of thyme, rosemary and laurel essential oils than other test microorganisms. These results suggested that thyme, rosemary and laurel essential oils can be used as antimicrobial agents against fish pathogenic bacteria.

KEYWORDS

Antimicrobial activity, thyme essential oil, rosemary essential oil, laurel essential oil, fish pathogenic bacteria

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Poster Session 8

Submission ID: 1062

PREPURIFICATION OF LIPASE ENZYME FROM CORIANDER SEED (CORIANDRUM SATIVUM)

DUYGU MERCAN¹, MÜGE GİDİŞ¹

ABSTRACT

Coriander (*Coriandrum sativum*) is an aromatic plant, and due to its therapeutic properties, it is widely used in many fields such as food, medicine, perfumery and cosmetics. Coriander is a medicinal and aromatic plant that is cultured in our country. It has been used for a long time due to appetising, , carminative and digestive properties in folk medicine. In recent years, studies on the pharmacological effects of coriander have gained intensity. Starch, tannins, sugars, fixed and essential oils are found in the seeds of coriander. in its fruit bearing seed. There is high incidence of coriandrol and low incidence of geraniol, borneol, pinene, phelladron and acetic acid in the essential oil of coriander. Lipases can be produced by animals, microorganisms and plants, and are enzymes that hydrolyze mono-, di- and triglycerides in the oil-water phase. Lipases have an important place in industry and medicine as they show activity in both aqueous and anhydrous solvent systems. Herbal lipases are preferred in industry and medicine because their accessibility and low cost. Lipases are pancreas enzyme that can digest lipids mechanically. Coriander seeds are used because of digestive properties colloquially. In this regard, whether coriander seed helps to digest lipids will be determined by the lipase activity. In this study, purification of lipase from coriander seed was done to add new literature of coriander. The plant was first degreased with acetone. After drying process, the phosphate buffer was applied in the refrigerator for 12 hours. The clear part of the centrifuged extract was saturated with ammonium sulphate up to 80%. Olive oil was used as substrate for enzyme activity measurements. The maximum activity in enzyme activity measurements was at the addition of 0.8 ml of base at 70% and 80% saturation. Enzyme activity results were found to be lower than the other medicinal aromatic plant seeds' lipase purification results.

KEYWORDS

Coriander seed, Lipase, Purification, Medicinal Plant

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Poster Session 8

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DETERMINATION OF PHENOLIC COMPOUNDS IN FRAXINUS EXCELSIOR AND FRAXINUS AMERICANA LEAVES BY LIQUID CHROMATOGRAPHY-ELECTROSPRAY TANDEM MASS SPECTROMETRY

BUSE AYDOĐAN¹, MUSTAFA CİTTAN¹, ALI ÇELİK¹

ABSTRACT

Fraxinus (family Oleaceae) is a genus of approximately 50 species of hardwood trees and shrubs found in Europe, N. Africa, W. Asia and N. America. Important North American species include Fraxinus americana (white ash) [1]. Fraxinus excelsior, also known as the common ash, is a species that grows in our country. The leaves of the both species, like all other oleaceae family, contain significant amounts of phenolic compounds. Phenolic compounds are widespread secondary plant metabolites. The most important classifications of phenolic compounds in oleaceae family are secoiridoids, phenyl ethyl alcohols, flavonoids and phenolic acids. There is currently much interest in these phytochemicals as bioactive components of foodstuffs [2]. Many of these phytochemicals possess significant antioxidant capacities that are associated with lower occurrence rates of several human diseases [3]. The purpose of this study was to evaluate the phenolic contents of leaves extracts of Fraxinus excelsior and Fraxinus americana obtained with infusion (IE) and ultrasound-assisted extraction (UAE) techniques. IE and UAE were carried out with ultrapure water and methanol/water solution (70/30, v/v), respectively. 34 phenolic compounds were scanned by liquid chromatography-electrospray tandem mass spectrometry (LC-ESI-MS/MS) and 22 of them were quantitatively determined in the leaves extracts. Contents of phenolic compounds in the extracts varied from 0.59 $\mu\text{g g}^{-1}$ to 55.2 mg g^{-1} . Oleuropein, a secoiridoid, was the dominant compound in both extracts of two species. Other predominant compounds were identified as verbascoside and hesperidin. Oleuropein is a very powerful antioxidant and its amount in the leaves of Fraxinus species that reaches approximately 5.5% by weight is quite remarkable. Consequently, the high amounts of oleuropein, verbascoside and hesperidin extracted from ash leaves make this raw material a key source of these phenolic compounds. References [1] N. Hammatt, Fraxinus excelsior L. (Common Ash), T. Widholm, Jack M., Kumlehn, Jochen, Nagata, Ed. Berlin: Springer, 1996, pp. 172–193. [2] D. Štěrbová, D. Matějčiek, J. Vlček, and V. Kubáň, Anal. Chim. Acta, 513(2), 435–444, 2004. [3] K. J. Anderson, S. S. Teuber, A. Gobeille, P. Cremin, A. L. Waterhouse, and F. M. Steinberg, J. Nutr., 131(11), 2837–2842, 2001.

KEYWORDS

Fraxinus excelsior, Fraxinus americana, Oleaceae, phenolic compounds, LC-ESI-MS/MS

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Poster Session 8

Submission ID: 1065

INVESTIGATION OF PHENOLIC COMPOUNDS AND TOTAL PHENOLIC CONTENT OF ISABELLA GRAPE (VITIS LABRUSCA L.) BERRIES IN BARTIN REGION

İBRAHİM TÜMEN¹, DİLEK ÜNEŞ¹, HASAN KESKİN¹, MEHMET KURTÇA²

ABSTRACT

Vitis labrusca L. which is known as “Aromatic grape, aromatic black grape, strawberry grape, isabella, American grape, black grape” grows in in Black Sea Region coastline. It has a wrapping body, a berry with special aroma, thick skin and seed. It grows very fast and it can grow up to 15 meters. It had been determined that. *V. Labrusca* berry and leaves has phenolic compounds, organic acids, vitamins and minerals, enzymes, monosaccharides, nitrogenous compounds, terpenes and lipids in phytochemical researches upon this plant. According to research upon *V. labrusca*, this plant has healing effects on respiratory tract infection, heart attack, cholesterol, digestive system disorders, some cancer species and Alzheimer. This also shows that *V. labrusca* is very important plant medically. In this study, berries of isabella grape (*V.labrusca* L.) which was collected from Bartın city, Serdarlı Village, were used. Three different samples were prepared as fresh, dried in outdoor, dried in drying oven. Phenolic compounds of Isabella grape (*V.labrusca* L.) were identified by HPLC. Total phenolic content was determined by Folin-Ciocalteu reagent (FCR). According to results of phenolic compounds analysis, in all of the fresh sample, sample dried in outdoor and sample dried in drying oven, the highest amount was determined as vitamin C (respectively; 11.205 mg/L, 15.191 mg/L, 15.160 mg/L). When compared these three samples, the highest total phenolic contents were calculated in sample dried in drying oven.

KEYWORDS

Phenolic compounds, isabella grape, HPLC

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Poster Session 8

Submission ID: 1067

PLACE AND IMPORTANCE OF MEDICINAL AND AROMATIC PLANTS IN THE WORLD AND TURKEY

VEYSİ ACIBUCA¹, DILEK BOSTAN BUDAK²

ABSTRACT

In agricultural activities, as well as the production of the necessary products to meet the needs such as nutrition, dressing, and sheltering which are vital for mankind; there also produced products that are useful for human health. It is known that plants with therapeutic properties have been used in diseases since the beginning of human history. In the early days, only some of these plants, which were collected from nature for nutrition and treatment purposes, were cultured and produced for economic purposes. In addition to therapeutic uses of medicinal and aromatic plants; they are used in many areas such as food, cosmetics and aroma. As a result of agricultural products trade's gaining of international qualification, and the increase in demand for these plants; a rise in the production and collection of medicinal and aromatic plants has happened. According to the World Health Organization data, while 80% of the population uses traditional medicines for treatment in underdeveloped countries; this proportion is around 40% in developed countries. And it is expected that the rate of utilization of medical plants in the future will increase all over the world. Due to its location and climate conditions, our country has a wide variety of plant species and is one of the leading producer countries of many medical and aromatic plants. For this reason, medical and aromatic plants have an important economic potential for our country. In this study, production and trade of medical and aromatic plants in the world and in Turkey have been examined in line with the data obtained from national and international institutions and previous studies related to the subject. In addition, the support given directly and indirectly to the medical and aromatic plants in Turkey has been examined and suggestions have been presented to increase the share of our country in the world trade.

KEYWORDS

World, Turkey, Medicinal Plants, Aromatic Plants

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Poster Session 8

Submission ID: 1068

EVALUATION OF AVACADO (*PERSEA AMERICANA* MILL.) LEAVES IN TERMS OF PUBLIC HEALTH

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ABSTRACT

Persea americana Mill. (Lauraceae) originated in central and southern of South America, is a evergreen tree. The tree commonly known as avocado. Avacado is cultivated in all tropical and subtropical regions in the world. This tree has been usually grown in southern coastal region of Turkey due to its commercial importance. Its fruit is a drupe which consumed as food. Except this, the leaves are widely used for pass kidney stone and against the urinary tract infections as therapeutic among the people in Turkey and Cyprus. This study was made to determine if they have scientific drug characteristics which used for its therapeutic feature in folk and supplied from the market of avacado leaves. For this purpose, 13 different samples from 5 diverse cities (Ankara, Hatay, İstanbul, Kayseri and Aydın) were purchased. The sample to be used as standard was obtained from the culture form. The morphological properties of leaves, which are part of the plant used as drug, were determined both in the standard sample and in the purchased samples. Anatomical features of transverse and surface sections from standard avacado leaves with transverse sections from the petiole of natural avacado leaves were investigated and determined. Besides, the distinctive anatomical structures of the powdered samples (standard sample and samples purchased from the market) were demonstrated. The avacado leaf is bifacial. The hairs are only located lower surface of the leaf and mostly unicellular. Secretory cells and crytals were observed in the avacado leaf and petiole. Crystals are simple in various sizes, and small raphids. The stomata confined to the lower surface and anomocytic type (3-6 subsidiary cells). In tranverse section taken from the petiole, the hairs were observed to be gathered on the upper surface of petiole. References 1) Yasir, M., Das, S., Kharya, M. D. (2010). The phytochemical and pharmacological profile of *Persea americana* Mill. *Pharmacognosy Reviews*, 4(7): 77-84. 2) Gruenwald, J., Brendler, T., Jaenicke, C. (Scientific Editors) (2004). Physicians desk reference (PDR) for herbal medicines. Third Edition. Thomson/Medical Economics Company, Montvale, New Jersey. 3) Sargin, S. A. (2015). Ethnobotanical survey of medicinal plants in Bozyazi district of Mersin, Turkey. *Journal of Ethnopharmacology*, 173: 105-126. 4) Demirkol, A. (1995). Avocado growing in Turkey. *Proceedings of the World Avocado Congress III*, p. 451-456.

KEYWORDS

Persea americana, Lauraceae, Morphology, Anatomy, Powder drug

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Poster Session 8

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COMPOSITION OF THE ESSENTIAL OILS OF TWO INULA SPECIES (*I. SALICIANA* L. AND *I. DISCOIDEA* BOISS.) GROWING WILD IN TURKEY

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ABSTRACT

The *Inula* genus members are mostly herbs or subshrubs, but sometimes annual or biennial herbs and belongs to the Asteraceae family. Several species of *Inula* are used in traditional medicine as an extensively used primarily for treatment of abdominal pain, emesis, diarrhea, and threatened abortion. In addition, the roots are effective in the treatment of diuretic, diaphoretic, expectorant, and anthelmintic remedy. In this study, the essential oil composition of *Inula saliciana* L. and *Inula discoidea* Boiss. collected from Turkey were analyzed. The oils obtained by hydrodistillation using Clevenger apparatus from two *Inula* species and chemical composition were determined by GC and GC-MS system. The oil yield were determined as 0.3% and 0.4% (v/w) in the both essential oils respectively. Sixteen constituents were comprised the 94.5% of the total essential oil extracted from the *Inula saliciana*. The predominant compounds of the oil were determined as 2-pentadecanone (30.5%), tetradecanal (25.5%) and [+-]Epi-bicyclosesquiphellandrene (7.0%). On the other hand, tetradecanal (38.0%) and palmitic acid (19.0%) were found as the main compounds identified in the oil of *Inula discoides*.

KEYWORDS

Inula, GC-MS, Essential oil, Turkey.

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Poster Session 8

Submission ID: 1070

A TRADITIONAL TURKISH DESSERT: PEKMEZ

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ABSTRACT

In Turkey, pekmez (liquid pekmez, LP) is one of the traditional food products and it is commonly produced from grape and can also be produced from fruits containing high amounts of sugar like apple, carob, plum, watermelon, apricot, sugar beet, mulberry and fig. For this reason in Turkey when the pekmez is called the first come to mind is grape pekmez. Pekmez is generally defined as boiling concentrated or shelf-life-preserved mulberry or grape juice without adding sugar or other food additives. Grape is the most commonly used fruit in pekmez production. Grape (*Vitis vinifera* L.) is one of the world's largest fruit crops, with an approximate annual production of 58 million metric tons. About 37% of harvested grapes are used in pekmez production in Turkey. Also, about 657,000 tons of grapes are processed into pekmez annually in Turkey. Grape pekmez is produced from grapes or raisins in an open kettle or vacuumed tank. Pekmez is traditionally made in rural areas. However, commercial pekmez production in small to mid-sized plants has been on the rise in recent years. Grape pekmez is a thick, concentrated product and is produced from grape or raisin paste by decreasing its acidity. Vacuum application may be applied to concentrate the product. The purpose of concentration is to extend the shelf-life by reducing the water content and to pasteurize the grape juice. Local pekmez generally takes its name from the place it is made such as Zile pekmez, the name of a Turkish town. Pekmez has been produced in Turkey for a long time in appreciable amounts and its production technology has changed very little since it was first produced. Pekmez made in Turkey is either in the liquid or in the solid form. Turkish standards classify pekmez as sweet (pH between 5 and 6) and sour (pH between 3.5 and 5.0). In the traditional production of sweet pekmez, grapes are washed and pressed to obtain grape must. The resultant must is cloudy and acidic. Grape must mainly contains tartaric, malic and citric acid, with tartaric acid being predominant. To neutralise acidity of grape must, pekmez earth can be used in percentages ranging from 0.1% to 1%. It is generally known as pekmez, and it is a healthy and natural product. Pekmez is consumed mainly for breakfast instead of jam or marmalade. Pekmez contains high amounts of sugar, mineral and organic acid, so, it is a very important food product in human nutrition especially for babies, children, and sportsmen and in situations demanding urgent energy. Pekmez has an important function in the working of the brain in which glucose is an energy source. Pekmez easily passes into the blood without digestion because most of its carbohydrate is in the form of monosaccharide like glucose and fructose.

KEYWORDS

Nutrition, Traditional Food, Pekmez, Production, Grape

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Poster Session 8

Submission ID: 1072

A REVIEW OF NURSING THESES ON AROMATHERAPY IN TURKEY

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ABSTRACT

Purpose: This study aims to review the nursing theses carried out on aromatherapy in Turkey. **Method:** To collect the research data, first a literature review was conducted, and then a key word search was carried out with keywords such as ‘aromatherapy’, ‘aromatherapeutic’, and ‘of aromatherapy’ in the database of the National Dissertation Center of the Higher Education Council. As a result of the search, 23 theses from Health Sciences Institute, Nursing Department related to the subject in question were identified, and the citation details of these theses were obtained. **Findings:** Of the theses conducted on aromatherapy in the field of nursing, 5 were master’s theses, and 18 were doctoral dissertations. 10 of these theses were carried out in Internal Medicine Nursing Department, 3 in Surgical Diseases Nursing Department, 4 in Fundamentals of Nursing Department, 2 in the Department of Child Health and Diseases Nursing, 2 in Women's Health and Obstetric Nursing Department, and 2 in Public Health Nursing Department. The research data in 10 of the studies were conducted as randomized controlled study. In 11 of the theses, aromatherapy was administered cutaneously, by inhalation in 9, and both cutaneously and through inhalation in 3. Lavender was the most commonly used aromatherapy oil in these studies. The effect of aromatherapy on more than one factor was studied in these studies. The first five items in terms of aromatherapy use were found to be coping with pain, coping with anxiety, improving sleep quality, reducing fatigue, and boosting life quality respectively. All of the theses found that aromatherapy agents were effective. **Conclusion:** It is noteworthy that aromatherapy has been used in many areas of nursing, including mainly in internal medicine nursing. This indicates that aromatherapy is one of the major areas of interest in nursing research. It also reflects the fact that it has the capacity to be integrated into nursing care in many areas of nursing. That nearly half of the studies were conducted as randomized controlled study increases the reliability of the research findings. It is important to recognize aromatherapy in nursing practices and authorize nurses with this regard. It is predicted that research into this area might grow if the nurses are authorized. It is believed that the outcomes of this study will guide nurses and other health professionals who are interested in studying on aromatherapy.

KEYWORDS

Aromatherapy, nursing, care

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Poster Session 8

Submission ID: 1073

DETERMINATION OF ZN(II) AND CD(II) CONCENTRATION IN WHEAT THAT GROWN AT KARAMAN WITH VOLTAMMETRIC METHODS

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ABSTRACT

Toxic and persistence substances in the environment continuously accumulate and increase owing to the anthropic activities. With reference to this, one of the major problems in ecology is related to the path of toxic metals contained in all matrices involved in foods and food chain, because of their irreversible deleterious effects on man [1]. The removal of these toxic materials is crucial for the living and the people. For this reason, heavy metals were determined using voltammetric methods on the wheat grown in Karaman. Three group of crop wheat were gathered from Karaman-Konya, Karaman-Organized Industrial zone motorway and some villages of Karaman, respectively. These samples were crushed at laboratory mill to obtain whole wheat flour and then sieved with 250 micron sieve. So, some whole wheat flour sample was converted into wheat flour for analyses. All samples were prepared after melting with mixture of 10 mL 98% H₂SO₄ + 10 mL 35% HNO₃ + 10 mL 30% H₂O₂ at microwave oven. Optimized conditions were determined for Anodic Stripping Voltammetry method. Calibration curves were plotted for analyses of Zn(II), Pb(II). After that, standard metal mixtures which were prepared with standard addition method were added in to both of whole wheat flour and sieved wheat flour. So those samples were analyzed. According to these results; those samples do not include Cd(II). Also determined amount of Zn(II) below to the limit of danger for human health.

KEYWORDS

Anodic stripping voltammetry, Polarography, Whole wheat flour, Heavy metal.

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Poster Session 8

Submission ID: 1074

DETERMINATION OF Pb(II) AND Cu(II) CONCENTRATION IN WHEAT THAT GROWN AT KARAMAN

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ABSTRACT

Plants pick up heavy metals from the ground with their roots and leaves from the air. Plants planted with industrial wastewater contain more heavy metals. Toxic effect occurs when the human body is exposed to heavy metals over certain quantities [1]. For this reason, heavy metals were determined using voltammetric methods on the wheat grown in Karaman. Three group of crop wheat were gathered from Karaman-Konya, Karaman-Organized Industrial zone motorway and some villages of Karaman, respectively. These samples were crushed at laboratory mill to obtain whole wheat flour and then sieved with 250 micron sieve. So, some whole wheat flour sample was converted into wheat flour for analyses. All samples were prepared after melting with mixture of 10 mL 98% H₂SO₄ + 10 mL 35% HNO₃ + 10 mL 30% H₂O₂ at microwave oven. Optimized conditions were determined for Anodic Stripping Voltammetry method. Calibration curves were plotted for analyses of Cu(II), Pb(II). After that, standard metal mixtures which were prepared with standard addition method were added in to both of whole wheat flour and sieved wheat flour. So those samples were analyzed. According to these results; those samples do not include Pb(II). Also determined amount of Cu(II) below to the limit of danger for human health.

KEYWORDS

Anodic stripping voltammetry, Whole wheat flour, Heavy metal.

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Poster Session 8

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EFFECTS OF GOJI BERRY (LYCIUM BARBARUM) EXTRACT ON EXPERIMENTAL TOXOPLASMOSIS

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ABSTRACT

Effects of Goji berry (*Lycium barbarum*) Extract on Experimental Toxoplasmosis Erol AYAZ¹, Fatma PEHLİVAN KARAKAŞ², Kerem YAMAN¹, Ayhan ÇETİNKAYA³, Hayriye ORALLAR⁴, Enes EĞİLMEZ⁵ 1 AİBÜ Medical Faculty, Department of Parasitology, BOLU 2 AİBÜ Agriculture and Natural Sciences Faculty, Division of Medical and Aromatic Plants, BOLU 3 AİBÜ Medical Faculty, Department of Physiology, BOLU 4 AİBÜ Agriculture and Natural Sciences Faculty, Division of Poultry, BOLU 5 AİBÜ Lab Animals Application and Research Center, BOLU Aim of our study is to examine the anti-parasitic effects of *Lycium barbarum* extract on the experimental model of toxoplasmosis. *Lycium barbarum* is known as goji berry or wolf berry and used in traditional Chinese medicine as an anti-oxidant, immunostimulator, relaxing and possible an additive agent against cancer. The polisaccharides of *L.barbarum* fruit is mostly responsible for these effects. *Toxoplasma gondii* is an intracellular Apicomplexan parasite which has got a worldwide spread. Toxoplasmosis isn't a symptomatic infection but it may threat life and cause severe conditions at immunocompromised individuals, fetuses and newborns. Separate from the known effects of *L.barbarum* , no study is accomplished as an anti-parasitic agent for this plant. Method: We used methanol evaporated and lyophilised essence of *L.barbarum* fruits. We applicate this extract to 40 mice aged 2-4 months old in this study. Mice were divided into five groups according to their situation of infection and intragastric application of extract. All mice in chosen groups were infected with 1X10⁵ tachyzoites of *T.gondii* RH strain. As an antiparasitic agent, 24 mg/ml dosage of co-trimoxazole in saline, is chosen and dispensed 0.1 ml by oral gavage . Dosage of *L.barbarum* extract was adjusted 100 mg/kg in saline and dispensed 0.1 ml by oral gavage too. Group I was the healthy group without any intervention. Group II was infected with *T. gondii* tachyzoites. Group III was infected and treated with co-trimoxazole. Group IV was infected and treated with *L.barbarum* extract. Last group was the group, we both appllied the plant extract and co-trimoxazole. After, chosen groups were infected, we observed the groups and examined the parasite load by counting tachyzoites in the intraperitoneal fluid of mice at Thoma chamber. Results: Significant difference is found in study groups compared with control groups. Number of parasites found close in study groups, thus resulting no significant difference between them. As a result of our study, we decided the extract of *L.barbarum* may be helpful for treatment of toxoplasmosis. As an advise, more elaborate research may progress through using different species of parasites.

KEYWORDS

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Toxoplasma gondii, Lycium barbarum, Mice, Anti-parasitic



Poster Session 8

Submission ID: 1076

CYTOTOXIC, MORPHOLOGIC AND APOPTOTIC EFFECTS OF PROTOCATECHUIC ACID ON DU145 CELL LINE

PINAR ÖZTOPCU-VATAN¹, EMINE İNAN¹

ABSTRACT

Protocatechuic acid (PCA) is a phenolic acid and widely found spread throughout in many plants as an aromatic secondary metabolites. Previous studies, have shown different biological and pharmacological activities PCA, as well as, suppression of proliferation of cancer cells. Prostate cancer is one of the most common cancer types in men and the treatment are very limited. In this study, we determinate the cytotoxic and apoptotic effects of PCA on human prostate cancer (DU145) line. The cytotoxic effects of PCA (0.5 to 3.5 mM) was examined in cells for 24 and 48 h by MTT and Neutral Red (NR) assay. All statistical analyses were performed using one-way analysis of variance (ANOVA) and followed up by Tukey's multiple comparison tests. Morphological changes in cells were evaluated by inverted microscope. Apoptotic cell death was assessed in cells treated with 1 and 1.5 mM PCA by DAPI staining. The cell viability started to decrease at 1 mM ($p < 0.001$) for 24 h, 0.75 mM ($p < 0.001$) for 48 h. The IC₅₀ values at 24 and 48 h were estimated as 1.29 and 0.90 mM by MTT and 1.23 and 0.88 mM by NR assay respectively. Increased PCA doses caused circular cell morphology, diminished the cell number as well as increased the nuclear condensation and fragmentation on DU145 cells. We reported for the first time that PCA possess cytotoxic and apoptotic effects on prostate cancer in a time and dose dependent manner. Further studies are needed to clarify the mechanism of PCA induced apoptotic death. *This study was supported by Eskisehir Osmangazi University, Scientific Research Projects Committee (Project number: 201219A104).

KEYWORDS

Protocatechuic acid, Prostate carcinoma, Cytotoxicity, DAPI, Apoptosis

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Poster Session 8

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EFFECT OF GOJI BERRY FRUIT EXTRACT ON SOME VITAMIN LEVELS IN RATS FED HIGH FAT DIET

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ABSTRACT

Purpose: Goji berry has been traditionally used for centuries in Asia due to its positive effects on health. In this study, we aimed to investigate the effect of goji berry fruit extract on Vitamin D, Folic acid and vitamin B12 levels in rats fed high fat diets. Method: Forty Wistar-Albino healthy rats were used as study material. The rats were divided into 4 groups, with 10 rats per group. Group 1: control group given standard pelleted feed for 60 days, Group 2: fed with 60 days of standard pelleted feed and 100mg / kg goji berry fruit extract, Groups 3: fed on a high fat diet for 60 days, Group 4 was formed from rats fed a high fat diet for 60 days and 100 mg / kg goji berry fruit extract. After 60 days, the rats were taken to the cardiac blood gel tube, and the serum was separated. Serum Folic acid, B12 and D vitamin levels were measured on an Architect brand CD16000I model autoanalyzer. Result: Serum folic acid level was significantly lower in group 3 than in the other groups. B12 vitamin and vitamin D levels were significantly lower in Group 3 and Group 4 than Group 1 and Group 2 ($p < 0.05$). Conclusion: VitD deficiency and obesity are common health problems. It still has to argue which one is the cause of the other. Vit D suppresses lipolysis by increasing the Ca ++ transition from outside to inside the cells, it stimulates lipogenesis. The same mechanism also suppresses the expression of uncoupling protein 2 (UCP2), which allows the use of lipids in mitochondria in the cell, leading to lipid accumulation. In our study, we observed that there were no effects on the vitamin level of the goji berry extract, which was reduced by Vitamin D, in the groups we fed with the oily diet. When the folate level was lower in the group fed with the overfat diet than in the other groups, but there was no significant difference (p), we observed that vitamin B12 levels fell in the 3rd and 4th groups ($p < 0.05$). Goji berry fruit extract did not affect vitamin D, B12 and folic acid levels in rats fed high fat diets.

KEYWORDS

Goji berry, vitamins, high fat diet

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Poster Session 8

Submission ID: 1079

**STRUCTURAL INVESTIGATION OF THE GLANDULAR
TRICHOMES OF ENDEMIC MARRUBIUM CEPHALANTHUM BOISS.
& NOË SUBSP. MONTANUM AKGÜL & KETENOĞLU, A NEW
SUBSPECIES FROM TURKEY**

İLKAY ÖZTÜRK ÇALI¹, ARZU CANSARAN¹, CENGİZ YILDIRIM¹

ABSTRACT

The genus *Marrubium* L. (Lamiaceae) has more than 40 species in the world. Most of them i.e. 12 species are endemic to Turkey and more than half of them (i.e. 22 species) are found in Turkey. Except few species, most of them are perennial herbs. There are a few species in this genus that is known to be used for medical purposes. The genus *Marrubium* is characterized by erect or ascending stems and densely hairy, usually having many lateral branches, leaf with toothed margins, flowers usually arranged densely on the stems known as verticillaster, having broad bracts and small bracteoles, and having tubular calyx and corolla. *Marrubium cephalanthum* subsp. *montanum* is a new endemic subspecies from Turkey. The plant specimens were collected in its flowering period from Amasya on 20.05.2016. The plant materials were identified and deposit at Amasya University. Structural studies of the glandular trichomes were carried out on vegetative and reproductive organs of the plant that were fixed in 70% alcohol. Hand made superficial sections in leaves on upper and lower surfaces and cross sections in stem, petiole, calyx, corolla were obtained to determine the glandular trichome structures of the plant. *M. cephalanthum* subsp. *montanum* has two main types of glandular trichomes. These are peltate and capitate glandular trichomes.

KEYWORDS

Marrubium cephalanthum subsp. *montanum*, *Trichome*, *Endemic*

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Poster Session 8

Submission ID: 1080

**SPECIES OF GLAUCIUM FLAVUM CRANTZ (PAPAVERACEAE)
MORPHOLOGICAL CHARACTERISTICS AND SPREADING AREAS
IN TURKEY.**

FATMA MUNGAN KILIÇ¹, KEMAL YILDIZ², MURAT KILIÇ²

ABSTRACT

A bright, remarkable yellow color which belongs to the genus *Glaucium* Mill. it is known as "yellow horned poppy". Species spread on the sea side, river valleys (0-50 m). The medical use; antidiabetic, anti-cancer, antibiotic and cardioprotective effect. Field work was carried out in the vegetation period covering the May to August months between the years of 2011 and 2015. The species were collected from as many different locations. Records of the collected samples were kept, photographs were taken in natural growing environments and the specimens collected were dried according to standard procedures and transformed into herbarium specimens. Pollen and seeds of the species were analyzed by scanning electron microscopy (SEM). As a result of morphological examination, the stem is 23-42 cm length, hairless, branched, whitish green; the leaves are thick, very green-matte. Flower buds are hairless or slightly acute, ovate -rectangular, acute, petals usually yellow. As a result of the morphological investigations, parallelism was observed between the obtained data and the Flora of Turkey. In addition, the spreading areas and description have been improved and the obtained data has been transformed into a table. At the end of the palynological investigation, pollen grains usually were spheroidal in shape and tricolpate aperture, ornamentation microecinate and microperforate. Seed features; reniform, that surfaces alveolate and faveolate was observed.

KEYWORDS

Glaucium, Morphology, Palynology, Medicinal Plant, Flora of Turkey

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Poster Session 8

Submission ID: 1081

GOLEVEZ (TARO, KOLOKAS)

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ABSTRACT

Research into food-derived bioactive components for cancer prevention as well as cancer therapy is growing due to the relatively low or no detectable toxicity and better bioavailability. In this regard, it has been carried out scientific research on the plant called "golevez" in our country and "taro, old cocoyam, eddoe or dasheen" in other countries. Golevez [*Colocasia esculenta* (L.) Schott] is a tropical root vegetables from the family of the Araceae. Golevez, which is produced extensively in 43 states around the world, is grown in Alanya and Gazipaşa of Antalya, Bozyazı, Anamur districts of Mersin and is well known as "kolokas" in the Turkish Republic of Northern Cyprus and widely consumed. The primary use of golevez is the consumption of edible leaves and root corms. The corms can be cooked as vegetables with boiled. The leaves of golevez are eaten as vegetables by people and are evaluated as wrapping and soup. Gollevez's corms is cooked with boiled meat, beans and chickpea. It is used as canned food, flour, chips, noodle and frozen food in tropical and subtropical countries. Dried fine powder of the plant's corm is used as additives for bread, pastry, food and pasta. Mucilage of golevez participates in diet products. Oxalic acid can be present in the leaves and root corms. Because of this, the plant must not be defeated without cooking, the oxalate ion can cause high irritation in the digestive tract. Since the method of processing of the golevez is very unknown in our country, it is widely consumed only in the regions where it is produced. The pharmacological effects of the plant are also unknown in our country. However, it has been known in the world since ancient times for its medicinal properties and is being used to help treat various diseases such as asthma, arthritis, diarrhea, internal bleeding, neurological disorders and skin disorders. It has been found that the extracts obtained from this plant have various pharmacological activities. Antimicrobial, antioxidant, antiinflammatory and anticancer activity of *Colocasia esculenta* has been reported. It has been reported with the scientific studies made that extracts obtained from this plant inhibit certain tumor metastases strongly and specifically. As research on *Colocasia esculenta*'s corm and leaves is promising and encouraging, it is necessary to purify the active components and to carry out their clinical studies in the future in order to increase these activities. In this review, the traditional use and known pharmacological effects of *Colocasia esculenta* have been examined.

KEYWORDS

Golevez, Colocas, Colocasia esculenta, antimicrobial, anticancer

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Poster Session 8

Submission ID: 1082

GRAPE SEED AS A FUNCTIONAL COMPONENT

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ABSTRACT

Grape seed obtained after wine or juice making and contains 13–19% oil, about 11% protein, 60–70% of non-digestible carbohydrates, phenolic compounds, and non-phenolic antioxidants such as tocopherols and beta carotene. The phenolic compounds in grape seeds are essentially all flavonoids, flavan-3-ols (catechin, epicatechin and epicatechin-3-O-gallate monomers) and their polymers. Grape seed has been used as grape seed oil or grape seed extract in food industry. Grape seed oil (also called grapeseed oil or grape oil) is pressed from the seeds of grapes. The nutritional value of the grape seed oil is very high because of the rich unsaturated fatty acids, mainly linoleic and oleic acids of the oil. Grape seed oil also contains bioactive compounds including phytosterols, tocopherols, tocotrienols, flavonoids and phenolic acids with recognized biological importance due to their antioxidant activity. This components contribute to the beneficial effects of the grape seed oil. Particularly, grape seed oil is a rich source of vitamin E and contains high quantities of tocopherols and tocotrienols. The grape seed extract contains high levels of phenolic compounds including flavonoids, procyanidins and phenolic acid. It is reported that proanthocyanidins as plant-based health-beneficial components in the human diet have potential health beneficial effects depending on their structure and especially on their degree of polymerization. It has been demonstrated that proanthocyanidins possess a large spectrum of pharmacological and therapeutic benefits including antioxidant, antithrombotic, antibacterial and antiviral, anti-inflammatory, anti-allergic and anticarcinogenic activities. Thus, due to its composition and related properties, grape seed has emerged as a product with health-promoting effects and having the potential for use in pharmaceutical and food applications as a functional components.

KEYWORDS

Grape seed, grape seed oil, grape seed extract, fuctional components

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Poster Session 8

Submission ID: 1083

ORGANIC COSMETIC PRODUCT USAGE PREVELANCE OF WOMEN WORKING IN TRABZON

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ABSTRACT

In this study, it was aimed to examine the prevalence of organic cosmetic product usage in women working in Trabzon. The sample of the research made by the descriptive type is 154 women working in different institutions in Trabzon. Data were filled with face-to-face interview technique using the questionnaire form. When the prevalence of use of organic cosmetics in the survey is examined; 95.5% used hand soap every day, 69.5% used shampoo once a week, 57.1% used hair dye and hair once a month, and 3.2% used face lotion every year. Among the products that are never used; Makeup material (3.9%), nail polish (2.6%) and shower gel (1.9%) are in the first three ranks. Brand names (75.3%) were the most important factor in the purchase of organic cosmetics products by working women and internet environment (51.3%) was the preferred place to purchase. As a result, working women often use organic cosmetics.

KEYWORDS

Organic Cosmetic Product, Working Women, Internet Environment, Brand

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Poster Session 8

Submission ID: 1084

SPECTACULAR FOOD-DRUG INTERACTION: ST. JOHN'S WORT (HYPERICUM PERFORATUM)

MUSTAFA FEVZİ KARAGÖZ¹, MAKBULE GEZMEN-KARADAĞ¹

ABSTRACT

St. John's wort, which is distributed in hot and temperate regions all over the world, has 89 species in Turkey, the most common being *Hypericum perforatum* L. species. The properties of St. John's wort, which has antiinflatuar, analgesic, antidepressant, antiviral, antimicrobial and antioxidant effects, are derived from hyperforine, flavonoids, procyanidins, essential oils, phenylpropanals, xanthenes and gamma aminobutyric acid (GABA). Hipericine and quercetin have the ability to bind to dopamine receptors, miquelianin and rutin bind to adrenergic receptors. Hyperforin inhibits synaptosomal reuptake of serotonin, norepinephrine, GABA and dopamine. Hence, *Hypericum perforatum* shows similar properties to some synthetic antidepressants (SSRI, MAO etc.). St. John's wort triggers the activity of cytochrome-P isozymes (CYP3A4, CYP2E1 fe CYP2C19) and the synthesis of a carrier membrane protein, P-glycoprotein (P-gp). St. John's wort has been shown to increase the metabolism of many medicines, mainly by increasing the activity of intestinal CYP3A4 enzymes. This is accomplished by activating the nuclear pregnane X receptor and inducing CYP3A4 expression. The increase in the synthesis of P-gp leads to a decrease in drug absorption and an increase in excretion. The hypericum extract reduces the plasma concentration of some antineoplastic agents (irinotecan) by triggering liver metabolism of P-gp and CYP3A4. Along with the use of St. John's wort, the half-life of oxycodone, which is used in the treatment of patients with chronic pain, is shortened, thereby the plasma concentration of drug is reduced. Finally, medicines used in the treatment of diseases should be carefully considered in terms of the interaction with the St. John's wort and other nutrients in order not to adversely affect the treatment.

KEYWORDS

St. John's Wort, Hypericum Perforatum, Drug Inteactons, Antidepressant

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¹GAZİ ÜNİVERSİTESİ SAĞLIK BİLİMLERİ FAKÜLTESİ BESLENME VE DİYETETİK BÖLÜMÜ

Poster Session 8

Submission ID: 1085

POTENTIAL HEALTH BENEFITS OF CHAMOMILE TEA

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ABSTRACT

Accepted as native to Europe and Western Asia, Chamomile (*Chamomillarecutita*) is widely found in all regions of Turkey, and it is used as a medicinal plant in Europe. One of the most popular herbal tea, chamomile tea is consumed more than a million cups a day worldwide. The beneficial effects of chamomile on health, determined to have more than 120 compounds, are generally divided into two classes: sesquiterpenic compounds such as α -bisabolol, bisabololoxides A and B, chamazulene and farnesene, and phenolic compounds, namely flavonoids including apigenin, quercetin, patuletin and luteolin, and their glucosides. In addition, coumarins are also considered to be an important bioactive component. Studies conducted so far have shown its antiparasitic, antioxidant and anticancer characteristics which support the use of the chamomile in the treatment of various diseases. Chamomile has been used to treat a variety of inflammation, irritation, and pain such as skin diseases, sores, eczema, ulcers, gout, neuralgia, and rheumatic pain. It has been determined in animal model studies that chamomile has strong anti-inflammatory effect, and antispasmodic and anxiolytic effects as well as some antimutagenic and cholesterol-lowering activities. Recent studies have focused on the anti-diabetic effects of chamomile tea. The purpose of this study is to investigate the effects of various bioactive compounds found in the content of chamomile tea.

KEYWORDS

Chamomile tea, health, medicinal plant, antioxidant

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Poster Session 8

Submission ID: 1086

CURE COMES FROM THE WATER “CHLORELLA AND SPIRULINA”

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ABSTRACT

The need for new food supplies has arisen due to the increase in the population of the world. As the terrestrial sources are unable to cope with the increasing demand people have a tendency towards aquatic resources. One of the most important aquatic creatures is the algae. In addition to their being a nutrient, they are also used as medicine. Their importance comes not only from the fact that they are the nutritional source of a variety of aquatic creatures but also from their part in producing the two thirds of the world's photosynhate carbon and their function in maintaining the integrity of the ecosystem. As a nutrition and a medicine algae has a major importance in China, Japan and Korea. In many countries it is used in various fields such as medicine, pharmacology, cosmetics, chemistry, agriculture, food industry and energy sector Chlorella and Spirulina are the two most prominent algae species used in food supplement industry in our country as well as the rest of the world. If the fossil records are to be examined it could be noticed that Chlorella has a cell structure that has not been changed for almost 2.5 billion years.. Spirulina has become widely used throughout the world thanks to its being an essential food of the Aztecs. Spirulina is a protein source with its low level of fat and calories and it contains nearly all essential amino acids. These two species of seaweed are preferred due to their rich nutritional value and that they can be reproduced in labrotaries. These algae species are rich in vitamin B12, minerals, protein and iron and that makes them useful in the renewal of the heart cells and in fighting against diseases such as high levels of cholestrol, ulcer, cancer,flu etc. In Turkey, this two of algae are sold by many of companies as a food supplement.

KEYWORDS

Spirulina, Chlorella, algae, treatment, food

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Poster Session 8

Submission ID: 1087

EFFECTS OF COMMON DAISY (BELLIS PERENNIS) EXTRACT ON EXPERIMENTAL TOXOPLASMOSIS

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GÖKÇE BOZAT¹

ABSTRACT

Effects of Common Daisy (*Bellis perennis*) Extract on Experimental Toxoplasmosis Erol AYAZ¹, Fatma PEHLİVAN KARAKAŞ², Kerem YAMAN¹, Ayhan ÇETİNKAYA³, Mücahit ÇAKMAK⁴, Gökçe BOZAT² 1 AİBÜ Medical Faculty, Department of Parasitology, BOLU 2 AİBÜ Agriculture and Natural Sciences Faculty, Division of Medical and Aromatic Plants, BOLU 3 AİBÜ Medical Faculty, Department of Physiology, BOLU 4 AİBÜ Lab Animals Application and Research Center, BOLU Aim of our study is to examine the anti-parasitic effects of *Bellis perennis* extract on the experimental model of toxoplasmosis. *Bellis perennis* is a herbal perennial plant used as an antimicrobial and anti-inflammatory agent in traditional medicine. Some researchs showed the diuretic, analgesic and anti-pyretic effects of this plant, especially the leaves. *Toxoplasma gondii* is an obligate, intracellular parasite which has got a high seropositivity around world. Although toxoplasmosis is not a clinically symptomatic infection, it gains importance at immunocompromised patients and fetuses. Dependent to the anti-microbial, anti-inflammatory effects, there is no research on the usage of *B.perennis* as an anti-parasitic agent. Method: We used ethyl acetate evaporated and lyophilised essence of *B.perennis*, We applicate this extract to 40 mice aged 2-4 months old in this study. Mice were divided into five groups according to their situation of infection and intragastric application of extract. All mice in chosen groups were infected with 1X10⁵ tachyzoites of *T.gondii* RH strain. As an antiparasitic agent, 24 mg/ml dosage of co-trimoxazole in saline, is chosen and dispensed 0.1 ml by oral gavage . Dosage of *B.perennis* extract was adjusted 100 mg/kg in saline and dispensed 0.1 ml by oral gavage too. Group I was the healthy group without any intervention. Group II was infected with *T. gondii* tachyzoites. Group III was infected and treated with co-trimoxazole. Group IV was infected and treated with *B.perennis* extract. Last group was the group, we both apply the plant extract and co-trimoxazole. After, chosen groups were infected, we observed the groups and examined the parasite load by counting tachyzoites in the intraperitoneal fluid of mice at Thoma chamber. Results: According to parasite load of study groups, we found significant decrease of tachyzoite levels in the groups III, IV and V, within comparison to control group II. Besides, no significant difference is indicated between groups III, IV and V. All mice but groups I and II, are found dead on day 7 post-infection. There is no change in normal life span of mice in group I and all mice in control group II are found dead on day 2 and 3 post-infection. As a result of our study, we concluded that the ethyl acetate extract of *B.perennis* is found beneficial for toxoplasmosis. We advise the usage of this herbal extract as an anti-parasitic agent could be helpful to cure toxoplasmosis.

KEYWORDS

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Toxoplasma gondii, Bellis perennis, Mice, Anti-parasitic

Poster Session 8

Submission ID: 1088

A FRUIT PACKED OF HEALTH: TAMARIND (TAMARINDUS INDICA)

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ABSTRACT

Tamarind belongs to the family of Fabaceae and is one of the fruits used in ayurvedic medicine. This fruit, rooted in Africa, is then exported to Asian countries such as India and Indonesia, and to America countries such as Mexico and Costa Rica. Tamarind is rich in phytochemicals besides vitamin and mineral content. Tamarind leaves have antiinflammatory features that diclofenac (NSAID)-like effect. In diabetic rats, using tamarind seed extract by 120 and 240 mg/kg per day, the levels of NO were decreased by 22 and 43%, respectively. When compared to corresponding diabetic control rats, TNF- α levels were dose-dependent decreased, dramatically ($p < 0,05$). Tamarind has antidiabetic properties due to increasing pancreatic intracellular Ca⁺ levels by insulin-like action in pancreatic β cells. Tamarind shows laxative activity because of fiber, malic and tartaric acid content, and also its bark and leaves are used for wound healing. Due to acidic content longed-term use can lead to tooth decay. The content of tannin can make it difficult to digest tamarind, so it is recommended to consume it as boiled or in water. When tamarind consume with aspirin and ibuprofen, bioavailability of and blood concentration of drugs increase. Considering health effects such as antiinflammatory, antioxidant, antidiabetics etc., be careful for drug interactions and other potential adverse effects in the use of tamarind which is inevitable in the use of ayurvedic medicine.

KEYWORDS

Tamarind, Tamarindus indica, Antiinflammatory, Antioxidant

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Poster Session 8

Submission ID: 1089

USE OF HAWTHORN (CRATAEGUS SPP.) FOR DIFFERENT MEDICINAL USES

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ABSTRACT

The hawthorn is known in Turkey with different names such as yemisen, alic, aluc, erderan, beyaz diken or eksi musmula. There are up to 200 species of recipient of the Rosaceae family under the Crataegus genus in the world, and this number has been increased to 1200 by some taxonomists. There are 17 species of Crataegus in Turkey. Naturally the most spreading species is Crataegus monogyna at the same time Crataegus orientalis, Crataegus oxyacantha and Crataegus aronia species are also common. Hawthorn fruit and flowers contain many useful substances for human health, especially antioxidant flavonoids (flavanes), vitamins (especially vitamin C), saponins, organic acids, ether oils and sugars. In the field of medicine, the number of studies analyzing the effects of substances contained in hawthorn fruits on human health are increasing day by day.

KEYWORDS

Hawthorn, medicine, antioxidant

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Poster Session 8

Submission ID: 1090

NUTRITIVE VALUE AND FUNCTIONAL PROPERTIES OF CHIA SEED (*SALVIA HISPANICA* L.)

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ABSTRACT

Salvia hispanica L., also known as chia, is a herbaceous plant cultivated semi-annually, and it belongs to the family Labiatae, division Spermatophyta, and kingdom Plantae. Chia is native to the region that stretches from North Mexico to Guatemala. Its seeds were widely used by Aztec tribes for food, medicine, and paints. Nowadays chia seeds are commercially grown in Mexico, Bolivia, Argentina, Ecuador, and Guatemala. The seeds are small with an oval, flattened shape and ranged in color from dark coffee to beige with small darker spots. The chia plant is sensitive to daylight and produces black and white seeds. Black colored chia seeds are more common. White seeds are larger, thicker and broader than the black seeds. The plant can grow in a wide range of well-drained clay and sandy soils with reasonable salt and acid tolerance. Different ecosystems have variable significant effects on the nutrient composition of *Salvia hispanica* especially its protein and oil content and also the fatty acid composition. The environmental factors which have been found to influence the composition of chia seeds include temperature, light, soil composition and type/variety. Chia seed contains a significant amount of lipids (approximately 40% of the total weight), with almost 60% of the lipids comprising Omega-3 fatty acids. Dietary fiber constitutes more than 30% of the total weight of the seed, and approximately 19% of the seed contains proteins of high biological value. The 25-g serving of chia seeds had 540 kJ, with 7.7 g total fat, 3.9 g protein, 11.0 g carbohydrate, 9.4 g dietary fiber, 4.4 g ALA, 1.4 g linoleic acid, and 158 mg calcium. Chia seeds possess many important functional properties (water-holding capacity (the chia seeds can absorb water up to 12 times their weight), oil holding capacity, solubility, viscosity, emulsion stability and foaming stability) which prove its potential to be used as a thickening agent, gel forming agent, chelator, foam enhancer, emulsifying agent, clarifying agent, rehydrating agent and as suspension formers in the formulation of food products at both home and commercial level. All these properties make chia a promising functional food for the future. From the past to the present day, possible therapeutic effects of chia (such as control of diabetes, dyslipidemia, hypertension, as anti-inflammatory, antioxidant, anti-blood clotting, laxative, antidepressant, anti-anxiety, analgesic, and immune improver) has been discussed in the scientific literature. Although not common in studies on humans, some research points to the consumption of chia having a positive effect on health. However, these studies vary a great deal in both sample size and the profiles of the individuals in the sample group, which may have created a discrepancy in the findings. Furthermore, the quantities and forms of chia seed —ie, milled, whole-seed, baked in bread— were different in the different studies. Also, studies of chia's intake in a human diet which take into consideration factors such as lifestyle and genetic variations are still limited. European Parliament and Council of Europe approved chia seeds as a Novel Food in 2009. Till date, no study has revealed any adverse toxic, allergic or anti-nutritional effects after ingesting whole or ground chia seeds. In 2015, García Jiménez S and co-workers described the first case of an IgE-

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mediated anaphylactic reaction induced by chia seeds. The allergens involved are water-soluble and liposoluble and include a lectin, an elongation factor, and an 11S globulin as known allergens. So, more clinical trials on animals and humans need to be done to ascertain the safety aspects of chia seeds.

KEYWORDS

chia, nutrient, health, functional properties

Poster Session 8

Submission ID: 1091

USE OF MICROELGAN'S AS PIGMENT SOURCE

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ABSTRACT

Microalgae, which are abundant in nature, contain a wide variety of color materials in their structures. Some of those; Astaxanthin, beta-carotene, phycocyanin, xanthophyll and phytoerythrin. These pigments can be used as natural pigments in food, medicine, textiles and cosmetics instead of synthetic pigments thought to be carcinogenic. Phycocyanin is a natural coloring substance with strong fluorescence properties, blue color, odorless, non-toxic, water-soluble. Due to its fluorescent properties, it is used as a fluorescent probe in microscopic, cytometry, immunology, tissue chemistry studies. In addition, they are used in nutraceutical and pharmaceutical applications due to antioxidant and radical scavenging effects. In this review, the pigments obtained from microalgae, their uses and new technologies will be mentioned.

KEYWORDS

Microalgae, Phycocyanin, Carotene, Pigment

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Poster Session 8

Submission ID: 1092

DETERMINATION OF ANTIOXIDANT AND ANTIMICROBIAL ACTIVITIES OF FIVE MULTIFLORAL HONEY SAMPLES FROM COLLECTED DIFFERENT REGIONS IN TURKEY

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ABSTRACT

Honey possesses antioxidant and antimicrobial activities. Many chronic diseases are associated with increased oxidative stress caused by an imbalance between free-radical production and antioxidant level. For that purpose, the total phenolic contents, antioxidant potentials and antimicrobial activities of five multifloral honey samples obtained from Turkey were investigated. The world population living in rural areas have confidence in herbal traditional medicines as their primary health care, the work on features and uses of medicinal plants and honey are getting growing curiosity. The difference between them indicated the presence of antimicrobial substance in honey. The kinds of antimicrobial substances (inhibines) in honey are evaluated. Hydrogen peroxide is not the only inhibine in honey. In fact, inhibines in honey include many other substances. Two important classes of these inhibines are the flavonoids and the phenolic acids. In this study, five multifloral honeys were compared with using pollen analysis, different antioxidant and antimicrobial test methods. The antioxidant capacity of honeys was assessed through the hydrogen peroxide scavenging activity (in terms of SC50), ferric reducing antioxidant power capacity (FRAP), DPPH radical scavenging activity (in terms of SC50), metal-chelating activity (%), total phenol content (TPC), and total flavonoid content (TFC). Additionally, antimicrobial activities of honey samples were investigated by using disc diffusion assay method against four Gram positive bacterias (*B. subtilis*, *S. aureus*, *L. monocytogenes*, *C. perfringens*), four Gram negative bacterias (*P. aeruginosa*, *E. coli*, *S. enteritidis*, *K. pneumoniae*) and a fungus (*C. albicans*). The antioxidant capacities of multifloral honeys were found between 251.99-269.96 µg/mL(HPSA), 72.47-74.66% (FRAP), 599.95-633.75 µg/mL(DPPH), 34.45-72.90% (MCA), 26.66-112.8 mg GAE/100 g (TPC) and 5.39-9.32 mg CAE/100 g (TFC). For comparison of these results, butylated hydroxy anisole (BHA), butylated hydroxy toluene (BHT) and α -tocopherol (TOC) were used as standard antioxidant compounds. The antimicrobial activity of multifloral honeys were found against *B. subtilis*, *S. aureus*, *L. monocytogenes*, *C. perfringens*, *P. aeruginosa*, *E. coli*, *S. enteritidis*, *K. pneumoniae*, *C. albicans* between 9.78-14.44, 6.00-13.11, 8.64-13.12, 6.00-12.27, 10.32-14.10, 6.00-15.22, 9.78-13.85, 6.00-13.22 and 6.00 mm, respectively. As a result, it has been observed that multiflower honeys had antibacterial effects against the Gram (+) and Gram (-) bacteria activities but not the fungus. The result of this study indicates that antimicrobial and antioxidant activities of multifloral honeys can be varied based on pollen composition.

KEYWORDS

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antioxidant, antimicrobial, multifloral honey, pollen composition

Poster Session 8

Submission ID: 1093

KONJAC GLUCOMANNAN AND HEALT BENEFITS

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ABSTRACT

The konjac glucomannan (KGM) is a water-soluble polysaccharide (dietary fibre) isolated from tubers of *Amorphophallus konjac* K. Koch. It is a perennial plant belonging to the family Araceae. *Amorphophallus konjac* K. Koch has been cultivated for centuries in Asian countries as a source of food and as an ingredient for traditional Chinese medicine. Konjac products are regarded as one of the "top 10 health foods" by World Health Organization. The polysaccharide has been largely consumed as a nutritional supplement. The important health benefits of KGM includes in reducing cholesterol, normalizing triglyceride concentration in blood, promoting intestinal activity and immune function, improving blood sugar levels and wound dressing. KGM is considered as an indigestible dietary fibre being resistant to hydrolysis by the action of digestive enzymes in the human gut. In pharmaceutical industry, KGM is used in the preparation of hydrogel as a DNA-controlled release matrix. In addition, it has been used to improve glycaemia and other related risk factors for coronary heart diseases in Type II diabetic patients. Therefore, KGM is recognized as a safe biomaterial according to the FDA (Food and Drug Administration, USA) for therapeutic uses. In this review, health benefits of KGM have been investigated.

KEYWORDS

Konjac glucomannan, dietary fibre, health benefits

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Poster Session 8

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MINERAL AND FATTY ACID COMPOSITION OF NIGELLA SATIVA OIL

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ABSTRACT

Nigella sativa, is a widely distributed annual herbaceous plant. For many years, the plants use for protective and therapeutic purposes from diseases and the usage are increased for lesser side effects and more safe of plants. These kind of products are increased depends on these interests. The efficacy, stability and quality of these products are affected to the public health. In particular, *Nigella sativa* oil is considered as one among newer sources of edible oils and it is important role in human nutrition and health. *Nigella sativa* oil or extract has protective and curative actions. Therefore, this investigation was undertaken to obtain information about the mineral composition of cold-pressed *Nigella sativa* oil sample and to the determine fatty acid profiles. In this study, the concentrations of mineral composition (Cu, Fe, Mg, Mn, Se and Zn) were determined in *Nigella sativa* oil by inductively coupled plasma mass spectrometry (ICP-MS). The samples were digested with nitric acid and hydrogen peroxide in a microwave oven. The calibration was accomplished by adding the standards prepared in the concentrations of 2, 5, 10, 25, 50, 100 and 200 µg L⁻¹ from the 10 mg L⁻¹ stock standard solution. In sample levels of Cu, Fe, Mg, Mn and Zn were found to be 475 µg/L, 20 mg/L, 112 mg/L, 456 µg/L, 10 mg/L, respectively. Selenium could not be detected. Determination of fatty acid and the esters profiles were completed by using gas chromatography mass spectrometry (GC-MS). Prepared samples, for FAME analysis, a TRACE TR-Wax GC capillary column (30 m× 0.32 mm) was used. The gas chromatograph system was combined with Thermo Trace GC and ISQ mass selective detector. The GC oven was kept at 60 C for 3 min, heated at 8 C/min up to 300 C, where it was kept for 1 min, and a total analytical time was 34 min. The carrier gas was helium (1 ml/min). The analysis of a sample by GC was carried out by injecting 2 µl of the sample solution into the GC. The formed methyl ester was identified by a selected ion monitoring (SIM) method. The major components of fatty acids in *Nigella sativa* oil are linoleic (%41), palmitic (%24) and oleic acids (%17). % Levels of Myristic acid, Palmitoleic acid, Heptadecanoic acid, gamma-Linolenic acid (GLA), Elaidic acid, Stearic acid, dihomogamma-linolenic acid, Methyl Eicosenoate, cis-11,14-Eicosadienoic acid, Arachidic acid and Behenic acid were found to be 0.6, 0.2, 0.1, 2.3, 0.7, 9.5, 0.7, 0.5, 2.2, 0.4 and 0.1, respectively.

KEYWORDS

Nigella sativa oil, essential oil component, GC-MS, mineral analysis and ICP-MS.

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¹AKDENİZ ÜNİVERSİTESİ GIDA GÜVENLİĞİ VE TARIMSAL ARAŞTIRMALAR MERKEZİ

Poster Session 8

Submission ID: 1096

PSEUDO-CEREALS: BUCKWHEAT AND QUINOA

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ABSTRACT

Cereals such as teff and millet, which grows rarely and/or in specific places, are called “minor-cereals”; small-pieced cereals, which are seed-sized, are called “pseudo-cereals”. Botanically speaking, most cereals such as wheat, barley, and rye are monocots while pseudocereals such as amaranth, quinoa, and buckwheat belong to eudicots group. Buckwheat is an annual plant which belongs to Polygonaceae family. It is shown with 20-25 cm intervals at the end of March or at the beginning of April and harvested in September or October. The height of buckwheat to be harvested can change between 60-120 cm according to conditions and climate type. One of the most important features of buckwheat is that it can adapt to growing at high altitudes in a short time. Buckwheat grain of which glumes are removed are called groat. Those are the ones which haven’t gone through heat process; raw grains of buckwheat. Groats, fractured or whole, have no inedible black glue on. Unprocessed white grains are a bit bitter. For this reason, if they are roasted with some oil until they turn rustish red before cooking, this bitter taste will disappear and leave a nice flavor. Most common buckwheat types grown as a food source are “common buckwheat” (*Fagopyrum esculentum* Moench) and “Tatar Buckwheat” (*Tartary Buckwheat-Fagopyrum tataricum* Gaerth). Common buckwheat is usually preferred because it has a delicious taste and a big seed, while Tatar buckwheat is preferred less because it has a bitter taste and a glue which can be peeled difficultly. The color of buckwheat is among the quality criteria along with its taste. Freshly harvested buckwheat seeds are light green. The color of old seeds is reddish brown. Whereas the annual buckwheat production changes year to year worldwide, the average production is around 3.5 million ton at present. In last 40 years, China has been the biggest buckwheat-producing country. %73.5 of a buckwheat grain consists of starch and %33.5 of it consists of resistant starch. Glycemic index of nutrients which contains resistant starch are usually low and this condition is an advantage for healthy adults. Quinoa Quinoa (*Chenopodium quinoa* Willd), an annual plant, is a member of goosefoot family (*Chenopodiaceae*) which includes spinach and beet. This plant is an endemic plant which generally belongs to And Region of South America (Colombia, Argentina, Peru, Bolivia, Chile, and Ecuador). Moreover, it is resistant to unsuitable climate conditions (frost, drought, etc.) and soil conditions (such as saltiness). Quinoa, used as a traditional food by most South American natives, like rice, can be used as a pilaf or be putting in soup dishes. Also, quinoa flour can be used for production of bakery products such as cookies, bread, biscuits, crisps, and pancakes. Leaves of this plant can be consumed like spinach and its sprouts can be added to salads. Buckwheat and quinoa are commonly used especially in the gluten-free food industry. Buckwheat (*Fagopyrum esculentum* Moench) includes a high level of protein, diet fiber, vitamins, minerals, basic non-saturated fat acids and antioxidants such as rutin and quercetin. Likewise, quinoa includes important micro-nutritional compounds such as minerals, vitamins and bio-active elements in balanced amounts.

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KEYWORDS

psedo-cereal, buckwheat, quinoa, grain

Poster Session 8

Submission ID: 1097

FUNCTIONAL FOOD AWARENESS OF VOCATIONAL HIGH SCHOOL STUDENTS

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ABSTRACT

Functional food; Is food or food components that reduce or mitigate some of the disease and health conditions as well as basic nutrition. In recent years, globalization, population growth, changing living standards with urbanization, increased health spending, increased elderly populations, and the emergence of various diseases have caused changes in the diet of individuals. Individuals are trying to take precautions by using health protective natural products as well as medicinal products such as medicines for the protection of diseases for healthy and quality life. The aim of this study is to determine the factors affecting the attitudes, knowledge levels and functional power consumption of the students attending to KTU Health Services Vocational School. A questionnaire consisting of various questions was applied to the students under the 7 sections heading. Within the scope of the research, the students were evaluated whether they were familiar with the term functional foods, consumed these nutrients, consumed them and their reasons, level of knowledge about health claims, in which situations they wanted to consume these foods and how they wanted to be informed. According to the results of the research, it has been determined that the three most functional foods consumed are mineral water (%76,8), herbal teas (%66,3) and Milk and dairy products that help digestion (%49,5). The aim of students to use functional foods for their favorite taste (%56,8), the second in order to be healthy (40.5%), in third place to assist in the digestion was determined as (%33.2). It has been determined that the least use is to reduce the risk of high blood pressure. As a result of the statistical analysis, it was seen that there was no meaningful difference between genders in terms of sources of information. In this study it was concluded that students did not know that functional foods were named as functional foods despite their definitions.

KEYWORDS

Student, Functional food, Awareness, Health

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Poster Session 8

Submission ID: 1099

NATURAL MUSHROOMS CONSUMED IN TURKEY AND THEIR CONSUMPTION PATTERNS

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ABSTRACT

Introduction: Fungi are important organisms that serve many vital functions especially in terrestrial ecosystems. Those fungi producing large and easily observed fruiting bodies are referred as macrofungi. The best known examples of macrofungi are the mushrooms. Wild edible fungi are collected and consumed by people for thousands of years. There is a huge diversity of different types, from truffles to milk-caps, chanterelles to boletes. Current checklists and the contributory studies on Turkish higher fungi were traced and it is found that about 300 edible taxa belonging to 9 orders, 40 families and 72 genera have so far been identified in Turkey and almost 54 species of them are generally or locally collected and consumed or marketed. Compared to edible macromycota of Turkey, naturally growing mushroom consumption can be regarded as very low. The Turkish people are especially know; *Morchella esculenta* as "Kuzu Göbeği"; *Lactarius deliciosus* as "Kanlıca Mantarı, Çintar" ; *Terfezia boudieri* as "Dolaman, Keme"; *Agaricus campestris* as "Çayır Mantarı" ; *Pleurotus ostreatus* as "İstiridyeye Mantarı, Kavak Mantarı, Kayın Mantarı"; *Boletus edulis* as "Ayı Mantarı" ; *Cantharellus cibarius* as "Tavuk Mantarı"; *Craterellus cornucopioides* as "Borazan Mantarı, Huni Mantarı" and *Helvella leucomelaena* as "Çukur Çanak Mantarı". Some of the edible fungi especially *Agaricus bisporus*, *Pleurotus ostreatus*, *Pleurotus citrinopileatus*, *Ganoderma lucidum*, *Lentinula edodes*, *Grifola frondosa*, *Hericium erinaceus* and *Flammulina velutipes* are also cultivated in Turkey.

KEYWORDS

Wild edible macrofungi, mushroom consumption, Turkey.

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Poster Session 8

Submission ID: 1100

COMPARATIVE OF THEIR FUNCTIONAL PROPERTIES BY MIXING VEGETABLE OIL IN THE DIFFERENT RATIO

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ABSTRACT

Vegetable oils have an important role to regulate the body's functions. Vegetable oil prevent lots of health problem. They relax body as mental and physical. Vegetable oils are more preferred than animal oils because it is thought that animal oils have some health problems. Vegetable oils have low ratio of saturated oil, contain oil acids which is necessary for body and they can solve Fat-soluble vitamin as A, D, E, K. Vegetable oils have high nutrition values. The objective of this study obtained a functional product by mixing oil of sesame, soybean, mustard and cumin. Antioxidant capacity of body is fungible when people consume this oil mixture because they contain vitamin e, variety sterols and sesamin, sesamol. Average refractive index, L*, a*, b*, peroxide and free acidity of oils were found to be between 1.47-1.48, 21.88-26.85, -0.15-3.68, 7.10-12.62, 6-6.25 meqg 02 kg-1 ve 0.56-3.86 (as oleic acid).

KEYWORDS

sesame, soybean, mustard, cumin, oil

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Poster Session 8

Submission ID: 1101

UZERLIK (PEGANUM HARMALA L.)

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ABSTRACT

From past to present day plants are used in the treatment of many diseases. In addition to this, it is known that a variety of plants have been used for the purpose of protection from the whammy. Very commonly known as "Peganum harmala" is a plant species from the family Nitrariaceae that grows in the hot regions of Africa, Asia and America. In our country, it is found in all Central Anatolian steams, especially in Ankara, Konya, Sivas, Nigde, Erzincan, Kayseri and Şanlıurfa. This plant is also known as "uzerlik, nazar otu, wild pearl grass, sipend, cypendan, isfend, mahmurcegi, yellow garlic, ilezik, eldruks and ilruk". Uzerlik (Peganum harmala) is a perennial plant that blooms in May-July, with white flowers, 30-50 cm in length. The green cone-shaped fruit has brown seeds inside. The fruit is a flat globular capsule. Once the seeds of the uzerlik (Peganum harmala) are dried, the tea can be made. It can be consumed by mixing with honey and baked or mixed with water. Moreover, the amulets made from the Peganum harmala are hanged in the houses. In order to prevent hazelnut, grains of Peganum harmala or incense of this seed are widely used in Anatolia. The active components of the uzerlik are alkaloids, which are especially found in seeds and roots. The total alkaloid ratio is 4-7%. Among the alkaloids harmin, harmaline, harmol and blend are important. There are also glycosides called peganine and red dye in their seeds. This paint material is used for dyeing Turkish carpets. The alkaloids obtained from P. harmala seeds have a broad spectrum of pharmacological action. The seeds have hypothermic, hallucinogenic, antibacterial, antifungal, antiviral, antitumoral, vasorelaxan and analgesic effects. P. harmala extract is toxic at high-doses and can cause digestive problems (nausea, vomiting), liver degeneration, kidney lesions, paralysis, spongiform changes in the central nervous system, euphoria, convulsions, hypothermia and bradycardia. In high doses of intoxication, it can be fatal. However, therapeutic doses have been reported to be safe in some countries (e.g. Morocco), this plant has been reported to have been used at high doses for pregnancy termination rather than illegal abortion. Quinazoline alkaloids (e.g., vasicine and vasicinone), within P. harmala, have been attributed to the abortifacient effect of this plant. This study reviews the traditional uses and pharmacological effects of total extract and individual active alkaloids of P. harmala.

KEYWORDS

P. harmala, uzerlik, whammy grass, benefits, damages

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Poster Session 8

Submission ID: 1104

CIRIS (ASPHODELUS AESTIVUS L.)

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ABSTRACT

Despite the fact that nearly 10,000 plants species grow naturally in our country, they are not utilized sufficiently. In order to benefit from Turkey's rich plant diversity, it is necessary to collect information on the use of plants in folk medicine cultures, to identify and separate chemical and biological methods and their active ingredients from natural sources, and to develop medicines for the treatment of diseases. Among the Asphodelaceae family, *Asphodelusaestivus* L. which is the genus of *Asphodelus* genus, is known among the population as *Asphodelusaestivus*. The leaves of the *Asphodelus aestivus* plant are similar to the leek leaf; However, it is rather small compared to leek and in most are as it is called "wildleek, Güllük, Yeling, grass and yellowlily". *Asphodelusaestivus* L. (Liliaceae), 50-150 cm in length, leaves in the form of swords, 35-45 cm in height, 3 cm in width; It is a green plant all year round with pea-shaped green fruits, 7 mm in size, flowering in April-May. It grows mainly in dry, poorly nutritious, sandy, non-cultivated soil. It is also used as an ornamental plant. It is a perennial plant that is found in some parts of Africa, Arab countries, Musar, Turkey and Europe. *Asphodelus aestivus* has been used as a foodstuff and traditionally because of its diuretic, wound healing, antihemorrhoidal, menstrual facilitating activities and therapeutic properties on alopecia and abscess. It is used as food for roots, flowering hulls and seeds, and also leaves and canned food. This plant grows in the high mountains in the spring in our country and the green leaves that come out of the soil are cut and sold as vegetables. Many dishes such as boiled, soup, salad, baked, yahnisi, rice and pie are consumed frequently during the season. There is also the use of dried grass in powder form by drying and grinding. There is a unique smell. Using this feature, the leaves of the plant are used in the production of Italian cheese "rignano garganico" and in the production of herbed cheese. *Asphodelus*'s apart from these yeast industry, In Erzurum, eham fabric is used to give firmness and shine. Many investigations have reported that *Asphodelus* contains valuable chemical compounds such as antracenes, flavonoids, steroids, triterpenes and arylcoumarins, anthraquinones and glycosides, and these gastroprotective, antimicrobial, antifungal, antioxidant, cytotoxic and apoptotic effects. It has been proven that the *Asphodelus* increases the white blood cells (WBC) and thus has an important feature for our defense system. The root extract of *Asphodelusaestivus* Brot has a potential acaricidal activity, and its use is thought to reduce unwanted side effects, health problems and environmental pollution related to synthetic chemicals currently used in harmful management programs. *Asphodelus aestivus* in Turkey is characterized by severe neuronal pigmentation with severe neural syndrome in sheep. In this study, traditional uses and pharmacological effects of *Asphodelus* plant were investigated. Key words: *Asphodelusaestivus* L, flavonoids. *İstanbul Aydın University, ABMYO, Food Technology Program, mbadayman@aydin.edu.tr, 4441428, Ext. 41803 1. Istanbul Aydın University, ABMYO, Food Technology Program

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KEYWORDS

Asphodelus aestivus L., Flavonoids

Poster Session 8

Submission ID: 1105

DETERMINATION OF PLUMBAGIN PHENOLIC FROM PLUMBAGO EUROPA BY HIGH PERFORMANCE LIQUID CHROMATOGRAPH (HPLC)

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ABSTRACT

The aim of the present work was to determine the extractable plumbagin phenolic compounds in the branches of *Plumbago europa*. The branches samples were obtained from Kahramanmaraş province of Turkey. The samples were extracted by using conventional extraction method for different types of extraction and solvent. For this purpose, methanol, deionized water and city tap water were preferred for solvent use. At the same time, the samples were extracted by boiling and without boiling procedure at 100 oC for 30 min and maceration method during 1 day at the 25 oC with deionized water and city tap water. The plumbagin phenolic in samples were determined as the concentration both mg/kg (ppm) and percent amount by using high performance liquid chromatography (HPLC). Moreover, it was found that the highest and lowest concentration of plumbagin in the *Plumbago europa* were determined for methanol extraction (%54.09, 267mg/L) and maceration with city tap water (%5.75, 11,96 mg/L), respectively. The results showed that methanol extraction has highest concentration potential than other methods and solvents. Even, deionized water showed great potential with boiling procedure in two methods than city tap water. Probably, inorganic compounds in city tap water could be prevented the increase in extraction efficiency of plumbagin. Most likely also, because of the increased penetration into the samples with boiling procedure, this method improved the efficiency of plumbagin concentration.

KEYWORDS

Plumbago europa., *plumbagin phenolic compounds*, *extraction methods*, *HPLC*.

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Poster Session 8

Submission ID: 1106

SOME MEDICINAL PLANT AND THEIR HERBAL DRUGS

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ABSTRACT

According to World Health Organization (WHO), Herbal medicines are drugs which prepared from extracts or parts (root, leaf, flower, bark and seed) of plants for use in the treatment and to be protected from diseases. Usage of plants for treatment begins with history of humanity. Today, many drugs are derived from plants used in modern medicine. They are used as crude materials in the pharmaceutical manufacturing industry because of that they contain active ingredients. In Turkey, the plants used for medicinal is estimated to be around 500. The aim of this study was introduced some medicinal plant and their herbal drugs. For this purpose, list of herbal origin drugs were provided from pharmacies in our region. The most common 15 drugs of them were determined. In this study, general features of medicinal plants and herbal drugs (commercially) made from them will be presented together in a visual way. Some of them is *Cinchona officinalis* L. (Nuedexta), *Centella asiatica* L. (Madecassol ointment), *Cimicifuga racemosa* L.(Remifemine), *Aesculus hippocastanum* L. (Venotrex medicine), *Cassia* sp. (Sennalax medicine), *Camellia sinensis* (Veregen), *Capsicum annum* L. (Algowax Pomade), *Hamamelis virginiana* (Hametan ointment), *Papaver* sp. (Relistor), *Atropa bellodana* (Sanctura).

KEYWORDS

Medicinal plant, Herbal Drug, Pharmacy, Turkey

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Poster Session 8

Submission ID: 1109

EFFECTS OF ELLAGIC ACID ON EXPERIMENTAL TOXOPLASMOSIS

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ABSTRACT

Effects of Ellagic Acid on Experimental Toxoplasmosis Erol AYZAZ¹, Kerem YAMAN¹, Ayhan ÇETİNKAYA², Ersin BEYAZÇİÇEK³, Mücahit ÇAKMAK⁴, Gökçe BOZAT⁵ 1 AİBÜ Medical Faculty, Department of Parasitology, BOLU 2 AİBÜ Medical Faculty, Department of Physiology, BOLU 3 DÜ Medical Faculty, Department of Physiology, DÜZCE 4 AİBÜ Lab Animals Application and Research Center, BOLU 5 AİBÜ Agriculture and Natural Sciences Faculty, Division of Medical and Aromatic Plants, BOLU Aim of our study is to examine the effects of ellagic acid on toxoplasmosis. Ellagic acid is a natural phenolic anti-oxidant found in some fruits and vegetables, especially the red ones like cranberries, raspberries, strawberries and pomegranate. These fruits make ellagic acid via hydrolysis of tannins such as ellagitanin. Toxoplasma gondii is a worldwide spread obligate and intracellular parasite which has got a high seropositivity level. Toxoplasma gondii causes a disease called toxoplasmosis which is mostly asymptomatic. Depending to the immun system of the host organism, it will cause some serious conditions, like toxoplasmic encephalitis. Ellagic acid is used as an anti-parasitic against Plasmodium spp.; causative agent of malaria and Schistosoma species but no study is done with T.gondii. Method: We used commercially sold ellagic acid dihydrate from TCI company (cat. No: E0375). We applicate this substance to 40 mice aged 2-4 months old in this study. Mice were divided into five groups according to their situation of infection and intragastric application of ellagic acid. All mice in chosen groups were infected with 1X10⁵ tachyzoites of T.gondii RH strain. As an antiparasitic agent, 24 mg/ml dosage of co-trimoxazole in saline, is chosen and dispensed 0.1 ml by oral gavage . Dosage of ellagic acid is adjusted 50 mg/kg in saline and dispensed 0.1 ml by oral gavage too. Group I was the healthy group without any intervention. Group II was infected with T. gondii tachyzoites. Group III was infected and treated with co-trimoxazole. Group IV was infected and treated with ellagic acid. Last group was the group, we both apply the acid and co-trimoxazole. After, chosen groups were infected, we observed the groups and examined the parasite load by counting tachyzoites in the intraperitoneal fluid of mice at Thoma chamber. Results: Related to parasite load obtained from study groups, we found significant decrease of parasite numbers in the groups III, IV and V, within comparison to control group II. Also, no significant difference is indicated between groups III, IV and V. Life span of mice is increased within comparison to control. As a result, we advised that the ellagic acid is found an efficacious agent for toxoplasmosis and may use for treatment. Further research is recommended for dosage optimization and different ways of application.

KEYWORDS

Toxoplasma gondii, Ellagic Acid, Mice, Anti-parasitic

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Poster Session 8

Submission ID: 1110

DETERMINATION OF TOTAL PHENOLIC CONTENT, ANTIMICROBIAL, AND ANTIOXIDANT PROPERTIES OF ESSENTIAL OIL AND EXTRACT OF THYMBRA SPICATA

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ABSTRACT

Turkey is regarded as an important center for the family Lamiaceae (Labiatae). The family is represented by 45 genera, 546 species and 730 taxa in Turkey. The rate of endemism in the family is 44.2%. The members of the Lamiaceae are mainly found in the mountainous areas of the Mediterranean parts of Turkey. *Thymbra spicata* (Labiatae) is known as “Zahter” and “Karabaş Kekik” in the Southeastern Anatolia Region of Turkey. It grows wild in some eastern Mediterranean countries. Their dried leaves are used as a condiment, herbal tea and folk medicine. It is known as *Thymbra spicata* plant is used for diseases such as asthma, colic, coughs, bronchitis, rheumatism and diarrhea. In this study, total phenolic content, antimicrobial, and antioxidant properties of essential oil and extract obtained from *Thymbra spicata* medicinal plants were investigated as well as the efficacy of two different extraction methods. The scope of study, two different methods were used, one of them hydro distilled method for the essential oil and the other one methanol extraction method for extract of the plant. The antimicrobial activity of the essential oil and extract of the plant against nine bacterial strains (*Bacillus subtilis*, *Escherichia coli* ATCC 25922, *Pseudomonas aeruginosa* ATCC 27853, *Salmonella typhimurium* ATCC 14028, *Listeria monocytogenes* ATCC 13932, *Klebsiella pneumoniae* ATCC 43816, *Bacillus cereus* ATCC 11778, *E. coli* O157 H7 ATCC 43888, *Staphylococcus aureus* ATCC 25923) and one fungal strain (*Candida albicans* ATCC 10251) were researched using disc diffusion method. The amounts of total phenolic compounds in the essential oil and plant extracts were determined by the spectrophotometric Folin-Ciocalteu method. Total antioxidant capacities were determined according to the DPPH method. Essential oils of *Thymbra spicata* are more effective than extracts on all the tested bacteria. Essential oil of *T. spicata* showed the highest antimicrobial activity against *L. monocytogenes* ATCC 13932 while the extract of *T. spicata* showed the highest antimicrobial activity against *Bacillus cereus* ATCC 11778. The results of antioxidant activity showed that the percentage of inhibition values ranged from 30.49 to 87.90 %. The oil of *Thymbra spicata* showed that the lowest antioxidant capacity (30.49 %), while the extract of *Thymbra spicata* showed the highest one (87.90%). It is found that the total phenolic content of the essential oil of *Thymbra spicata* (2.70 mg/ml) is higher than the extract of plant (1.70 mg/ml). As a consequence, the data obtained suggests that different extract method of *T. spicata* plant possesses useful antimicrobial and antioxidant properties and may be utilized in the food industry and as a dietary supplement.

KEYWORDS

Thymbra spicata, Essential oil, Antimicrobial activity, Antioxidant activity, Total phenolic content.

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Poster Session 8

Submission ID: 1111

SOME HERBAL TEAS, USAGE AREAS AND PROPERTIES OF PLANTS USED AS HERBAL TEA

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ABSTRACT

Herbal tea is beverage made from their fusion or decoction of herbs, spices, fruits or other plant material in hot water. Herbal teas are consumed cold or hot. Herbal teas are used in health and beauty purposes in the world and in Turkey. In this study, fifteen plants consumed as herbal tea and teas made from them will be discussed. Investigated plant and their teas are very popular and the most used in Anatolia. These plants: *Rosa canina* L. (Rosaceae), *Camellia sinensis* (L.) Kuntze (Theaceae), *Salvia* sp. (Lamiaceae), *Tilia* sp., *Thymus* sp. (Lamiaceae), *Cinnamomum verum* J.Presl (Lauraceae), *Zingiber officinale* Roscae (Zingiberaceae), *Melissa officinalis* L. (Lamiaceae), *Feniculum vulgare* Mill. (Apiaceae), *Echinacea purpurea* (L.) Moench (Asteraceae), *Rosmarinus officinalis* L. (Lamiaceae), *Hibiscus sabdariffa* L. (Malvaceae), *Mentha piperita* L. (Lamiaceae), *Matricaria chamomilla* L. (Asteraceae). Their morphological features, general information, parts used, methods of using, names of tea, scientific name and Turkish name were determined. Herbal teas can be made with fresh or dried flowers, leaves, seed sorroots, generally by pouring boiling water over the plant part and letting them steep for a few minutes. Green tea accelerates metabolism and also has antioxidant properties. Linden tea is an antiperspirant and a breast emollient. Rosehip tea increases body resistance. Sage tea opens appetite, facilitates digestion. Sage has antiseptic properties. For sores in the throat, cold gargle is made. Thyme and cinnamon accelerate blood circulation. Cinnamon digestion cures and has antioxidant properties. Rosemary strengthens the memory and increases concentration. Echinacea tea is used for the treatment of diseases such as colds and flu. *Matricaria chamomilla* is the most popular source of the herbal product chamomile. Chamomile tea can help to prevent and treat colds while protecting against bacterial-related illness and infection.

KEYWORDS

Herbal tea, Plant, Usage areas, Health

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Poster Session 8

Submission ID: 1112

AROMATIC HERBS THAT USED DURING PREGNANCY

VESİLE KOÇAK¹, KAMİLE ALTUNTUĐ¹, EMEL EGE¹

ABSTRACT

Complementary and Alternative Medicine is a series of health approaches with a history of use other than medical treatments. It covers a broad range of therapy divided into five categories: alternative medical practices, mental and physical interventions, biological based treatments, manipulative-body based methods and energy healing therapies (NIHS, 2017; Strouss, Mackley, Guillen, Paul, & Locke, 2014). Complementary and Alternative Medicine (CAM) is a different collection of health care. Women at maternal age represent one of the biggest group of CAM users. The National Health Interview Study (NHIS) analysis in USA in 2007 reported that almost half of the women at the age of 18-49 used a kind of CAM in the previous year (Holden, Gardiner, Birdee, Davis, & Yeh, 2016). Many pregnant women throughout the world are increasingly using the alternative and complementary treatment methods for their pregnancy problems as they regard them to be natural and safe (Joa, Haeng Leeb, Moo Leea, Leec, Kwackd, & Kime, 2016). This ratio varies by 7% - 55% depending on the geographical location and socio-cultural structure (Cuzzolin, Francini-Pesenti, Verlato, Joppi, Baldelli, & Benoni, 2010). Pregnant women employ several methods to cope with the problems of pregnancy. One of these methods is the use of herbal products. The most common problems during pregnancy are nausea, heartburn, vomiting, skin problems, constipation and indigestion (Al-Ramahi, Jaradat, & Adawi, 2013). Moreover, there are other problems like toothache, other pains of various type, flue, stomach-ache and chest pain (Mothupi, 2014). The mostly used herbal products to cope with these problems are ginger, garlic, eucalyptus and tenaadam (Rutachalenssis) (Al-Ramahi, Jaradat, & Adawi, 2013, Mothupi, 2014, Mekuria etal. 2017, Bayisa etal. 2014, Laelago etal. 2016). Ginger is one of the best natural medicines known used for pregnancy nausea and vomiting. Ginger appears to be useful for morning sickness but it is not clear whether it is safe to use during pregnancy. Some studies indicate that ginger may potentially affect the foetal sex hormones (Al-Ramahi, Jaradat, & Adawi, 2013). The pregnant women start the use of herbal products on their own or by the recommendation of their families and they usually don't consult with health professionals (Ekrasarian, Rostami, Charati, & Abdollahi, 2016, Kissal, Çevik Güner, & Batkın Ertürk, 2017). Women like using these products despite the lack of sufficient evidence and safety measures for the use of herbal products. During pregnancy, many women consider herbs to be natural and risk-free, and they are not aware of their possible negative effects. (Kalder, Knoblauch, Hrgovic, & Munstedt, 2011; Strouss, Mackley, Guillen, Paul, & Locke, 2014). The use of herbal treatment may lead to abortion or premature birth, presence of malformation, intrauterine growth retardation and low neonatal birth weight (Cuzzolin L., Francini-Pesenti, Verlato, Joppi, Baldelli, & Benoni, 2010). In conclusion, pregnant women employ herbal products for their physiologic and psychological problems, and they usually decide on their own what herbs to be used. Most of the pregnant women believe that the herbal treatments are safe. The studies on the safety of herbal products are not sufficient. There is need for evidence based studies on the use of herbal products during pregnancy.

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KEYWORDS

Pregnancy; Herbal Treatment; Alternative Treatment

Poster Session 8

Submission ID: 1114

A RESEARCH ON MEDICINAL PLANT CYCLAMEN COUM SUBSP. COUM TAXA

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ABSTRACT

Cyclamen coum subsp. coum Mill. (Primulaceae) is a perennial geophyte species which is used as medicinal plant (boils treatment, stains and sunburn, gout, emetic, poisonous animal bites, in lowering the cholesterol level in the blood and tinnitus). Local names of taxa which commonly used in public are Yersomunu, Danagöbeđi, Kızıl menekşe, Domuz ekmeđi, Domuz elması, Domuz turpu, Domuz avşadı and Tavşankulađı. In this study, some of morphological characters were determined in Cyclamen coum subsp. coum samples collected from different localities in Ordu province (Turkey) depending on the elevational gradient (from sea level to 1850 meters). The shoot length, number of nodes and branches, leaf length and width, living leaves, dead leaves, the number of flowers, root/shoot ratio, specific leaf area (SLA), leaf weight/leaf area (LMA) were calculated separately in the plant samples. According to statistically analyses there were found shoot length, bulb width, leaf width, leaf length, numbers of branches and flowers were found statistically significant, whereas the length of tubers, root-shoot ratio, number of living and dead leaves, number of node, the SLA and the LMA values were not significant. Knowing these morphological properties is important for protecting species and culturing.

KEYWORDS

Cyclamen coum var. coum, Geophyte, Morphology, Protecting

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Poster Session 8

Submission ID: 1115

THE CHEMICAL COMPOSITION OF MILK THISTLE (SILYBUM MARIANUS)

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ABSTRACT

Milk thistle purifies the liver from all toxic and harmful substances, supports the regeneration of liver cells. In this study, the chemical composition of Milk thistle (*Silybum marianum* (L.) Gaertner = *Carduus marianus* L.) from Turkey investigated. The chemical composition obtained by hydrodistillation of was investigated by GC and GC-MS systems. The essential oils yield is 1.1% (v/w). Eight constituents were comprised the 97.3% of the total oil extracted from the Milk thistle. The major compounds of Milk thistle were determined as oleic acid (45.6%), linoleic acid (29.0%), ethylbenzene (7.0%) and stearic acid (5.7%).

KEYWORDS

Milk thistle, Chemical Composition, GC-GC/MS, Turkey.

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Poster Session 8

Submission ID: 1117

AN ECOLOGICAL STUDY ON MEDICINAL GEOPHYTE CYCLAMEN COUM SUBSP. COUM

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ABSTRACT

Turkey is a very rich country in terms of wild plant species. 816 geophytes taxa were identified according to Tubives records. Geophytes are plants that survive part of their annual life cycle as a dormant, fleshy underground structure (bulb, rhizome and tuber). Geophytes have been used as food, medicinal, industrial and economic for many years. Geophytes were threatened by various activities (overgrazing, industrialization, agricultural struggles, forest fires, new road opening, and illegal collection) in our country. *C. coum* subsp. *coum*. Mill. (Primulaceae) is medicinal and ornamental geophytes plant. Plant has emetic, laxative and stimulating effects. Its tuber is preferred food by pigs. Local names are used in public are Alayaprak, Danagöbeği, Devetabanı, Domuzekmeği, Domuzelması, Domuzturpu, Kırmeneşesi, Kızılmenekşe, Köstüköpeği, Kuskusa, Tavşankulağı, Topalak and Yersomunu. Plant is in CITES (Convention on International Trade in Endangered Species of Wild Fauna & Flora) due to threatened by illegal collection. Therefore the ecological characters of this species are important for its conservation. The aim of this study was investigated Reproductive Effort (RE) values and soil properties of *Cyclamen coum* subsp. *coum* (Primulaceae) along an elevation gradient. Reproductive effort (RE) is an important trait for the adaptive ability of a particular species. RE1, RE2, RE3 and RE4 values were determined as RE value. RE values were calculated as follows; RE1= flower biomass/ above ground plant part biomass, RE2=flower biomass/total plant biomass, RE3=flower nitrogen concentration/above ground plant part nitrogen concentration, RE4= flower nitrogen concentration/total nitrogen concentration. According to the results of study, the lowest RE1, RE2 and RE3 values were found in 1850 meters while the lowest RE4 value was in 500 meters. The results of statistical analysis made for the reproductive effort values indicate that only RE3 values were found to be significant. In soil samples taken from different altitudes was carried out physical and chemical analysis. There were found sea level and 1850 m. localities have sandy-loam soils while 500 m. locality has sandy-clay-loam soil. In addition, it has been determined locality of 1850 meters has strongly acidic while the sea level locality has weakly acidic in character.

KEYWORDS

Cyclamen coum subsp. *coum*, Medicinal plant, Conservation, Ordu

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Poster Session 8

Submission ID: 1118

CHROMATOGRAPHIC AND SPECTROSCOPIC DETERMINATION OF PHENOLIC ACID AND FLAVONOID CONTENTS WITH RADICAL SCAVENGING ACTIVITY OF CUSCUTA CAMPESTRIS

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ABSTRACT

As a holoparasitic plant, *Cuscuta campestris* Yuncker (*C. campestris*) is being valorized for treatment of liver injury and cancer in traditional medicine. Phenolic acid and flavonoid content of *C. campestris* were evaluated in this study by analyzing its diethyl ether, ethyl acetate, methanol, n-butanol and water extracts. Antioxidant potential of these extracts were characterized with their total phenolic (TPC) and flavonoid contents (TFC) and 2,2-diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging activities. The individual phenolic compounds of all extracts were analyzed by HPLC-DAD to illuminate the responsible antioxidants. Ethyl acetate extract revealed significantly highest antioxidant effect, and also had highest TPC and TFC contents. The most amount of phenolic compounds were quantified in methanol extract by HPLC-DAD analysis. Isorhamnetin, kaempferol and quercetin were the major compounds of the methanol, ethyl acetate and diethyl ether extracts. The most amount of rutin (quercetin-3-O-rutinoside) was found in the water extract. Ferulic acid was the highest phenolic compound in the butanol extract. As a result, *C. campestris*, a rich source of phenolic compounds, may be a reliable candidate for drug development.

KEYWORDS

Cuscuta, bioactive compounds, flavonol.

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Poster Session 8

Submission ID: 1119

DETERMINATION OF GERMINATION ABILITY OF BASIL IN INCREASING SALT CONCENTRATIONS

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ABSTRACT

Salinity is one of the most environmental problems in arid and semi-arid region. It is an abiotic stress factor which restricts crop production and affects development of plants. One of the these plants is basil (*Ocimum basilicum*). It is an annual medicinal and aromatic plant from Lamiaceae family. The present study was carried out to determine the response of different salt concentrations from 0 to 240 mM which increasing 20 mM. The experiment was conducted with randomized complete block design with 3 replications and placed 20 number from seeds of each plant in petri dishes. 39 petris were used consisting from 1 plant x 13 salt levels x 3 replicats. Germination tests were made at constant temperature (29 ± 1 °C), dark field and drying oven in laboratory conditions. Appropriate test solution was placed at each petri dish being 5 ml and was renewed with an interval of two days. According to the study results, germination speed and power of basil seeds completed within 3-15 days. The results noted that root lenght changed between 0.08-5.07 cm, shoot lenght changed between 0.1-5.82 cm in the basil and they changed between 10-100% germination rate between the 0-240 mM salt concentrations. The lowest germination speed and power were seen in 240 mM and the highest germination speed and power were seen in 20 mM except control (pure water) condition. Germination percentage of basil seeds were decreased from 0 (control) to 240 mM. In addition to this, the highest shoot and root lenght were obtained from 20 mM and the lowest shoot and root lenght were obtained from 240 mM except control condition. Root lenght/shoot lenght was also determined changing between 0.43-1.27 cm. To results, it was determined that germination number and rate, shoot and root lenght were statistically affected by different salt doses. Considering different salt doses, the highest number of germination was obtained from 20 mM salt application, the lowest value was determined in 240 mM salt application compared to control application. It is suggested that salt tolerance studies should be preferred under 200 mM salt concentration to obtain the germination number and rate over 80% in different salt concentrations and in order to grow the basil under salted areas.

KEYWORDS

Basil, Salt, Germination, Root and shoot lenght

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Poster Session 8

Submission ID: 1121

CHARACTERIZATION OF PHENOLIC COMPOUNDS AND THEIR INHIBITORY EFFECT OF ROSA CANINA ON BACTERIAL DNA POLYMERASES

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ABSTRACT

Investigation of novel plant-based agents might provide alternative antibiotics and thus fight antibiotic resistance. Here, we measured the ability of fruit and leaf extracts of *Rosa canina* to inhibit nonreplicative (Klenow Fragment-KF and Bacillus Large Fragment-BLF) and replicative (DnaE and PolC) bacterial DNA polymerases along with their antimicrobial, DPPH free radical scavenging activity (RSA), and chemical contents by total phenolic content and HPLC-DAD analysis. We found that leaf extracts had nearly 10-fold higher RSA and 5-fold greater TPC than the corresponding fruit extracts. All extracts had large amounts of chlorogenic acid (CGA) and rutin, while fruit extracts had large amounts of quercetin. Hydrolysis of fruit extracts revealed mainly caffeic acid from CGA (caffeoylquinic acid) and quercetin from rutin (quercetin-3-O-rutinoside), as well as CGA and derivatives of CGA and p-coumaric acid. Plant extracts antimicrobial activity against Gram-negative microorganisms. Thus, these species can be considered a potential source of novel antimicrobial agents specific for Gram-negative bacteria.

KEYWORDS

Rosa canina, phenolics, DNA polymerase inhibition

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Poster Session 8

Submission ID: 1780

A REVIEW ON SAFFRON

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ABSTRACT

From the family of Irisaceae (*Crocus sativus*), an onion plant, saffron is known as the world's most expensive spring. Moroccan, Indian, European, Arabic and Turkish cuisines are commonly used for the purpose of coloring and adding flavor to foods and for treating traditional diseases in various diseases. Recent studies have begun to focus on the important effects of saffron on metabolism. Research on the bioactivity of saffron has shown an antioxidant effect in living organisms. These studies, carried out in a wide range of, confirm that the genotoxic chemicals of the saffron can inhibit damage caused by it, suggesting that oxidative stress can be reduced in living organisms. It is a compound which gives the characteristic features of crocin, piccrocin and safranal plant. Along with many other effects such as antioxidants, anticancer agents, immunomodulators and antidepressants, saffron extracts, and potentially antitumor, antidepressant and memory healing properties of crocin, are also promising for Alzheimer's, one of the major problems of our time. At the same time, a certain amount of saffron consumption can be used to prevent the development of obesity thanks to digestive toxins are investigated. In recent years, saffron has been attracting attention due to the fact that it is a natural resource in the field of new drug development with different effect mechanisms on diseases.

KEYWORDS

saffron, disease, treatment

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Poster Session 9

Submission ID: 57

ANATOLIA'S SACRIFICIAL WILD FRUIT PYRUS ELAEAGRIFOLIA (AHLAT) AND EVALUATION POTENTIALS

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RECEP ALI EMRE³, HAKAN KELEŞ⁴, MUSTAFA ÜNLÜ⁵, MEHMET YAMAN¹

ABSTRACT

Pyrus elaeagrifolia Pall. is a species of wild fruit that is found naturally in our country especially in the interior and passage areas. It has long been recognized that a wide variety of natural varieties, both in-species and interspecies, is considered to be a species that grows with seeds that are open pollinated in nature. It is foreseen that this rich diversity in the dialect, which is generally observed to conform to calcareous and arid areas, has characteristics of resistance to biotic and abiotic stress (drought, lime, salt, etc.) conditions especially for rootstock breeding studies. The existing *P. elaeagrifolia* populations are utilized for different purposes in the regions of Anatolia in practice. Some varieties of pears are grafted on *P. elaeagrifolia*, they can be used for afforestation purposes in rural areas in arid conditions, fruits are consumed fresh, pickled or dried. It is known that *P. elaeagrifolia* is a useful product for diarrhea cutter, heart and kidneys and is used among the people. The small, and very sandy structure, is regarded as an animal feed. In addition, the branches are utilized in cane construction. With these respects, ahlal can be used for the benefit of human beings and animals for medical and nutrition purposes as well as being developed and cultured. It is very important to protect and develop this kind of adaptation to the Anatolian steppes and guarding it.

KEYWORDS

Pyrus elaeagrifolia, wild fruits, ethnobotanic

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Poster Session 9

Submission ID: 59

DETERMINATION OF IMPORTANT FRUIT CHARACTERISTICS OF PYRUS ELAEAGRIFOLIA, A WILD FRUIT SPECIES SELECTED FROM KAYSERİ AND USE FOR HUMAN NUTRIENT

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KAHRAMAN GURCAN³, MUAMMER COŞKUN²

ABSTRACT

The motherland of Anatolia, wild pear (*Pyrus elaeagrifolia* Pall.) is one of 22 *Pyrus* species and spread in Southeast Europe, Russia and Turkey. Natural spreading areas in our country are reported as Kütahya, Eskişehir, Bolu, İstanbul, Kastamonu, Sivas, Ankara, Antalya and Kayseri. The trees are medium-sized, rounded crowned, often branched and thorny. The fruit is small, round and very smooth. *Pyrus elaeagrifolia* is deeply rooted, fully xerophilic, well adapted to the arid climatic conditions. There are of this species is mainly used as fresh fruit in the countryside, dried and pickled and can be used for nutrition purposes, as it is beneficial to the heart and kidneys with diarrhea treatment firstly in the folk medicine. In addition, cultured pears are vaccinated on matrices and evaluated for rootstock purposes. On the other hand, sandy and small fruit that is not consumed by human beings is regarded as animal feed. The main factors for the consumption of *Pyrus elaeagrifolia* fruits are fruit size and sandy. There are important variations in the natural genotypes in this respect. In this study, which is one of the important spreading areas of this species, Kayseri region, fruit characteristics were revealed in different types of populations and it was aimed to determine the types that are more suitable for human consumption. The study presents beneficial results for the evaluation, development and conservation of this naturally grown population where people can evaluate for different purposes.

KEYWORDS

Pyrus elaeagrifolia, fruit characteristics, genetic resources

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Poster Session 9

Submission ID: 1122

AN IMPORTANT FLAVONOID FOR NUTRITION: QUERCETIN

MUHAMMET ALI CEBİRBAY¹, NAZAN AKTAŞ¹

ABSTRACT

The increase in diseases such as cancer that have occurred based on oxidative degeneration in nutrition-related cells in the recent years has generated interest in the pharmacokinetic properties of various bioactive molecules, particularly the antioxidants in foods to reduce the effects of oxidative stress. Quercetin is important for nutrition because it is a well-known flavonoid which is very commonly found in plants and it has potential functional properties. This study aimed to compile the findings about the relationship of quercetin with nutrition, sources of quercetin, its biological activity and metabolism. As a result, it emphasized that quercetin has various positive effects (e.g., anti-inflammatory, antihistaminic) on cells, particularly on oxidative stress. Quercetin is found in many vegetables and fruits (e.g., citrus fruits, onions, tomatoes and capers) or foods obtained from them (e.g., wine) based on carbohydrates, ethers or phenolic acids as secondary metabolites. It is associated with many nutrition-related diseases, particularly with some cardiovascular diseases. Quercetin plays a metabolic role in glucuronidation, sulfation and methylation reactions in the human body. Further detailed studies which will determine the relationship of quercetin with nutrition should be conducted, and awareness about its effects on health should be raised.

KEYWORDS

Quercetin, nutrition, flavanoids

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Poster Session 9

Submission ID: 1123

THE FUNCTIONAL FOOD: WALNUT

BAŞAK ÖZDEMİR¹, SAADET SEVİL YÜCEL², FATMA YEŞİM OKAY¹

ABSTRACT

Walnut is a valuable nutrient in terms of human nutrition and health and also it is a source of energy because of its fat content (59 - 74%). It provides about 700 calories per 100 g. Due to walnut's several benefits to human health, it is remarkable precious nutrition which is wealthy with regards to fatty acids and tocopherols. Walnut oil is rich as unsaturated fatty acids and for this reason walnut has a great value in terms of health. Besides, walnut contains protein (14 - 24%), mineral compounds (1.5 - 2%), cellulose (5 - 10.5%), it is rich with B and D vitamins and also it contains A, C and E vitamins. Shelled walnuts are containing high amounts of potassium, phosphor, magnesium, calcium, sulphur and iron. Unsaturated fatty acids in walnut have an effect of decreasing the risk of cardiovascular diseases. Linoleic, oleic, linolenic, palmitic and stearic acids enable to increase HDL cholesterol and reduce LDL cholesterol, thereby walnut has an effect on cardiovascular diseases such as protector. Mineral compounds as potassium and magnesium regulate blood pressure. When consumed frequently, it provides protection from coronary heart disease. Juglone which is obtained from walnut roots has an effect of reducing gall deflection. Due to its antioxidant and phytochemical compositions, walnut avoids cell destruction of the free radicals. Besides, it enhances body resistance thereby walnut plays as a prohibitor against diabetes. It reduces cancer risk by means of its polyphenol content. High amount of omega-3 fatty acids make walnut a brain food and also it contains ready form of melatonin. Also walnut is accepted as functional food because it supplies special physiological effect in body requirement and displays activity in cure besides fulfills a need of basic nutrition. Walnut oil is used in pharmaceutical industry, its leaf, root and green shell are processed in various forms for using in some cures of diseases, also dye and tanin are obtained from walnut. After obtaining walnut oil, the rest of residue has a nutrient value for animal nutrition in terms of fat and protein content. It should not be forgotten that, in addition to walnut kernel, walnut kernel pellicle also has high nutritional and health values. There is increasing evidence that consumption of whole foods is better than isolated food components such as dietary supplements and nutraceuticals. It is emphasized that whole food such as walnut is more effective than dietary supplements in increasing LDL oxidation resistance, lowering DNA damage, and inducing higher repair activity in human volunteers.

KEYWORDS

Walnut, Nutrition content, Health, Functional food

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Poster Session 9

Submission ID: 1124

ST JOHN'S WORT (*HYPERICUM PERFORATUM L.*): ITS COMPOSITION AND CLINICAL PROPERTIES

BİRSEN YILMAZ¹, GAMZE AKBULUT¹, NİLÜFER ACAR-TEK¹

ABSTRACT

There are about 400 species of St John's wort in the world belonging to the Hypericum genus Clusiaceae family and the Hypericoideae subfamily. It is reported that the herb has about 80 types. The most common types in our country are *Hypericum perforatum L.*, *H. Trigqetrifolium*, *Hypericum calycinum*, *H. empetrifolium Willd.* (heather, yellow heather), *H. scabrum L.* (mexican herb, kepir otu) and *H. tedrapetum Fries*. It is best grown in light acidic-neutral soils, mainly in Europe, Asia, North Africa and the United States. St John's wort is known in our country with different names such as tipton's weed and felty germander. It is a perennial plant with golden yellow flowers, ranging in height from 30 to 90 cm. The chemistry of St John's wort is quite complex and the available data on the active ingredients is not clear. It is also reported that the plant has different composition depending on its dry/wet status, and some components have intensified/decreased in certain areas. The major groups of dry extracts are phenyl propanoids, flavon glycosides, biflavones, oligomeric proanthocyanins as well as floroglucinols, xanthones and naftodiantrons. The phenylpropanoids in St John's wort include p-coumaric acid and caffeic acid. The anthracene derivatives especially in the hiperisin and pseudohyperaceous are found in the foliage and perforated parts of the flowers and give a red color to the oil of St John's wort. In general, when the components of the plant are evaluated, a number of compounds with biological activity are mentioned, especially anthracene derivatives (hypersecin and pseudohypercin), cholinergic acid, flavonoids, phenolic compounds (hyperforin), procyanidins, vitamin C, carotene, protein, resin and essential oils. St John's wort has been known with the healing effect of injuries for many years. Recently, the antidepressant effect has been proven and the use has become widespread. Accordingly, it is used particularly in the treatment of mild and moderate depression, cancer, diabetes, chronic rheumatism, some gastrointestinal diseases as well as throat infections, colds, antiseptic and burn wounds. In the treatment of mild and moderate depression, the daily dose is 500 mg extract (500 mg extract contains 1-2 mg of hypericin). It has been reported that hypericin, one of the major causative agents, may be effective in the treatment of AIDS as well as depression and cancer. However, as with many plant extracts, St John's wort also require extensive and long-term investigations to better understand the mechanisms of action and possible beneficial/deleterious effects.

KEYWORDS

St John's wort, health, aromatic plant

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Poster Session 9

Submission ID: 1125

SYNTHESIS AND CHARACTERIZATION OF SILVER NANOPARTICLES USING GREEN TEA EXTRACT

GÖNÜL SERDAR¹, CANSU ALBAY¹, MÜNEVVER SÖKMEN²

ABSTRACT

Synthesis and Characterization of Silver Nanoparticles Using Green Tea Gönül SERDAR¹, Cansu ALBAY¹, Münevver SÖKMEN² 1Karadeniz Technical University, Faculty of Pharmacy Department of Analytical Chemistry, 61080 Trabzon, 1Karadeniz Technical University, Faculty of Pharmacy, Department of Biochemistry, 61080 Trabzon, 2Konya Food and Agriculture University, Faculty of Engineering and Architecture, Department of bioengineering, 42080 Konya gonulserdar@ktu.edu.tr In this study, the synthesis and characterization of Ag nanoparticles from green tea collected the Eastern Black Sea region was investigated. Microwave extraction was applied to caffeine and catechin coextraction from tea samples. A household microwave system device was used for microwave extraction. 10 g of sample was shaken in 100 mL of water for 90 min at room temperature and then extracted in a household microwave device at 90 ° C, 3 minutes, 360 W. Ag nanoparticles were synthesized that the obtained aqueous solution was taken in different volumes by mixing 100 mL of 1mM AgNO₃ solution at room temperature of 0-60 min for different times. UV-Visible spectroscopy is one of the widely used techniques for the characterization of nanoparticles. A yellow coloration appeared, indicating the onset of Ag nanoparticle formation. The progress of the reaction was monitored by measuring the absorbance of the solution at regular intervals of time. Absorption spectra were measured on a Shimadzu UVP-1240 spectrophotometer. Keywords: Green tea, Ag nanoparticul, Microwave Assisted Extraction, UV-Visible REFERENCES: [1]. Loo, Y.Y., Chieng, B.W., Nishibuchi, M., Radu, S., 2012. Int. J.Nanomed.,7, 4263–4267. [2]. Jia, J.L., Xu, H.H., Li, D.Q., Ye, W.H., Liu, W.J. 2015. Synthesis and Reactivity in Inorganic, Metal-Organic, and Nano-Metal Chemistry, 45, 941–946. [3]. Khalil, M.M.H., Ismail E.H., El-Baghdady, K.Z., Mohamed, D. 2014. Arabian J. Chem., 7, 1131–1139.

KEYWORDS

Green Tea, Ag nanoparticul, Microwave Assisted Extraction, UV-Visible

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Poster Session 9

Submission ID: 1127

ISOLATION OF SECONDARY METABOLITES FROM AN ENDEMIC PLANT SPECIES 'TANACETUM ALYSSIFOLIUM' AND DETERMINATION OF ANTIOXIDANT-ANTI-PROLIFERATIVE PROPERTIES

YAKUP ULUTAŞ¹, EKREM KÖKSAL¹, AHMET ALTAY¹

ABSTRACT

Secondary metabolites, synthesized by plants, both during normal development and in response to stress conditions are phenolic compounds. The intake of these compounds is an important health-protecting factor. Reactive oxygen species responsible of oxidative stress are involved to the chronic diseases such as atherosclerosis, cancer, obesity, diabetes, and coronary diseases. Many studies with different type of species of tanacetum medicinal plant revealed many bioactive properties of these plant species such as antioxidant, antimutagenic and anti-carcinogen. The aim of this study was to isolate the available secondary metabolites in *Tanacetum alyssifolium* plants by column chromatography and determine their structures with spectroscopic methods as well as their antioxidant and antiproliferative activities. For this purpose, *Tanacetum alyssifolium* plants was collected from the foothills of Munzur Mountains in Erzincan province and dried at room temperature. The upper part of ground plant was extracted with ethyl acetate/ butanol solvent system. The butanol extract was subjected to the procedure of column chromatography. The structures of the isolated compounds were elucidated by spectroscopic methods (1 H-NMR, 2 D-NMR, HPLC-TOF) to reveal that luteolin 7-o-glycoside, umckaline and S-8-H29. The antioxidant activities of the isolated compounds were evaluated according to the DPPH and ABTS free radical scavenging and metal ion chelating capacities. Antiproliferative activities of the samples was investigated on HeLa (Human Rectum Cancer) and C6 (Rat Brain Tumor) cell lines and compared with 5-Fluorouracil (5-FU), which is used as an anticancer drug. In the antiproliferative activity tests, n-butanol extract, Umckalin, Luteolin 7-o-glycoside and S-8-H29) showed lower activity than 5-FU against both HeLa and C6 cell lines at four different concentrations (5, 25, 50 100 µg/ml). The antiproliferative activities of the samples against the HeLa cells at the highest dose of 100 µg/mL were; 5-FU> butanol extract> Umckaline> S-8-H29> Luteolin 7-o-glycoside, respectively. On the other hand, antiproliferative activities against C6 cells were observed as 5-FU> butanol extract> Luteolin 7-o-glycoside> Umckaline> S-8-H29, respectively.

KEYWORDS

Tanacetum alyssifolium, isolation anticancerogen activity, antioxidant activity, secondary metabolite

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Poster Session 9

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EVALUATION OF INFORMATION AND REFLECTIVES OF COMPLEMENTARY AND ALTERNATIVE METHODS OF HEALTH SERVICE VOCATIONAL SCHOOL STUDENTS

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ABSTRACT

Objectives:The study was conducted as a descriptive study to determine the knowledge and thought of the students attending Karadeniz Technical UniversityHealth Services Vocational School (KTU SHMYO) on Alternative and Complementary Medicine Methods: The study group consisted of 230 individuals studying at KTU SHMYO. Data was collected from December 2016 to March 2017 using a questionnaire. Numbers of percentage test was used in evaluating the data. **Findings:** 70.8% of the students were found not to use the CAM methods at all. It was determined that the students who used CAM especially preferred to use these methods in order to decrease their stress (%30.9), for their health problems (%26) and hair and facial treatment (%11.6). Most of these methods were seen / heard via internet (39.9%) and friends (16.7%). The use of herbal products (59.2%) was found to be the generally recognised; while massive massaging (13.3%) was the most commonly known CAM method. **Results:** Students generally do not have detailed knowledge of CAM methods. It was found that the methods used more frequently in everyday life were even more recognised by the students

KEYWORDS

Complementary Treatment, Alternative Treatment, Student

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Poster Session 9

Submission ID: 1129

ASSESSMENT OF IN VITRO ANTIGENOTOXIC EFFECT OF α - TOCOPHEROL AGAINST MITOMYCIN-C INDUCED MICRONUCLEUS FORMATION

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ABSTRACT

Alpha-tocopherol (AT), better known as Vitamin E (Vit-E), is an important compound in cell membranes and has specific biological effects on regulating gene expression, signaling, cell proliferation and reproduction. Alpha-tocopherol is present in a lot of different vegetables such as spinach, turnip greens, broccoli, asparagus, tomatoes, mango, and orange vegetables such as carrots. Many edible nuts such as almonds, hazelnut, pine nuts, peanuts, and pistachios are good sources of AT. Vegetable oils such as wheat germ oil, sunflower, safflower, grape seed, almond, corn, peanut and olive oils are another important sources of AT. Vit-E is a primer biological antioxidant and enables prevention of oxidation reactions. It also plays a role in the reduction of free radicals, in this way it provides protective property against potential toxic effect of highly reactive compounds. In this study, possible antigenotoxic effect of α -tocopherol, known as vitamin E, against Mitomycin C (MMC) (antitumor agent) induced genotoxic damage was investigated. For this purpose, micronucleus (MN) assay was performed in human peripheral lymphocytes in culture from two donors, a woman and a man. Different concentrations of α -tocopherol (25, 50, 100 and 200 $\mu\text{g}/\text{mL}$) were used in combination with 0.20 $\mu\text{g}/\text{mL}$ MMC. In the treatment of lymphocytes, the following groups were studied. 1) pretreatment with α -tocopherol 1 h before MMC; 2) simultaneous treatment with α -tocopherol and MMC; 3) post-treatment with α -tocopherol 1 h after MMC. Lymphocytes were treated with MMC alone or together with α -tocopherol for 24 h and 48 h. In all the treatments, α -tocopherol reduced the frequency of MN compared to MMC alone. In the 24 h pre-treatment group, the frequency of MN decreased significantly at the highest concentration of α -tocopherol compared to positive control. In the simultaneous treatment, a statistically significant reduction was observed at 50 and 200 $\mu\text{g}/\text{mL}$ concentrations of α -tocopherol compared to positive control. In the post-treated lymphocytes, none of the reductions in MN frequency was significant. In 48 h pre-treatment group, a significant reduction of MN frequency was observed at 100 $\mu\text{g}/\text{mL}$ concentration of α -tocopherol compared to the positive control. In simultaneous and post-treatment (except 100 $\mu\text{g}/\text{mL}$) groups, MN frequency decreased non significantly at all the concentrations. The result of this study showed that MMC increased the frequency of MN in lymphocytes. The antigenotoxic experiments indicated that α -tocopherol was able to ameliorate the genotoxic effect induced by MMC.

KEYWORDS

α -tocopherol, mitomycin C, antigenotoxicity, micronucleus test

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Poster Session 9

Submission ID: 1130

SAGE AND HYPOGLYCEMIC EFFECT

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ABSTRACT

Sage (*Salvia officinalis*) is commonly located in Turkey produced medical aromatic plants. The genus *Salvia* is distributed all over the world, with belonging to the Lamiaceae family represented by over 900 species. *Salvia officinalis*, one of the *Salvia* species, is one of the important species due to its medicinal and aromatic character. The botanical name of sage is a clear reference to the plant of the genus name *Salvia* comes from the Latin *salvāre* meaning "to save" or "to heal" and *Officinalis* means medicinal. Studies on animals have shown that more than 400 plant species have a hypoglycemic effect. One of these plants is *Salvia officinalis*. *Salvia officinalis* has been used as a traditional treatment of diabetes in many countries, and glucose-lowering effects have been shown in animal studies. Diabetic patients have increased oxidative stress and impaired antioxidant defense systems, which appears to contribute to the onset and progression of diabetes-related complications. It is believed that the antidiabetic effect of the sage is caused by its high antioxidant content. Its flavonoids and polyphenolic compounds (Carnosic acid, rosmarinic acid, caffeic acid) have a strong antioxidant and radical cleansing role. A methanol extract of *Salvia officinalis* given intraperitoneally in diabetic rats significantly reduced blood glucose without any change in insulin levels in rats. In another study, Aqueous ethanol extracts of *Salvia officinalis* have been found to significantly reduce blood glucose in healthy rats and to significantly reduce hyperglycemia in mildly type 1 diabetic rats. Tea-infusions of *Salvia officinalis* have been shown to possess similar effects in vitro. *Salvia officinalis* administered by oral route showed significant hypoglycemic activity in diabetic rats. In a study conducted with humans, no effect was observed on fasting blood glucose of sage tea (300 ml twice daily). However, drinking sage has improved lipid profile and antioxidant capacity and has been shown to benefit indirectly from diabetes. In conclusion, many in vitro studies show that the antidiabetic effect of sage tea is insufficient to study on humans. More research is needed in this area to determine factors such as quantity, infusing type and duration that are effective on humans. It is important for diabetics to be warned about sage tea use and hypoglycemic effects.

KEYWORDS

date palm, antioxidant, nutrition

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Poster Session 9

Submission ID: 1131

MEDICINAL USES OF EVERNIA PRUNASTRI

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ABSTRACT

Evernia prunastri (L.) Ach. also known as oakmoss is a species of lichen that represents symbiotic organisms consisting of the mycobiont and photobiont. The use of lichens in medicine is based on the fact that they contain unique and varied biologically active metabolites. Oakmoss is used in medicine due to its antiseptic, demulcent, expectorant and restorative properties. Its essential oil is also used in certain perfume compositions. Here; we review the medicinal efficacy of Evernia prunastri which intends to explore the pharmaceutical potential of the lichen substances.

KEYWORDS

Active metabolites, Evernia prunastri, Oakmoss

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Poster Session 9

Submission ID: 1132

EFFECT OF DRYING TEMPERATURE AND AIR VELOCITY ON BIOACTIVE COMPOUNDS OF DRIED CORNELIAN CHERRY PUREE

İSMAIL TONTUL¹, EMRAH EROĞLU², AYHAN TOPUZ²

ABSTRACT

Cornelian cherry (*Cornus mas L.*) is a rich source of bioactive compounds such as anthocyanins, ascorbic acid and phenolics. Therefore, it has different health beneficial effects such as antioxidant activity, anti-inflammatory effect, cardioprotective, and lipid-lowering properties. According to Turkish Statistical Institute, the production of cornelian cherry in Turkey was higher than 10000 tons in 2015. The produced cornelian cherry used in production of jams, marmelades and nectar in Turkey. However, it is also used to produce different alcoholic and non-alcoholic beverages due to its astringent properties. Moreover, it is also used in cosmetic and ornamental industries. There are some studies on drying of whole cornelian cherry fruits using different drying techniques. However, usability of the dried whole fruit is limited. Therefore, in the current study, cornelian cherry puree was dried using hot air drying technique. By this way, a dried product which can be used as additive or colorant in different food formulation was produced. In the current study, the effect of drying temperature (50, 60 and 70°C) and air velocity (1, 2 and 3 m/s) on total monomeric anthocyanin content, radical scavenging activity and ascorbic acid content of the dried cornelian cherry puree was determined. The study was conducted according to factorial design and all drying experiments were carried out until moisture content of the final product reached 7.61-8.57 g/100g which corresponded 0.345-0.356 water activity. Total monomeric anthocyanin content of dried cornelian cherry puree was determined in the range of 213.2-304.4 mg C3G/100g dm. According to the statistical analyses, drying temperature, air velocity and their combination had significant effect on total monomeric anthocyanin content of the samples. The highest total monomeric anthocyanin content was determined at 3 m/s air velocity regardless of drying temperature. Radical scavenging activity of the samples were ranged between 751.3-885.6 mg trolox equivalent/100 mg dm. The highest radical scavenging activity was determined in the samples dried at 70°C at 2 m/s air velocity while it was lowest at 60°C at 1 m/s. Ascorbic acid content of the dried cornelian cherry puree was determined between 677.5 and 1462.8 mg/100g dm. Both factors and their interaction were found to be significantly effective on ascorbic acid content of the samples. Generally, increasing drying temperature had negative effect on ascorbic acid content. The air velocity showed huge differences according to drying temperature. Overall, drying at 60°C drying temperature and 3 m/s air velocity provided dried cornelian cherry puree with highest content of total monomeric anthocyanin, radical scavenging activity and ascorbic acid content. The product produced using these conditions had total monomeric anthocyanin, radical scavenging activity and ascorbic acid content of 297.3 mg C3G/100 g dm, 854.6 mg trolox equivalent/100 mg dm

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and 1222.9 mg/100g dm, respectively. The study clearly showed that, dried cornelian cherry puree can be used as an additive to increase functional properties of different food products.

KEYWORDS

cornelian cherry; drying; total monomeric anyhocyanins; radical scavenging activity; ascorbic acid

Poster Session 9

Submission ID: 1133

ROSEMARY (ROSMARINUS OFFICINALIS L.): ITS COMPOSITION AND CLINICAL PROPERTIES

BİRSEN YILMAZ¹, GAMZE AKBULUT¹, NİLÜFER ACAR-TEK¹

ABSTRACT

Archaeological finds from the early ages indicate that people have benefited from many features of plants, especially in terms of obtaining nutrients and improve the health problems. Over the years, the interaction between man and plants has increased and now the ethnobotany field is born. The term "phytotherapy", which means treatment with medicinal plants, was first used by Henri Leclerc. The rosemary (*Rosmarinus Officinalis* L.) is also found in medicinal aromatic plants which are widely produced in Turkey. Rosemary is a valuable essential oil and spice plant from the Lamiaceae family and is in the form of a half-brier or brier. *R. officinalis* is the most important rosemary species cultured. Rosemary, a plant that remains green all seasons, is a strong antioxidant. Rosemary come out with leaf (*Rosmarini folium*) and volatile oil (*Rosmarini aetheroleum*) In European Pharmacopoeia has many effects on health as well as the commercial use of it. Rosemary essential oil is especially important in perfume, cosmetics and aroma therapy. A lot of research has been done about secondary metabolites of rosemary. As a result of these investigations, it has been reported that rosemary has anticancer, insecticide, antimicrobial and antioxidant effects. It is known that rosemary is used by people in various fields such as headache, diuretic, rheumatic diseases and wounds healing. Studies have concentrated on herbal antioxidants, as synthetically obtained antioxidants can have toxic effects. Antioxidant molecules in rosemary are defined as carnosic acid, carnosol, rosmaridifenol and rosmarinic acid in ethanol soluble fractions. Moreover, antioxidant properties are found in the essential oil fractions of the rosemary. In addition to the positive properties of antioxidants, it has been reported that they can be prooxidants and this can stimulate free radical reactions. It has been shown that the composition of the rosemary is influenced by environment, agronomic conditions, harvest time, storage period, age of the plant, developmental stage of the plant and harvested organ. For this reason, there is a need to study more about health effects.

KEYWORDS

rosemary, medicinal plant, health

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Poster Session 9

Submission ID: 1134

**HELICHRYSUM SP.: KNOWN AND EVALUATED BY THE COMMON
FOLK EASTERN ANATOLIA AGRICULTURAL RESEARCH
INSTITUTE MANAGEMENT SOIL AND WATER RESOURCES
CAMPUS, TURKEY**

DR.SİBEL KADIOĐLU¹, DR BANU KADIOĐLU¹

ABSTRACT

Abstract In an ethno-botanic study carried out between 2013 and 2016 in Kop Pass, 14 villages were visited to record information about the plants used by the people. In 9 visited villages (Akduran, Kopk y, Tařađıl,  rence, Demirkař, Sıđırcı, Altıntař and Bařcımagıl, Kapıkale) it is recorded that people are utilizing one of the *Helichrysum* species which they call yellow flower as a medicinal herb. The *Helichrysum* species that are used to decorate the ceilings and the vases at the homes are known with the names such as yellow flower, grapefruit and amaranthus. It is commonly used as herbal tea. It is noted that the herb is used internally or externally for illnesses such as stomach ache, infection, ulcer, wound, cancer, kidney stone, urinary track infection and arthritis. *Helichrysum* sp. is a common plant in our country even though its originally from Europe. It has 34 naturally growing species half of which are endemic. Because of this reason it is known with different names in each region (Tr. Altın  i ek, Altın otu, Sari i ek, Mantuvar otu, Yayla  i eđi, Herdentaze, Solmaz  i ek, G neř  i eđi, G ve otu, Uludađ  i eđi, Kudama, Arı  i eđi, Dudiye  i eđi, Yahudi otu, Sarı kediayađı, etc.). Medicinal plants has long-lasting usage for treatment purposes. Even though they lost their importance to some extent due to development of synthetic medicines in this area of industry, raw materials of many medicines are obtained from plants. Therefore, ethno-botanic studies that gathers the folkloric information should be increased and the result of these studies should be evaluated in pharmacologic and pharmacognosy researches.

KEYWORDS

Key Words: Everlasting Flower, Helichrysum, Pharmacognosis, Herbal tea, Ethno-botanic

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Poster Session 9

Submission ID: 1136

ETHICAL FRAMEWORK FOR THE USE OF VEGETABLE PRODUCTS

DIDEM SARİMEHMET¹, NURHAN GÜMRÜKÇÜOđLU¹, SEVİLAY HİNTİSTAN¹, GONCA SERDAR¹

ABSTRACT

The herbal products have been used for thousands of years in many different cultural histories. For reasons such as the increase of the expectancy of life, the fail of success in preventing and treating chronic diseases, economic inadequacy, pressure from media, ineffectiveness of modern medicine and fear or dissatisfaction from medical care; both health care providers and patients pursuit different approaches. The most familiar of these approaches is the use of herbal products. Supportive attitudes and proposals of individuals or institutions, whose identities are not sufficiently known in terms of "competence", that are not based on the scientific basis, the use of herbal products like "medicine" and collective use through written and visual media cause health workers to worry about this issue. Due to these discomforts, the development of an approach that draws the scientific and ethical aspects of the subject has become a matter of importance by the institutions and individuals working in this area. The aim of this compilation is to provide information on the importance of the use of herbal products, ethical aspects and the responsibilities of nurses in this subject

KEYWORDS

Herbal Products, Ethics, Medicine, Nursing

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Poster Session 9

Submission ID: 1138

RHEUM RIBES L.: MIRACULOUS PLANT OF TURKEY (IN ERZURUM)

DR. BANU KADIOĐLU¹, DR. SIBEL KADIOĐLU¹

ABSTRACT

Abstract Rheum ribes is from Polygonaceae family that is one of the primary medicinal plants with distinctive aromatic taste and rich content. The plant that grows in may and june is found more in eastern regions of our country. It can grown in heights (1800-2800 or 2300-2700 or 1000-4000 meters), on rock and pebbled slopes. Rheum ribes is generally consumed fresh. Peeled stems of the flowers growing among wide and rough leaves of the plant that appears after snow melts are consumed. The versions of Rheum ribes known as ışgın or eşgın in Erzurum, in local language are ışkın, ıçgın, ıçkın, uçkun, uçgun, uşgun, uşkun, aşgın, aşkın, eşkin, eşgi. in Divanu Lügati't-Türk, Rheum ribes is defined as "a plant with a red flower whose sherbet is good for polio". The edible part of "Rheum ribes" of Anatolia is "stem of flower" whereas edible part of this plant growing in England "Rheum rhaponticum" is "stem of leaf". Today, in Erzurum Rheum ribes is consumed not only out of joy but also for medicinal purposes. It has common folkloric usage to treat diabetes and hemorrhoid. Rheum ribes that has rich Vitamin-C reserve contains Vitamins A, B1, B2, E and K. In scientific studies it is observed that Rheum ribes plays an important role for cell renewal and development. It can easily pollinate and interbreed with other species of its genus. Due to this feature, which is important for research studies, it has common usage in pharmacologic researches. However, in Anatolia there is a risk of extinction of Rheum ribes collected unconsciously and by inappropriate methods which cannot be ignored. Therefore, it should be protected and the studies on the plant should be increased.

KEYWORDS

Key Words: Rheum ribes, Erzurum, Medicinal Plants, Treatment, Pharmacology

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Poster Session 9

Submission ID: 1139

MEDICAL AND AROMATIC PLANT PRODUCTION AND FOREIGN TRADE FROM 2000 TO TODAY

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ABSTRACT

This study is a part of the Turkish Medicinal and Aromatic Plant Sector Analysis Project supported by General Directorate of Agricultural Research and Politics. This project aimed to give detailed information about the production, foreign trade amounts and changes of medicinal and aromatic plants from the year 2000 onwards. The research covers all medicinal and aromatic plants and takes place by using secondary data. Secondary data were obtained from TUIK records (foreign trade records) by screening, filtering and grouping methods and subjected to descriptive statistics. According to the findings, about 20 kinds of medicinal and aromatic plants are cultivated in the field of 1.3 million decares, and black tea, redbibber, poppy, cumin, mint, thyme, oil rose and anise are in the first place in terms of production amount. From 2000 to 2015, production sites increased by about 50%. On the other hand, more increases in the production quantities have occurred. There are dozens of plants in the foreign trade of medicinal and aromatic plants. Some of these plants are considered medicinal and aromatic plants, while they are found in industrial plants or oil seeds. Foreign trade of medicinal and aromatic plants was realized with export of 280 million dollars and import of 254 million dollars in 2015. The most important plants in export are thyme, poppy, laurel, tea, anise, caraway, sage, mahlep, redbibber and herbal teas. Thyme is in the first place with 25% share in exports. Thyme exports have increased by 300% compared to the past, reaching 56 million dollars and approximately half of them are realized in the Aegean Free Zone. Despite the increase in exports of many plants, red pepper, hemp, rosemary, peppermint, paint plants have decreased in exports. The most important plants in import are coffee, tea, linen, black pepper, carob, cumin, cumin, hops. Coffee constitutes 61% of imports. There are also many reeksports such as thyme, laurel, cumin, coffee, sage and carob. As a result, medical and aromatic plant production areas have increased, exports have increased, while imports have also increased. The foreign trade surplus is 25.3 million dollars while the coffee account includes 121.5 million foreign trade deficit.

KEYWORDS

medical and aromatic, 2000's, production, foreign trade

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Poster Session 9

Submission ID: 1141

TRADITIONAL USES OF MEDICINAL AROMATIC PLANTS OBTAINED FROM FOREST AREAS

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ABSTRACT

In recent years, there has been an increasing demand for wood raw materials produced from ornaments in the world market as well as for non-wood forest products. This increase is important not only for the purposes but also for the needs of the people. Turkey, which contains 20% of herbal products used for various purposes in the world, while many of the export of medicinal and aromatic plant is located in an important position in imports. In addition, our country is the ecological potential and one of the world's few countries. As in the rest of the world, the use of medicinal and aromatic plants found in natural flora in our country has become a part of our traditional cultural richness from centuries ago. For example, the treatment of people, food, tea, spices, dyes, treatment of animal diseases, resin, gum, benefiting from essential oils and use in the beverage-cosmetics industries. The transfer of medicinal aromatic plants that are used throughout the history for different purposes and their utilization patterns to future generations is very important in terms of not losing this information. In this study made for this purpose, the history of medicinal aromatic plants, the potential in the country, the traditional usage patterns of local people have been investigated.

KEYWORDS

Medicinal aromatic, traditional usage, forest product

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Poster Session 9

Submission ID: 1142

**THE USE OF COMPLEMENTARY AND ALTERNATIVE MEDICINE
IN OUTPATIENTS OF ANKARA ÇANKAYA CEVİZLİDERE FAMILY
HEALTH CENTER: PRELIMINARY RESEARCH**

ÖZLEM AYNAOĞLU HAKVERDİ¹, ALEV ÖNDER²

ABSTRACT

The aim of this study is to examine the types and the use of Complementary and Alternative Medicine (CAM), as well as the factors affecting the use of CAM in Çankaya Cevizlidere Family Health Center, Ankara, Turkey. In the study, 75 respondents were selected randomly from the Family Health Center and questionnaires were applied. The results show that 65 % of the respondents use different types of CAM. Socio-demographic characteristics did not show any significant effect on the overall use of CAM.

KEYWORDS

Questionnaire, CAM, Alternative Medicine, Health

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Poster Session 9

Submission ID: 1144

EFFECTS OF PHYTOCHEMICALS ON AGING

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ABSTRACT

Aging is defined as a genetic physiological process associated with morphological and functional changes in cellular and extracellular components aggravated by injury throughout life and resulting in a progressive imbalance of the control regulatory systems of the organism, including hormonal, autocrine, neuroendocrine and immune homeostatic mechanisms. Aging includes a reduction in strength, endurance, the speed of reaction, agility, basal metabolism, sexual activity and hearing acuity. Aging is primarily caused by external or environmental factors that inflict cellular damage, ultimately leading to organ damage and death. The exact mechanisms underlying the aging process are not well understood, but increasing evidence shows that aging is highly associated with the chronic increase in reactive oxygen species (ROS), accumulation of a low-grade proinflammatory phenotype and reduction in age-related autophagy. Also, aging in humans is associated with a greatly increased incidence of a number of degenerative diseases including cardiovascular disease, Type 2 diabetes, cancer and Alzheimer's disease. Both aging and chronic diseases are highly associated with increased metabolic and oxidative stress, elevated chronic, low-grade inflammation, and accumulated DNA mutations as well as increased levels of its damage. All these factors may play an important role in the progress of aging. It was expressed that some phytochemicals present in the foods are antiaging molecules, and dietary intake of these compounds can promote health and extend lifespan. These effects can be associated with multiple mechanisms, including reducing oxidative stress, suppressing low-grade chronic inflammation, inducing autophagy, as well as regulating several important molecules involved in promoting mitochondrial function and energy homeostasis. Resveratrol, epicatechin, quercetin, curcumin and epigallocatechin gallate (EGCG) are anti-aging effective phytochemicals. It was reported that resveratrol improved insulin resistance, blood flow, and various cardiovascular events, as well as decreased oxidative stress and inflammation, may point to a promising antiaging action of this compound, given that cardiovascular disease is a major cause of age-related morbidity and mortality in humans. Dietary intake of epicatechin can improve blood vessel function, insulin sensitivity, blood pressure, and inflammation, all of which could be associated with the aging process. Quercetin, curcumin and EGCG are thought to play an important role in preventing aging, with antioxidant and anti-inflammatory properties preventing oxidative stress and inflammation. Additionally, other phytochemicals such as fisetin, butein, phloridzin, kaempferol, glaucarubinone and garlic extract, which contains s-allylcysteine, s-allylmercaptocysteine, allicin and diallosulfides were also found to be anti-aging effects in vitro studies. As a result, it can be said that phytochemicals are anti-aging effects due to the antioxidant, anti-inflammatory and other properties. But there is a need for more studies on people to clarify these effects.

KEYWORDS

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Phytochemicals, anti-aging



Poster Session 9

Submission ID: 1145

SEASONAL EVALUATION OF MEDICINAL AND AROMATIC PLANT CONSUMPTION (SAMPLE OF ERZURUM PROVINCE)

DR. BANU KADIOĐLU¹, DR. SIBEL KADIOĐLU¹

ABSTRACT

Abstract: Turkey is a country where there are around 12.000 plant species whose 1/3 is endemic and 30% of this rate is aromatic. Among rich variety of plants, medicinal and aromatic herbs have a significant place and it is known that in Turkey about 500 plant species are used as medicine by the general public. In this study that intends to detect knowledge and consumption habits on medicinal and aromatic herbs of the consumers in Erzurum, sample size is determined as 384. Questionnaire is distributed to the neighborhoods proportionally. The main material of the research is the questionnaire data conducted with the consumers face to face. In the research results, consumers' medicinal and aromatic plant consumption habits are given by frequencies, percentages and cross tables depending on the seasons. The medicinal and aromatic plant consumption habits of the consumers vary depending on the season. In summer the most commonly used plant are coriander (*Coriandrum sativum*), mint (*Mentha sp.*) and nettle (*Urtica sp.*). These plants are used as spices, sweetening and for digestive system problems. During the winter months, cinnamon (*Cinnamomum sp.*), linden (*Tilia sp.*) and rosehip (*Rosa sp.*) are used for treating influenza and cold, strengthening of the immune system and the fulfillment of the need for vitamins.

KEYWORDS

Key words: Medicinal and aromatic plants, consumer habits, seasonal consumption

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Poster Session 9

Submission ID: 1146

VOLATILE OIL FOREIGN TRADE FROM PAST TO TODAY'S

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ABSTRACT

This study is a part of the Turkish Medicinal and Aromatic Plant Sector Analysis Project supported by General Directorate of Agricultural Research and Politics. This project aimed to give detailed information about the production, foreign trade amounts and changes of volatile oil. This study covers all volatile oil and takes place by using secondary data. Secondary data were obtained from TUIK records (foreign trade records) by screening, filtering and grouping methods and subjected to descriptive statistics. According to findings, volatile oil foreign trade is realized as \$ 34 million export and \$ 27 million import in 2015. Exports were 11.6 million and imports were 5.3 million dollars in 2002. The most important essential oils in export are rose, thyme, stearopten, orange. In export, rose ranks first with 36% share. Rose exports was 8 million dollars in 2002 and 11 million dollars in 2015. France is the most important country with a share of 61% in volatile oil exports. Important essential oils in import are mint, orange, lemon, other citrus fruits, lavender. Mint is in the first place with a share of 14%. It reached \$ 2.8 million in 2015, while it was \$ 1.2 million in 2002. Important countries in importing essential oil are India, Germany and USA. Resinoids, by-products, oil resins and distilled water and concentrates of essential oils are also subject to foreign trade. As a result, exports are increasing, imports are increasing at the same rate, and there is a steady increase in foreign trade.

KEYWORDS

essential oils, past, present, foreign trade

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Poster Session 9

Submission ID: 1149

ETHNOBOTANICAL USAGE OF SOME PLANT TAXA SPECIES NATURALLY GROWING IN ESKİŞEHİR

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ABSTRACT

Eskişehir, with its approximately 220 endemic and over 1300 plant taxa, is one of the most important geographical regions of the Central Anatolia region in terms of floristic structure. Because of having neighbors in the north side such as Bolu and Bilecik where the European-Siberian phytogeographic region plant groups are dominate; the presence of large Central Anatolian steeps in the east, west and south side of the city where the Iranian-Turan phytogeographic region elements are dominate and having microclimate region around the Sakarya basin where the plant groups of Mediterranean phytogeographical region are dominate, Eskişehir hosts the plants of three kinds of phytogeographical regions. The usage of plants for different purposes by people in a region where the plant diversity is so high, is also quite common. Asteraceae (127 taxa) ; Fabaceae (94 taxa); Lamiaceae (83 taxa); Brassicaceae (70 taxa) and Caryophyllaceae (51 taxa) are in the top five in terms of the number of taxa which grown naturally in Eskişehir. When considered in terms of ethnobotanical usage, Lamiaceae (27 taxa) ; Asteraceae (21 taxa); Apiaceae (7 taxa); Rosaceae (5 taxa) and Fabaceae (4 taxa) are mostly used families. In this study which is based on both field and literature studies, ethnobotanical usage, usage methods, endemism, distribution patterns and phytogeographical characteristics of some plant taxa which are naturally grown in Eskişehir have been determined. It has been found that 65 different taxa belonging to 50 genus from 35 different families have been used for ethnobotanical purposes. 11.4% of these plants which are used by local people for ethnobotanical purposes are member of Mediterranean phytogeographic region element; 10.2% Iran-Turan phytogeographic region element and 9.23% Europe-Siberia phytogeographic region element. In addition, 4,61% of the plant taxa used for ethnobotanical purposes are endemic plant taxa.

KEYWORDS

Ethnobotany, Medical Plant, Biodiversity, Eskişehir, Turkey

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Poster Session 9

Submission ID: 1152

MEDICINAL AND AROMATIC PLANTS OBTAINED AS NON-WOOD FOREST PRODUCT

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ABSTRACT

This study aimed to give detailed information about quantities and changes of medicinal and aromatic plants obtained as forest side product by years. The data are compiled from the records of the Ministry of Forestry and Water Affairs. According to findings, there are close to 30 medicinal and aromatic plant varieties collected as non-wood forest product, and laurel leaf, thyme and carob are in the first order. The amount of laurels, goat horns, lime increased when compared in the 1990's, while the amount of thyme, laden and steed decreased. It is seen that plants such as cantoron, cauliflower, lavender are obtained from forest areas and the quantities are not recorded properly in records.

KEYWORDS

medicinal and aromatic, non-wood

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Poster Session 9

Submission ID: 1155

ANTIOXIDANT ACTIVITY OF NEW APPLE CULTIVAR: MALUS COMMUNIS L. (PIRAZIZ APPLE)

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ABSTRACT

Malus communis L., local cultivar is known Piraziz Apple by the local people, grown in Piraziz (Giresun). This cultivar was patented by the Turkish Patent and Trademark Office (No: 204 Patent' s Owner: Piraziz Ziraat Odası). According to the literature, beginning of the flowering, full flowering and harvesting period were May 25-30, 6th June and 15th November in 2011. On the other hand, these periods were determined as April 25-30; 6th May and 15th October in 2012. 160 days pass from the full flowering to the harvest. Apple samples were harvested in November, 2016. In this study, the antioxidant capacity of this cultivar' s apple was assessed by using different antioxidant test methods such as hydrogen peroxide scavenging activity, ferric reducing antioxidant power capacity (FRAP) at the 100 µg/mL concentration, DPPH radical scavenging activity, metal-chelating activity at the 100 µg/mL concentration, total phenol content (TPC), and total flavonoid content (TFC). These values were determined as 686.18 µg/mL (SC50), 6.44 (%), 273.12 µg/mL (SC50), 19.03 (%), 16.21 mg GAE/g extract and 12.91 mg CAE/g extract, respectively. Butylated hydroxy anisole (BHA), butylated hydroxy toluene (BHT) and α -tocopherol (TOC) were used for comparison of the data as standard antioxidant compounds. When antioxidant results of apple compare with standards, we can say that this apple cultivar don't show effective antioxidant activity as well as standard compounds. Although Piraziz Apple are used antidiabetic agent by the local community as ethnopharmacological material, it has no effective antioxidant activity. So this cultivar is generally used as antidiabetic agent. According to obtained results, we cay say that these activities can be related to active components in the Piraziz Apple. Consequently, this new cultivar' s biological properties can be investigated profoundly by the researchers because of the ethnopharmacological and ethnobotany properties.

KEYWORDS

Malus communis L., Piraziz Apple, Antioxidant activity, total phenol and flavonoid contents.

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Poster Session 9

Submission ID: 1156

**SOME AROMATIC PLANTS OF PHRYGIAN VALLEY
(ASTERACEAE, LAMIACEAE, APIACEAE)**

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ABSTRACT

Turkey is among the leading countries of the world in terms of its floristic diversity. Turkey, which has approximately 12,000 plant taxa has more higher floristic diversity than many other countries. Turkey is also among the few rare places on the World because of its high endemism ratio (31%). Moreover its gene center of the many plant taxa. Many plants that be in flora of Turkey have been used for traditional medicine purposes locally and globally. Numerous plant taxa belonging to various families which naturally distributed in our country are also used for commercial medicine and pharmacy fields. When family-based distributions of medicinal and aromatic plants in our country are examined, it is observed that plant taxa belonging to families such as Asteraceae, Lamiaceae and Apiaceae constitute the majority of these plants. In this study, Asteraceae, Lamiaceae and Apiaceae taxa of Phrygian Valley where located at the junction point of the Eskişehir, Kütahya and Afyon provinces and also getting popular in terms of ecotourism in recent years were determined. A total of 107 taxa belonging to the family of Asteraceae that includes 104 species and 3 subspecies were identified. Also 64 plant taxa (62 species and 2 subspecies) belonging to 20 genera from Lamiaceae and 37 plant taxa (35 species, 1 subspecies and 1 variety) belonging to 24 genera from Apiaceae were determined. Totally 208 plant taxa from these 3 families were identified from study area. 26 of these are endemic and the endemism rate is 12.5%. 43 of these taxa are Irano-Turian, 29 Euro-Siberian and 21 Mediterranean. 115 of these 208 taxa are multiregional or floristic region are unknown. This study aimed to determine the floristic diversity of Asteraceae, Lamiaceae and Apiaceae, which spread in the Phrygian valleys, and thus to guide the further studies which will be carried out on the taxa belonging to this family.

KEYWORDS

Phrygian Valley, Medicinal and Aromatic Plant, Biodiversity, Turkey

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Poster Session 9

Submission ID: 1157

DETERMINATION OF SOME HEAVY METAL CONCENTRATIONS OF SAGE TEA WITH FAAS

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ABSTRACT

Herbal teas are blends based on the plant's roots, root hairs, branch shoots, aromatic parts of leaves, flowers, shells, fruits, or seeds that are prepared by drying aromatic parts in boiling water. Although plant teas are known to have many benefits in terms of health, they are an important threat to human life if they are exposed to some contamination due to misuse or overuse or uncontrolled production. A significant proportion of these exposures constitute heavy metals. The living environment of the plants is polluted with many harmful substances which arise from various sources. Factors such as the development of industry and increasing traffic, pesticides, industrial and household waste increase the heavy metal pollution. Considering the studies evaluating herbal teas in terms of heavy metal contents, it is seen that in herbal teas there are elements naturally found in plants such as Cu, Co, Zn, Mn, Fe and necessary for human health. However, some metals, such as Ni, Pb, Cd, As, Hg, which are poisonous, appear to be present when they reach certain levels (1,2). To prevent heavy metal accumulation and health problems caused by it, it is important to avoid heavy metal contamination in stages such as plant collection, production, packaging, storage and storage. If it is thought that the people use these unconsciously and uncontrollably, it is very important to make legal regulations and audits in this area. In this study, adequate quantities of sage tea (*salvia officinalis*) plants offered for sale in markets, and herbalist in Karaman were taken in sufficient quantities and analyzed by appropriate drying, milling and dissolution processes. The samples were prepared to be 2 parallel for each sample and were solutioned by wet burning method. For this purpose, one gram of the powdered sample washed and dried in a suitable manner is precisely weighed 16 ml HNO₃ (65%, w/w) and 4 ml HClO₄ (70-72%, w/w) are added to it and the solution is slowly heated in the drawer for about 5-6 hours. The heating process close to the end of the acids is cut off and the solutions are cooled. Then 5 ml H₂ O₂ (30%, w/w) was added and heating was continued until clear liquid was obtained. Heating was stopped when clear liquid was formed, and the solutions were allowed to cool. Cooling solutions were filtered through blue band filter paper and 15 ml of the obtained solutions were mixed with distilled water to prepare the analyzed. The concentrations of the determined elements were determined by Flame Atomic Absorption Spectrometry. The amounts of Co, Ni, Cu, Zn, Cd, Mn, Mg, Fe and Ca were determined in all of the foods determined according to the results. Cr was not detected in the samples. When the results were evaluated Co, Ni, Fe and Ca were found to be above the determined limits. Co, Ni, Fe element concentrations are above the normal range but below the toxic limits. It should be noted that these foods can easily be contaminated due to factors such as the physical and chemical structure of the soil, agricultural activities, storage and packaging conditions. Moreover, it is important to consciously consume and make the necessary quality controls not to adversely affect public health.

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KEYWORDS

Sage tea, Heavy metal, FAAS, Karaman, Turkey.

Poster Session 9

Submission ID: 1158

LAMIACEAE TAXA OF GYPSUM AND MARL SOILS IN ESKİŞEHİR

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ABSTRACT

The investigation area covers gypsum and marl soils reside in the border of Eskisehir. It occurs in the B3 square according to the grid system of P.H. Davis. To investigate the flora, 1750 specimens have been collected during the field seasons of 2012- 2015. The floristic list follows the APG III. At the end of identifications of the specimens 47 taxa belonging to Labiate family have been determined. The endemism ratio of the areas is 17.5 %.

KEYWORDS

B3 square, Eskişehir, gypsum, marl, flora

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Poster Session 9

Submission ID: 1160

INVESTIGATION OF EFFECTS ON RIPENING OF DIFFERENT TYPES OF SPICES USED IN KASHAR CHEESE PRODUCTION

ZEKAI TARAKÇI¹, ENGIN AYDIN²

ABSTRACT

Investigation of Effects on Ripening of Different Types of Spices Used in Kashar Cheese Production* Zekai TARAKÇI¹, Engin AYDIN² 1Department of Food Engineering, Agricultural Faculty, Ordu University, Ordu, Turkey 2Department of Cooking, Vocational College, Giresun University, Giresun, Turkey *This research was supported with number TF-1624 by ODU-BAP. 1zetarakci@hotmail.com In this study, six types of Kashar cheese, one of them is control sample that was produced without adding any spices; the others samples were processed to cheese by adding dead nettle, mint, lemon balm, arugula and parsley as 0.5% according to the milk used. Then, all cheeses were vacuum-packed and ripened at 7±1°C during 3 months and dry matter, fat, pH, titratable acidity, salt, total protein, ripening rate, nonprotein nitrogen rate (NPN), amino nitrogen rate, textural properties and sensory analyses were performed by taking cheese samples during the 2nd, 30th, 60th and 90th days of ripening. The results were compared in terms of the types of cheese and ripening period, statistically. The values of adhesiveness, springiness and resilience parameters of texture profile analyses and also the values of structure-texture parameters of sensory analyses were founded importance difference. The values of fat and the values of springiness parameters of texture profile analyses were determined statistically significant. All of the other parameters were obtained statistically differences. As a result of sensory evaluation made by panelists, ripened kashar cheeses had more acceptability than fresh kashar cheeses. Keywords: Kashar cheese, spices, ripening criteria

KEYWORDS

Kashar cheese, spices, ripening criteria

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Poster Session 9

Submission ID: 1161

ELEMENTAL COMPOSITION DIVERSITY OF SELECTED WILD EDIBLE PLANTS FOR ALTERNATIVE NUTRITION

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ABSTRACT

Vegetables and fruits in general are an important category in food based approaches a sources of multiple micronutrients. In addition to meeting nutrient intake levels, greater consumption of fruits and vegetables is associated with reduces risk of developing chronic diseases. Within this group, gathered wild vegetables deserve greater attention several research show how they are easily accessible, culturally accepted and inexpensive sources of vitamins and minerals to many rural population groups. Diversity and number of examples from different region indicate their importance at an aggregated level. The wild edible plants are consumed in many different ways but mostly eaten raw as a salad. However, widespread knowledge of wild edible plants not provide much information on their nutritional significance and their diversity. The objective of the present work was to evaluate variability for dry matter, protein and mineral composition of nutritionally important and widely consumed wild edible plants in Aegean region of Turkey. The plant material comprises 17 edible plants collected from naturally found and widely distributed in the experimental area of Horticulture Department of Ege University. In order to reduce environmental and edaphic factors on the composition of the plant samples and visualize genotypic differentiation, the plant material collected from the a total 500 m2 area where the soil that has not been cultivated for a long time, furthermore not use any chemicals such as fertilizer and pesticide in collection site. A total 17 edible wild species *Lactuca serriola* L., *Capsella bursa-pastoris* L. Medik., *Malva sylvestris* L., *Papaver rhoeas* L., *Urtica dioica* L., *Erodium cicutarium* (L.) L'Herit., *Chondrilla juncea* L., *Stellaria media* L. *Rumex patientia* L., *Taraxanum officinale*, *Allium ampeloprasum* L., *Plantago lagopus* L., *Sonchus oleraceus* L., *Daucus carota*, *Sinapsis arvensis* L., *Mentha pulegium* L., *Portulaca oleraceae* L. were evaluated for dry matter, protein, N (nitrogen), P (phosphorus), K (potassium), Ca (calcium), Mg (magnesium) composition. The data were subject to analysis of variance, and a Pearson correlation test was used to determine the correlations between dry matter, protein content and N, P, K, Ca, Mg compositions. Principal component analysis was performed on the result of examine compositions and the factor loadings, eigenvalues and percentage of cumulative variance were calculated, the patterns of relationships among nutritive element were shown two-dimension scatter plot. Dry matters, protein and mineral elements were found to vary widely depending on species. According to the results the wild edible species dry matter content ranged from 8.65-20.11% in the edible parts of plant, and the highest protein (29.94%) and N (4.79 mg 100 g⁻¹) values were observed in *C. bursa-pastoris* L. Medik., P content ranged between 0.19-0.37 mg 100 g⁻¹, where *P. rhoeas* showed the highest. K was found in the range of 2.24 to 4.24 mg 100 g⁻¹ respectively, for *M. pulegium* L. and *P. oleraceae* L. Ca was present good amount in *U. dioica* L. 3.47 mg 100 g⁻¹ while other species in the range of 0.64-2.64 mg 100 g⁻¹. Similarly, other micro minerals including Mg (0.14-0.43 mg 100 g⁻¹) and Na (0.04-0.86 mg 100 g⁻¹) were observed in the selected plant species. Multivariate analysis revealed considerable

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variation for the most of concentration. The principal component (PC) analysis explained that 81.49% of total variation accounted for three PC axis. The first axis was mainly related to variation in protein, N and P compositions. The second axis was mainly concerned with dry matter, K, Ca, and Na, the third axis related to Mg. The data reveal that selected wild plant provide significant nutrition and genetic background of species can play role in the nutritional value.

KEYWORDS

Nutritional value, minerals, wild edible plants, principal component analysis

Poster Session 9

Submission ID: 1162

INVESTIGATION OF NATURAL ADVERTISING OF SOME MEDICAL AND AROMATIC PLANTS IN THE GAP OF PEANUT PINE PLANTATION

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ABSTRACT

There are hundreds of medical and aromatic plants in our country that are collected from nature and offered for sale or exported. In the process of nomination to the Mediterranean model forest network being established, work has been initiated to improve forest-peasant relations and to promote the cultivation of non-forest products in forest openings and to increase the participation of villagers in the system. In this study, organic farming possibilities of some medicinal and aromatic plants (Sage, Rosemary, Thyme, Lavender and Laurel) were investigated in the openings of pistachio pine plantation of Armutlu peninsula. At the end of the project, the optimal planting time and location of the plants to be planted in different ways (shaded view, sunny view, uninjured area) and at different times (autumn, winter, spring) were determined. Experiments that were established separately for each plant, 3 replications were set up in random parcel trial design in random blocks. The results were subjected to analysis of variance and significant averages were evaluated by the Lsd test. With the study, the new plant, Sage, Rosemary, Lavender planted in the forest openings, has been adapted to the newly formed ecosystem and it has come to the conclusion that the breeding can be done in such areas. Competition with other forest bushes and weeds was found to be weak due to the herbaceous structure of the Istanbul Thyme used in the study. It is observed that these areas where defnesin is planted are not suitable for uncontrolled cultivation and that their development is not good and they can not take place in the ecosystem. The study is a first for Turkey and a model for breeding.

KEYWORDS

Medical plant, organic farming, lavender, thyme, rosemary, sage, Yalova

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Poster Session 9

Submission ID: 1163

PHYTOCHEMICAL ANALYSIS OF DIFFERENT PARTS OF SALVIA PAHYSTACHYS BY USING LC-MS/MS

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ABSTRACT

Salvia L. genus is member of lamiaceae family which exists approximately 220 genus and 4000 species on the world. Although it shows most natural distribution in Turkey and Mediterranean region on the world, almost it can be grown in all habitat types and heights. Salvia L. genus is represented about 89 species in Turkey and 45 of them are endemic. Salvia species are generally known for their multiple pharmacological effects including their antibacterial, antiviral, antioxidative, antimalarial, anti-inflammatory, antidiabetic, cardiovascular, antitumor, and anticancer. In this study, secondary metabolite profile (37 phytochemicals including 15 Phenolic acids, 17 flavonoids, 3 nonphenolic organic acids, 1 phenolic aldehyde and 1 penzopyrane) of ethanol extracts of different parts (stems, leaves, flowers, roots and mixed parts) of Salvia pahystachys was determined with LC-MS/MS. LC-MS/MS method validation was developed for the qualitative and quantitative analysis of 37 phytochemicals. The LC-MS/MS studied showed that S. pachystachys was including high amount hesperidin, caffeic acid, fumaric acid, malic acid, apigenin and especially rosmarinic acid.

KEYWORDS

Salvia pahystachys, LC-MS/MS, Phenolic Content

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Poster Session 9

Submission ID: 1164

MEDICINAL AND AROMATIC LAMIACEAE TAXA THAT NATURALLY DISTRIBUTED IN PAZARYERİ (BİLECİK) AND ITS ENVIRONS

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ABSTRACT

The Lamiaceae family, which has an important place among medicinal and aromatic plants, is represented by about 250 genera and 7000 species in the world. Because of the aromatic oils, essential oils and a wide variety of secondary metabolites they have, great deal of these have been using as spice, food and medical purposes in our country and in the world since ancient times. Turkey is among the Lamiaceae-rich regions of the world. Moreover, Turkey is the gene center of many Lamiaceae taxa and is host in a large number of endemic taxa. Lamiaceae is among the largest families of The flora of Turkey and it is represented with near 574 species from 45 genera between about 12,000 taxa of Turkey flora. In this study, Lamiaceae specimens have been collected through the Pazaryeri (Bilecik) and its environs between 2013-2014 years. Totally, 50 Lamiaceae taxa (45 species, 5 subspecies) belonging to 18 genera were identified from study area. 13 of these taxa are Irano-Turanian, 8 Euro-Siberian and 6 Mediterranean. Other 23 taxa are multiregional or their distribution unknown. 9 endemic taxa (7 LC and 2 NT) determined from study area and endemism ratio 18%. This study aims to determine the Lamiaceae taxa which spread naturally in the vicinity of the Pazaryeri (Bilecik) and so reveal the medicinal and aromatic dimensions of these taxa.

KEYWORDS

Pazaryeri, Bilecik, Biodiversity, Medicinal and Aromatic Plants, Turkey

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Poster Session 9

Submission ID: 1165

EVALUATION OF THE ANTIOXIDANT CAPACITY AND PHENOLIC CONTENT OF JUNIAEA MESOPOTAMICA EXTRACT OBTAINED WITH DIFFERENT SOLVENTS.

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ABSTRACT

Antioxidant plays an important role in inhibiting and scavenging free radicals, thus, providing protection to human against infection and degenerative diseases (Ansari, 2013). Now the modern research is directed towards "Natural antioxidants" from the herbal plants due to safe therapeutic. In the present paper we have investigated antioxidant activity of extracts from *Juniaea mesopotamica* for its free radical scavenging activity by adopting various in vitro methods. The methanol and buthanol extracts of *Juniaea mesopotamica* exhibited significant antioxidant activities determined by different assays. This study shows that methanol and buthanol extracts of *Juniaea mesopotamica* have higher antioxidant activities than dichlorometane and hexane extract. Moreover, this plant showed antioxidant properties close to the standards. This suggests that *Juniaea mesopotamica* extract is a potential source of natural antioxidants, which could be added to dietary supplements to help prevent oxidative stress.

KEYWORDS

Juniaea mesopotamica, Antioxidant, free radicals

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Poster Session 9

Submission ID: 1166

DETERMINATION OF ANTIOXIDANT PROPERTIES OF DRY ROSE TEA

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ABSTRACT

ABSTRACT Medical and aromatic plants that have been used since mankind have become, a focus of interest especially due to increased health concerns and safe food demand in recent years. It can be demonstrated that the pharmaceutical industry takes a large share in R & D expenditures made as a result of the increase in the importance of pharmaceuticals and aromatic plants. Data from the World Health Organization show that 70-80% of the world's population benefits from traditional medicine. In this direction, approximately 20,000 in the world; in our country, there are plants used for about 500 medical purposes. Medicinal and aromatic plants in traded is used in 50% food, 25% cosmetics and 25% pharmaceutical industry. The rose takes part the fragrant plant parts used in the field of medicinal and aromatic plants. It has an important role in food, perfumery and cosmetic industry. Besides this usage roses are curtained some benefits such as sedative, anti-stress property, hemostatic, stomach, liver, intestines, fever and skin disease therapeutic and anti-inflammatory functions. General usage areas of rose in our country; used as raw material in the production of products such as dried rose, rose oil, rose syrup, rose jam, rose water and the use of flavouring and colouring agents in the formulation of delight products etc. For this purpose, tea made by using 3 different dried bud roses and 3 different dried rose leaf purchased in Isparta and İzmir market were investigated in terms of antioxidant properties. The roses were kept in boiled water at 98 °C for 5 minutes and filtered at the end of the time. Total phenolic substance by Folin-Ciocalteu method, antioxidant capacity by TEAC method and total flavonoid determination were done in the samples which arrived at room temperature. When the results of the analyses are examined, the total amount of phenolic material 5,241-166,355 mg/200 mL tea, the total amount of flavonoids 2,019-14,825 mg/200 mL tea and the antioxidant capacity values 0.64-10.78 µM troloks/200 mL tea are found. In all analyzes, dry bud results were found to be lower than dry leaves. In addition, there was a statistically significant difference between the varieties (p<0.05). Besides its pleasant smell and comfortable drink, it also has antioxidant properties that rose tea can be an alternative to other herbal teas, it is thought that the consumption can be widespread and the usage areas can be expanded with the works to be done.

KEYWORDS

Antioxidant capacity, tea, phenolic substance, rose,

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Poster Session 9

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THE CYTOTOXIC AND APOPTOTIC EFFECTS OF THE YOUNG SHOOTS EXTRACT OF TAMMUS COMMUNIS ON HEPATOCELLULAR CARCINOMA

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ABSTRACT

Plants are an important sources as development of novel therapeutic agents in cancer treatments because most chemotherapeutic drugs have been improved or isolated from plants or their synthetic derivatives. *Tamus communis* L. (Dioscoreaceae, named "Sarmaşık" locally), a perennial herbaceous climbing plant, have some pharmacological effects including antioxidant, antiviral, anti-inflammatory and antimicrobial. However, the anticancer effect of *T. Communis* extract has not known well yet in the literature. In the current study, we aimed to determine the cytotoxic and apoptotic effects of young shoots extract of *T. communis* on hepatocellular carcinoma. The cytotoxic effect of *T. communis* extract on SNU-449, Hep G2 cells treated with different concentrations (50-250 µg /ml) was determined by WST-1 assay for 24,48 and 72h. The DNA damage and repair capacity in these cells treated with the most effective concentration of *T. communis* young shoots extract were analyzed by comet assay. Additionally, the morphology of apoptotic cells was examined by acridine orange/ethidium bromide staining to support comet assay. The young shoots extracts from *T. communis* displayed anti-proliferative activity on SNU-449 and Hep G2 cell lines ($p < 0.05$). The cell viability of Hep G2 and SNU-449 cells decreased to 58.6% and 80.0% at 250 µg/ml of concentration for 72 h, respectively. Hep G2 cells exhibited a higher sensitivity to the young shoots extracts than SNU-449 cells due to associated with a more aggressive tumor phenotype. The young shoots extract of *T. communis* exhibited less toxicity (12.7%) on HUVEC control cells. Additionally, the young shoots extract of *T. communis* induced DNA strand breaks and apoptosis in SNU-449 and Hep G2 cells. The cytoplasmic and nuclear shrinkage and chromatin condensation were observed on particularly Hep G2 cells. Consequently, young shoot extract of *T. communis* has displayed an anticancer properties due to its pharmacological profile. However, this study may be improved by extraction of antitumoral activity different plant parts (rhizome and stem) and determination in amount of phenanthrene or phenolic compounds

KEYWORDS

Hepatocellular carcinoma, Tammus communis, Cytotoxicity, Apoptosis, Extraction

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Poster Session 9

Submission ID: 1168

A STUDY OF ANTIMICROBIAL ACTIVITY OF CONSOLIDA ORIENTALIS AND SPARTIUM JUNCEUM

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ABSTRACT

For a long period of time, plants have been a valuable source of natural products for maintaining human health, especially in the last decade, with more intensive studies for natural therapies. The World Health Organization estimates that plant extracts or their active constituents are used as folk medicine in traditional therapies of 80% of the world's population. Therefore, such plants should be investigated to better understand their properties, safety and efficiency. The aim of this study are to determine the antimicrobial activities of methanol and water extracts from *Consolida orientalis* and *Spartium junceum* plants distributing in Turkey. Antimicrobial activity of the tested plant extracts were studied by the broth microdilution method. It was determined that *Consolida* methanol extracts showed antibacterial activity at doses ranging between of 6.25-3.125 mg/ml against *S. aureus*, *S. enteritidis* and *E. faecalis* standart bacteria. It was found that methanol extract of *Consolida* had antifungal activity at a dose of 6.75 mg/ml against *C. albicans* and *C. parapsilosis*. However water extracts of *Consolida* had an antibacterial effect only against *E. faecalis* at a dose of 6.25 mg / ml. When the methanol extracts of *Spartium* were evaluated it was seen that methanol extracts were effective at a dose of 6.75 mg/ml on the *S. lutea*, *E. faecalis* and *C. albicans*. However water extracts of *Spartium* showed no antimicrobial activity. It was concluded that methanol and water extracts of *Consolida orientalis* and *Spartium junceum* have weak antimicrobial activity.

KEYWORDS

Antimicrobial activity, Consolida orientalis, Spartium junceum, Turkey

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Poster Session 9

Submission ID: 1171

THE ANTIMICROBIAL ACTIVITY OF ONOSMA ISAURICUM

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ABSTRACT

In many developing countries antibiotic resistance, adverse drug reactions, and the high costs of antimicrobials have made management of infectious diseases ineffective. Natural products of higher plants may be a source of new antimicrobial agents with possibly novel mechanisms of action. In this study, it is aimed to investigate the antimicrobial activity of the extracts of methanol and water of *Onosma isauricum* on some microorganisms. The antimicrobial activity was evaluated according to the broth microdilution method by using *Escherichia coli*, *Pseudomonas aeruginosa*, *Staphylococcus aureus* (MSSA), *Klebsiella pneumoniae*, *Staphylococcus aureus* (MRSA), *Salmonella enteritidis*, *Sarcina lutea*, *Enterococcus faecalis*, *Candida albicans* and *Candida parapsilosis*. It was found that methanol extracts of *Onosma* had antimicrobial activity at a dose of 6.25 mg/ml against *S. lutea*, *E. faecalis*, *C. albicans* and *C. parapsilosis*. When the water extracts of *Onosma isauricum* were evaluated it was seen that water extracts were effective at a dose of 3.125 mg/ml on the *S. aureus* (MSSA) and *S. aureus* (MRSA). As a result, we concluded that methanol and water extracts of *Onosma isauricum* have weak antimicrobial effect.

KEYWORDS

Antimicrobial activity, broth microdilution, Onosma isauricum

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Poster Session 9

Submission ID: 1172

INVESTIGATION OF EFFECTS ON RIPENING OF DIFFERENT TYPES OF SPICES USED IN WHITE CHEESE PRODUCTION

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ABSTRACT

INVESTIGATION OF EFFECTS ON RIPENING OF DIFFERENT TYPES OF SPICES USED IN WHITE CHEESE PRODUCTION* Zekai TARAKÇI¹, Fahrettin DEVECİ² 1Department of Food Engineering, Agricultural Faculty, Ordu University, Ordu, Turkey 2Ordu Food Agriculture and Livestock Directorate, Ordu, Turkey *This research was supported with TF-1423 project number by ODU-BAP. 1zetarakci@hotmail.com In this study, six types of white cheese, one of them is control sample, were produced. While control cheese was produced without adding any spices; the others were processed to cheese by adding black cumin, dried mint, thyme rubbed, red pepper flakes and isot pepper as 3% according to the milk used. Then, all cheeses were vacuum-packed and ripened at 7±1°C during 3 months and dry matter, fat, pH, titratable acidity, salt, total protein, ripening rate, nonprotein nitrogen rate (NPN), amino nitrogen rate, electrophoretic casein fractions, textural properties and sensory analyses were performed by taking cheese samples during the 2nd, 15th, 30th, 60th and 90th days of ripening. The results were compared in terms of the types of cheese and ripening period, statistically. The values of adhesiveness, springiness and resilience parameters of texture profile analyses and also the values of structure-texture parameters of sensory analyses were not statistically significant (P>0.05). The values of fat and the values of springiness parameters of texture profile analyses were determined statistically significant (P<0.05). All of the other parameters were obtained statistically significant (P<0.01). As a result of sensory evaluation made by panelists, ripened cheeses had more acceptability than fresh cheeses. Also as cheese type, samples with black cumin, mint and thyme exceeded in common with control sample. Keywords: Spice, white cheese, ripening.

KEYWORDS

Spice, white cheese, ripening

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Poster Session 9

Submission ID: 1174

USE OF SOME NATIVE TREES WITH MEDICINAL QUALIFICATIONS IN URBAN GREEN AREAS: ANTAKYA (HATAY- TURKEY)

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ABSTRACT

Trees have been important for human beings in terms of benefits as shelter, obtaining food and clothing materials, etc. from past to present. For this reason, some of the species have produced, growth and even its protection have provided. With the establishment of cities as living space, planting of green areas such as parks, streets, cemeteries and gardens have carried out within certain frameworks. At this time, initially plants with food and medicinal qualification have preferred to bring to the cities. By this way, use of many of the species with both aesthetic and functional qualities in planting urban green areas have leaded. Trees that are the main material of the plantation are indispensable elements of urban landscape with many functional features such as shadowing, orientation, focusing, and accumulation of pollutants. Especially, because of its easier adaptation to environment, native species have used often in urban green areas. With this study, it was aimed to determine native tree species with medicinal qualification used in the green areas of Antakya (Hatay). The study was conducted in parks (Atatürk Park, Vali Ürgen Park), public institutions gardens (Governorship, General Directorate of State Hydraulic Works, Provincial Directorate of Health), urban roads, and Mustafa Kemal University Tayfur Sökmen Campus in Antakya city center between April-May 2016. As a result, it was determined that native twenty tree taxa with medicinal qualification were used in urban green areas of Antakya. In this context, all taxa were studied in terms of aesthetic (color, texture, form) and functional (shadow, focus, orientation) qualifications important in landscape architecture and other qualifications such as medicinal.

KEYWORDS

Native trees, urban green area, landscape, medicinal, Antakya

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Poster Session 9

Submission ID: 1176

BIOLOGICAL ACTIVITIES OF SALVIA PACHYSTACHYS FROM ANATOLIA TURKEY

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ABSTRACT

Since ancient times, Salvia species have been used in folk medicine for the treatment of diabetes and skin diseases such as psoriasis and eczema. These species have been the subject of extensive pharmacognosic researches that were intended to identify biologically active compounds. Particular attention has been shown to the members of the genus Salvia due to their wide range of important biological activities such as antifungal activity, antitumor activity, antibacterial activity, antiviral activity, cytotoxic activity, antioxidant activity, treatment of heart disease, and antimycobacterial activity. The aim of this study was to determine the phenolic and flavonoid contents (determined as pyrocatechol and quercetin equivalents, respectively), antioxidant (DPPH free radical scavenging activity, β -carotene bleaching assay, CUPPRAC, ABTS cation radical scavenging activity) and anticholinesterase (acetyl- and butyrylcholinesterase enzymes) activities of these salvia species were tested. It was determined that working in all extracts not show acetylcholinesterase activity but show a moderate butyrylcholinesterase activity. Furthermore the ethanol extracts of all parts of (stems, leaves, flowers, roots and mixed parts) species showed high antioxidant activity in all antioxidant tests. Especially the flower of Salvia Pachystachys showed high antioxidant activity in ABTS assay.

KEYWORDS

Salvia pachystachys, Total Phenolic-Flavonoid Content, Antioxidant, Anticholinesterase

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Poster Session 9

Submission ID: 1178

DETERMINATION OF PHENOLIC AND MINERAL COMPOUND COMPOSITION IN SOME FRUIT JUICE MARKETED IN NİĞDE

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ABSTRACT

In this research, it is aimed to determine total phenolic and mineral contents of some kind of fruit juices (apricot, sour cherry, orange, peach and mixed) which was bought from markets in Niđde and to evaluate with the standards. Firstly, pH, total acidity and hydroxymethyl furfural (HMF) analysis of the collected samples were achieved. Then, total phenolic contents and some mineral and metal contents (potassium, iron, zinc, aluminium and copper) were determined and evaluated with standards of regulations. The average pH value of the samples was found as 3.78 ± 0.20 . The average of HMF concentrations of the samples was found as 4.99 ± 3.04 mg/L. Average of total phenolic material contents for all samples was found as 153.03 ± 42.93 mg/L. According to analysis of mineral and metal contents results, potassium, iron, zinc, aluminium and copper contents were between 219.88-425.98 mg/L, 0.025-0.056 mg/L, 0.588-1.965 mg/L, 0.004-0.014 mg/L, 0.187-0.557 mg/L for sour cherry juices,; 320.58-580.88 mg/L, 0.097-3.653 mg/L, 0.385-2.086 mg/L, 0.002-0.134 mg/L, 0.115-1.129 mg/L for apricot juices, 205.88 and 489.88 mg/L, 0.049 and 0.115 mg/L, 0.777 mg/L, 0.028 and 0.083 mg/L, 0.076-0.233 mg/L for orange juices, 230.08 and 371.78 mg/L, 0.128 and 0.137 mg/L, 0.389 and 0.734 mg/L, 0.066 and 0.110 mg/L, 0.114 and 0.258 mg/L for peach juices and 165.38-417.38 mg/L, 0.027-0.1112 mg/L, 0.359-1.087 mg/L, 0.025-0.073 mg/L, 0.049-0.561 mg/L for mixed fruit juices respectively.

KEYWORDS

Fruit juice, total phenolics, hydroxymethyl furfural, potassium, zinc, ferrum, copper, aliminium.

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Poster Session 9

Submission ID: 1179

GC-MS ANALYSIS OF ESSENTIAL OIL AND FATTY ACID COMPONENTS OF CENTAUREA PAPHLAGONICA PLANT

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ABSTRACT

Centaurea plant species that have medicinal properties are among the largest species of the asteraceae family. Because of these properties, it is used by human for therapeutic purposes. There are about 600 centaurea species in the world. There are about 187 species in Turkey. 120 of these species are endemic species. In this study, volatile oil in the plant was obtained by hydrodistillation method. Fatty acid of plant were obtained according to the method of mesagenization in the hexane organic solvent. Component analyzes in volatile and fatty acid were determined by GC-MS instrument. According to the results obtained, spathulenol and gamma-elemene compounds in volatile oil were identified as the main components. In fatty acid, hexadecanoic acid was identified as the main component.

KEYWORDS

Asteracea, centaurea paphlagonica, essential oil, fatty acid

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Poster Session 9

Submission ID: 1182

IN VITRO NEMATOSTATIC ACTIVITY OF ALLIUM TUBEROSUM (ROTTL.) ON STEM AND BULB NEMATODE (DITYLENCHUS DIPSACI)

ELIF YAVUZASLANOđLU¹, ALI BILGIÇ¹

ABSTRACT

Allium tuberosum (Rottl.) (Alliaceae) is a native growing plant in Southern Asia named commonly as garlic chive. It produces small bulb and fast growing leaves. The leaves are cultured and used for treating abdominal pain, diarrhea, hematemesis, snakebite and asthma in China. The whole plant has also antibacterial, cardiac, depurative, digestive, stimulant, stomachic and tonic activity. The stem and bulb nematode (*Ditylenchus dipsaci*) is one of the important constraints of a wide range of plant species with main host of onion and garlic. It reproduces endoparasitically and damages plants. Nematostatic activity of garlic chive on *D. dipsaci* was tested in vitro. Leaves of garlic chive were dried at room temperature for two to three weeks. A one gram of dried leaves grinded and extracted in 10 ml methanol for 48 hours at room temperature on a magnetic stirrer. Dried methanol extract diluted with water to 3% concentration. Nematodes were treated with 0,5 ml, 1 ml and 1,5 ml of aqueous solution of garlic chive methanol extract. Negative control contained sterilized tap water. Each treatment contained averagely 50 nematodes. Total volume in each treatment was completed to 5 ml using sterilized tap water in 9 cm plastic petri dishes. Nematodes incubated at 15 °C for 48 hours. Moving and motionless nematodes were counted under microscope after 48 hours of exposure in the treatments. Motionless nematode rate increased significantly at garlic chive treatments. While motionless nematode rate was 6% in negative control treatment, it was recorded 35, 86 and 78% in 0,5, 1 and 1,5 ml garlic chive treatments, respectively. Preliminary results indicate that the methanol extract of garlic chive shows nematostatic effect on *D. dipsaci* at 48 hours exposure in vitro. The effective content of methanol extract of garlic chive and effect of active content under in vivo conditions are next step of the study.

KEYWORDS

garlic chive, nematostatic activity, stem and bulb nematode, Allium tuberosum, Ditylenchus dipsaci

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Poster Session 9

Submission ID: 1183

AFYONKARAHISAR MEDICAL AND AROMATIC PLANTS CENTRAL OFFICE INTRODUCTION AND ACTIVITIES

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ABSTRACT

The centre was established in Afyonkarahisar in 2013 of Ministry Of Forestry And Water Management. The purpose of establishment increases identifying the medical and aromatic plants which are grown in our country and uses the national wealth potential the most productive. The Medical And Aromatic Plants Centre was established in 45000m² area. The centre has got 1200m² in door area and 5000m² growing area of plants. There are demonstration greenhouse, conference and assembly hall, laboratory, sales and working offices, production greenhouse in indoor area. From the opening day to this day there are a lot of visitors who are from different places of our country and interested in medical and aromatic plants. The visitors are acquainted with and making introduction of these plants. The scientific Project studies are developed with and applied to Afyon Kocatepe University. The growing conditions of the plants which are medical and aromatic and grown in our nature are produced in our introduction area.

KEYWORDS

Afyonkarahisar, Aromatic plants, Medical plants, Ministry Of Forestry And Water Management, Plant growing

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Poster Session 9

Submission ID: 1184

ANTIMICROBIAL AND ANTIFUNGAL ACTIVITY OF FABRICS DYED WITH VIBURNUM OPULUS AND ONION SKINS

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ABSTRACT

Microorganisms such as bacteria and fungi that we can encounter almost everywhere in our daily life, and varieties that are pathogenic against special diseases can cause serious health and hygiene problems. The negative effects of hygienic artificial products on natural environment and ecological balance are also quite high. For this reason, place of various products with antimicrobial activity gains importance from day to day. As is known, textile products can provide a suitable environment for the development of microorganisms. In this context, we aimed to develop textile products which can provide antimicrobial and antifungal effect. For this purpose, woolen fabrics were dyed with onion (*Allium cepa*) skins and juice of *Viburnum opulus* plant fruit in our study. The dyeings were carried out without using of any mordanting agent and no prior extraction of the herbal sources were carried out in other words these natural dye sources (onion skins and juice of *Viburnum opulus* plant fruit) were directly added to the dye bath. Samples after dyeing with these natural dye sources were tested in terms of antimicrobial activity using two bacteria (*Escherichia coli*, *Enterobacter aeruginosa*) and a yeast strain (*Candida albicans*). As a result, it was observed that onion skin and *Viburnum* fruit juice had an antimicrobial effect. While the dyed fabric with *Viburnum* juice showed higher activity on bacterial strains, the onion skin had a higher effect on the yeast. *Viburnum* provided the highest activity on *E. coli*, whereas onion skins showed the highest activity on *C. albicans*.

KEYWORDS

Antimicrobial textiles, bacteria, biotechnology, fungi, natural dye

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Poster Session 9

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EVALUATION OF WHEAT GERM OIL EFFECTS ON ERECTILE DYSFUNCTION INDUCED BY RESTRAINT STRESS IN RATS.

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ABSTRACT

Policosanols in wheat germ oil structure is used for increasing physical and sexual performance. Wheat germ oil has antioxidant properties because of its natural vitamin E ingredient. In this study we aimed to evaluate the effects of wheat germ oil; which is a traditional herbal medicinal product used for erectile dysfunction; on experimental erectile dysfunction model in rats. For this purpose; male Wistar Albino rats were subjected to restraint stress one hour per day for 10 days in a special tube with holes for air supply to perform erectile dysfunction model. Rats for divided to 2 groups. In control group (n=5), rats were treated with 3 ml/kg/day tap water for 10 days during restraint stress period by oral gavage. In wheat germ oil group (n=5), rats were treated with 3 ml/kg/day wheat germ oil for 10 days during restraint stress period by oral gavage. At 11th day; i.m. ketamine (80 mg/kg) and i.m. xylazine (8 mg/kg) were administered for anesthesia. Under anesthesia, intra cavernous pressure (ICP) and mean arterial pressure (MAP) from right carotid artery was measured after canulation. All data of systemic arterial and cavernosal pressure were recorded by MP36 computerized system. After 20 minutes of resting time; cavernous nerve was stimulated for 1 minutes by electrical stimulation (5 V, 20 Hz, 1 milisecond). During and after the stimulation ICP, MAP, ICP/MAP rates and corpus cavernosum detumescence time was evaluated. Mean ICP, MAP, ICP/MAP and corpus cavernosum detumescence time measured in placebo group were 35,5±5,01 mmHg, 97,6±12,73 mmHg, 0,36±0,05 and 133,4±16,03 seconds respectively. In wheat germ oil group these values were 45,1±7,6 mmHg, 106,2±8,23 mmHg, 0,51±0,06 ve 256,2±27,53 respectively. Statistical analyses between groups were evaluated by t-test. Our results showed that statistically significant difference between the groups was only found in detumescence time (p=0.01). Our limitation of this preliminary study is not having a group to evaluate normal ICP, MAP and detumescence values without stress but; according to the statistical significance in detumescence times between two groups; we can speculate that wheat germ oil may be a beneficial herbal medicinal product as a complementary medicine to improve erectile function.

KEYWORDS

wheat germ oil, erectile dysfunction

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Poster Session 9

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DETERMINATION OF DEOXYNOJIRIMYCIN BY DEVELOPED AND VALIDATED AN HPLC-FLD METHOD IN LEAVES OF MULBERRY VARIETIES FROM TURKEY

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ABSTRACT

1-deoxynojirimycin (DNJ), a piperidine alkaloid, is known to be one of the most potent a-glycosidase inhibitors. In previous studies, more than twenty polyhydroxylated alkaloids have been identified in leaves of *Morus* species. The leaves of *M. alba* and *M. nigra* used in diabetes mellitus patient's nutraceutical foods due to their antihyperglycemic activity in Korea and Japan. Therefore, it is necessary to analysis of 1-deoxynojirimycin contents in pharmaceutical preparations and herbal drugs made from *Morus* leaves in order to quality control. Hence, a rapid, sensitive and reliable high performance liquid chromatographic method for the determination of 1-deoxynojirimycin (DNJ) in *Morus alba* L. and *Morus nigra* leaves with fluorimetric detection after precolumn derivatization with 9-fluorenylmethyl chlorformate (FMOC-Cl) was developed. DNJ in *Morus alba* L. and *Morus nigra* L. leaves was extracted with 0.05 mol/L HCl, derivatized with FMOC-Cl, and analyzed by high performance liquid chromatography equipped with fluorescence detector. The separation was performed on GL Sciences Inertsil ODS-3 C18 column (4.6 x 250 mm, 5 µm), mobile phase consisted of acetonitrile - 0.1 % aqueous acetic acid (50:50, v/v) with a flow rate of 1.0 mL/min at 26°C. The calibration curve was linear in the range of 0.1- 30 mg/L, the correlation coefficient (r²) was 0.9985. The limit of detection (3s/b) and quantification (n=10) were 1.07 and 3,27 ng mL⁻¹, respectively. Intraday and interday method precision (n=5) were between 7.26; 3.98 and 7.03; 3.52 (RSD%), respectively. Intraday and interday method accuracy (n=5) were between (-6.68) - 2.80 and (-8.35) - 3.77 (RE%), respectively. The method recovery (n=3) was between 97,16% - 107,85%. The obtained robustness values from emission and excitation detection, mobile phase ingredients and flow rates changes were show that method was very strong. The results showed that the content of DNJ in leaves of *Morus alba* L. were between 0,9% - 1,1% and in leaves of *Morus nigra* L. was 1,0%.

KEYWORDS

HPLC, FLD, Morus alba, Morus nigra, Deoxynojirimycine, Validation

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ANTIMICROBIAL AND ANTIOXIDANT ACTIVITY OF ECHINOPS EMILIAE (ASTERACEAE)

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ABSTRACT

The aim of this study was to investigate the antimicrobial and antioxidant activities of different extracts from *Echinops emiliae* Schwarz ex P. H. Davis. Antimicrobial activity was estimated against several common human pathogenic bacterial strains using the agar disc diffusion and minimal inhibitory concentration assays. Antioxidant activity was evaluated using the DPPH radical-scavenging assay and total phenolic content methods. On the light of these experiments, *E. emiliae* would seem to be an important natural antioxidant. Antimicrobial and antioxidant of *E. emiliae* have not been reported up to now. The results of this study obviously reported that the antimicrobial and antifungal activity could be change with used extracts. Also, the micro dilution method was more sensitive than disk diffusion. This study is first report on the biological activity of *E. emiliae* as regarded endemic species from Turkey. The results show that *E. emiliae* could use in the treatment of some illness.

KEYWORDS

Anti-bacterial; antifungal; Composite; Echinops; phenolic content; plant extracts

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Poster Session 9

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FERULIC ACID AS A FUNCTIONAL FOOD COMPOUND AND ITS IMPORTANCE

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ABSTRACT

Ferulic acid (4-hydroxy-3-methoxycinnamic acid) is one of the most abundant phenolic acid in plant kingdom. It occurs from metabolism of phenylalanine and tyrosine by Shikimate pathways in plants. It is present at high concentrations in many products, including vegetables, fruits, cereals, and coffee. It is mainly conjugated with mono- and oligosaccharides, polysaccharides, lipids, and polyamines, and seldom found in a free forms in plants. It can be absorbed along the entire gastrointestinal tract and easily metabolized by the liver. It has many therapeutic properties like antioxidant, anti-inflammatory, antimicrobial, anti-thrombosis, and anti-cancer activities. It protects against many disorders such as Alzheimer's disease, cardiovascular disease, diabetes mellitus, and colon cancer. Also, ferulic acid is used in the food industry. The raw material of the production of vanillin is ferulic acid. In this review, the chemistry, natural resources and human health effects of ferulic acid are discussed.

KEYWORDS

Functional food, secondary metabolite, phenolic acids, ferulic acid

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Poster Session 9

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MILK THISTLE (SILYBUM MARIANUM), POSSIBLE CLINICAL EFFECTS AND SAFETY

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ABSTRACT

Milk thistle (*Silybum marianum*) is being used for the treatment of liver and gall bladder illnesses and for the protection of liver against toxins. Today, researches have focused on its effects as cytoprotective, antioxidant and anticarcinogenic effects as well as on its protective effects against death cup (*Amanita phalloides*). Its active substance is silymarin, which is mostly found in the seeds. Silymarin is a flavonoid complex, which also includes silybin, silychristin and silydianin. Milk thistle seeds include 1.5-3% flavonolignan, also known as silymarin, 20-30% non-volatile oil (60% linoleic acid, 30% oleic acid, approximately 9% palmitic acid), 25-30% protein, 0.038% tocopherol and 0.60% sterol. There are frequently 70-80% flavonolignan (silybin, silychristin and silydianin), which are also known as silymarin, in milk thistle. Silymarin enters into enterohepatic circulation in the body so its concentration in the liver is generally higher than serum. Absorption of silymarin in gastrointestinal system is rather low (%20-50). For that reason, production of extract with high concentrations of active substance has become popular. The clinical researches suggest that milk thistle extract has positive effects on Hepatitis A, alcoholic cirrhosis and liver illnesses caused by exposure to harmful chemical. It has been found out that, as an anti-fibrotic agent, it has reduced the collagen accumulation in liver caused by serum procollagen Type III-formation. In a number of other researches it has been stated that silymarin has shown anti-inflammatory effect and has regulated inflammatory mediators such as; tumor necrosis factor (TNF)- α , nitrous oxide, interleukin-6 and interleukin-1 receptor antagonist. Within this frame, it is considered that it has a role in the treatment of infectious diseases. In some studies, it has been found out that milk thistle has reduced free radical production and hepatotoxicity lipid peroxidation. Studies on its anticarcinogenic effects are still going on and there are studies suggesting that it is especially effective in the treatment of prostate cancer related with sex hormones. However, American Family Physicians Association (AAFP) states that the evidence regarding its effectiveness in its use in the clinic is poor. As for the assessments regarding its side effects, it is stated that it is generally well tolerated, but it has caused itchiness, eczema, skin eruption and anaphylaxis in some cases. However, effective and safe dose in clinic use is contradictor. US Food and Drug Administration (FDA) stated in 2001 that it is safe to be added in malt based drinks to support bitter aroma. However, evidence for its safety in clinical use is inadequate. Although it is not mentioned very significant interference in general in terms of drug interactions, in some studies it has been stated that it may form herb-drug interference by interfering with cytochrome P (CYP) microsomal enzyme. In some in vitro studies, it has been found out that it has significantly induced CYP3A4 isoform and in some other studies that it may inhibit the activities of enzymes by irreversibly binding to CYP3A4 and CYP2C9 enzymes. It has been found out that it may inhibit CYP2C9 enzyme in liver and it has reduced metabolite rate related with CYP2C as the result of use of Losartan with Milk Thistle. As a

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result, although it has been stated in some studies that milk thistle has significant effects in protection from and treatment of some diseases in clinic, evidence for that is poor. Further studies are required on this subject. Attention should be paid for its safety and for its possible drug interactions and it should not be used without an advice from a physician. Selected References Gezmen-Karadađ M, Türközü D, Topađaç Kapucu D. Güztepe Tıp Dergisi 2013; 28(4):164-70. Rainone F. Milk thistle Am Fam Physician 2005;72(7):1285-8. Ross SM. Milk Thistle(Silybum marianum):An Ancient Botanical Medicine for Modern Times.Holist Nurs Pract 2008;22(5):299–300.

KEYWORDS

Milk Thistle (Silybum Marianum), Clinical Effects, Safety

Poster Session 9

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SALVIA SPECIES AND DRUG INTERACTIONS

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ABSTRACT

Salvia belongs to the family of Lamiaceae (Labiatae), which has a cosmopolitan distribution with 200 genera and 3000 to 4000 species. There are about 900 species of Salvia, one of the widest generals of the family. The plants are herbaceous or bushy, perennial, rarely biannual or annual, mostly aromatic, with flowers in different colors. Salvia L. is widely distributed in various parts of the world such as the Mediterranean region, South Africa, Central and South America, and Southeast Asia. The main center of species in Asia is Anatolia. There are 43 endemic species in Anatolia. In addition to diversity of species, Salvia also has differences in bioactivity between species. There are very different pharmacological effects between species. For thousands of years, it has been used in the treatment of many diseases such as flu, bronchitis, tuberculosis, hemorrhage, oral cavity and throat inflammation. The main component of Salvia oil is volatile monoterpenoids. It has been reported that *S. officinalis* (Sage), *S. lavandulifolia* and *S. fruticosa* Miller species with high essential oil content have antibacterial properties. Dan-shen (*S. miltiorrhiza* root extract) is defined as a drug used in the Chinese Pharmacopoeia to treat heart and circulatory system diseases, insomnia and acute arthritis pain in patients with rheumatism. Salvianolic acid in Dan-Shen is a potent inhibitor of H⁺/K⁺ ATPase and has been shown to be effective in reducing gastric acid secretion. However, the antiulcer effect is less than the well-known antiulcer agent omeprazole. The antispasmodic effect of Salvia varies by species. Sage and *S. fruticosa* Mil. has antispasmodic activity while *S. verbenacea* L. species was observed to increase spasmolytic efficacy. Sage leaves show antioxidant properties due to its phenolic structure. Pharmacological studies show that *S. lavandulifolia* Vah., *S. fruticosa* Mil. and *S. aegyptiaca* species have strong hypoglycemic effects. The Mexican sage, *S. divinorum*, is well known for its hallucinogenic effect. The components thujone and camphor are responsible for volatile oil toxicity. α -thujone inhibits gamma-aminobutyric acid-A receptor and oral use of camphor even in small quantities may lead to serious adverse effects resulting in tonic-clonic seizures and death. Inhalation or oral consumption of Sage and its commercial products may result in convulsions. Essential oil can reduce the effects of central nervous system depressants such as diazepam and phenobarbital while potentiating the effects of stimulants. An experimental neurotoxicity study in rats showed that the subconvulsive limit for volatile oil is 0.3 g/kg dose. The anticholinesterase (AChE) activity observed in the components of the Salvia species has been investigated clinically in the treatment of Alzheimer's disease. Sage volatile oil (0.5 mg/ml) has been shown to inhibit AChE activity by 46%. Sage and *S. lavandulifolia* volatile oil may interact with AChE inhibitor drugs used in the treatment of Alzheimer due to AChE inhibitor effect. The Chinese herb 'Dan Shen' with antiplatelet activity has been reported to cause bleeding by increasing the anticoagulant effect of warfarin. *S. miltiorrhiza* increases plasma estrogen levels, ovarian and uterine prostaglandin-F₂ α levels, and this effect on the endocrine system has been shown in immature rats. The estrogenic effect of Salvia may potentiate the effect of oral

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antidiabetics, folic acid antagonists and some corticosteroids and may induce hyperlipidemia and inhibit the effect of hypolipidemic drugs. Due to the antidiabetic effect of thujone, sage should be used with carefully antidiabetic drugs. Sage's aqueous extract is a specific inhibitor of CYP2C9, CYP2C19, CYP2D6 and CYP3A4 enzymes so prolonged uses of sage may interact with the substrates of these enzymes. Carnosol isolated from sage extract has been shown to reduce the minimum inhibitor concentration of aminoglycoside in vancomycin-resistant enterococci. Carnosol and carnosic acid show synergistic effect with gentamicin.

KEYWORDS

Sage, Salvia officinalis, Dan-shen, drug interaction

Poster Session 9

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SCOPOLETIN: NATURAL SOURCES AND ITS EFFECTS ON HEALTH

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ABSTRACT

In recent years, coumarins, which are commonly used for preventing and treatment of many diseases, are one of secondary metabolites produced by bacteria, fungus and some plants under abiotic and biotic stress. The scopoletin, involved in coumarins, is important health-related substance, has been shown to exert biological activities such as antioxidant, anti-inflammatory, antihyperglycemic, anticancer, hypouricemic, enhancer of melanin synthesis. Until today, the presence of scopoletin has been found in many plants belong to Liliaceae, Asteraceae, Convolvulaceae, Loasaceae, Urticaceae, Apiaceae, Fabaceae, Portulacaceae, Malvaceae families. In this review, distribution of scopoletin in plant kingdom, its biological and pharmacological properties and benefits on human health were discussed.

KEYWORDS

Coumarin, scopoletin, health

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Poster Session 9

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THE UNKNOWN HEALING 'TAURUS CREAM'

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ABSTRACT

Turkey is like a continent about plants. According to the results of studies made until today, it's determined that Turkey has got so many plants as family, genus and species. Our country's flora is wealthier than its neighbours and other European countries. As its cultural treasure, besides this our country has a comprehensive information treasure about ethnobotany. But with migrations to big cities from villages and the development of technology; this knowledge is nearly disappearing. Medical and aromatic plants has a wide marketing all over the World especially for medicine and food raw material. Using of these plants from past until today and knowledge of their local names are so important for humanity and transferring these to next generation. Turkey has got 10765 flowering plant. In the world there are 800.000, in Turkey there are more than 9000 plants. The species which is cultivated for food is about 3000. But the wild plants used for food are above 10000. World Health Organisation determined nearly 20.000. Whereas the wild plants used for medical are at least 500. In this study, in Mersin, Anamur city's, Çarıklar village Havva SEZGİN (60 year old) called woman's 'Taurus cream' has been searched. She got it from her father İsa Salı and it's been a medicine for 21 years. She used in this cream these materials and plants; Juniperus oxycedrus L. subsp. oxycedrus, Cyclamen cilicium Boiss.&Heldr., Abies cilicica (Ant.&Kotschy) Carr. subsp. Isaurica Coode & Cullen, wax (bee houses), butter with no salt. She is determining the quantities according to the capacity of case and her need for the sick. For example, 2 kiloes of Juniperus oxycedrus L. subsp. oxycedrus 's – Abies cilicica's resin gum are boiled with wax and butter after mashed. Then she is adding the Cyclamen cilicium's tuber. After boiling these materials, she is leaving the mixture under the sunlight. She puts this medicine on the injured skin for 24 hours. If the injured skin has turned to white colour, it means that it had effected and healing is started. Havva Sezgin's neighbours in the village and people from Anamur city centre are visiting her and getting this 'Taurus cream' for healing. As the kind of illness; she is giving the cream, but not cancer people. Her father had said her 'Don't refuse anybody and help everyone with this medicinal mixture. In this study; this cream was also used for a woman Şerife K. (73 years old) who has got stained skin on face and burnt. The cream was practised to her face and has got good results of it in 24 hours. This medical mixture is used for these illnesses; skin injuries except cancer, foot&hand fungus illness, face acnes, hair illness, knife cuts, inflammated wounds, bullet wound. In the conclusion of this ethnobotanical search, this unknown medical cream can be brought in the science and by transferring next generations, positive and useful results can be got.

KEYWORDS

Ethnobotany, flora, medicine, Taurus cream.

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Poster Session 9

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SENNA AND DRUG INTERACTIONS

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ABSTRACT

The senna fruit obtained from *Cassia angustifolia* is one of the most important herbal drugs for the treatment of constipation worldwide. It is one of the most popular laxatives, especially in geriatric patients. The major component of senna is anthraquinone glycosides. Senna leaf anthraquinones include sennosides A, B, C and D, and palmidin A, rhein anthrone and aloe-emodin glycosides. The fruit contains sennosides A and B and a closely related glycoside named sennoside A1. Senna is usually standardized according to the amount of sennoside B content. At therapeutic doses, sennosides provide relief from painful constipation by softening the consistency of the feces without disturbing the routine defecation frequency. Senna increases colonic transit rate and colonic peristalsism. The characteristic activity of senna usually occurs within 8-10 hours. So it is recommended to be used at night. The long-term use of senna can cause excessive water and potassium loss because of anthraquinones. Systemic corticosteroids with mineralocorticoid activity can cause water retention and potassium loss too. Theoretically, prolonged use of senna combined with systemic corticosteroids may increase the risk of hypokalaemia. Also, senna may increase the risk for digitalis toxicity including cardiac arrhythmias due to its hypokalemic effect. Theoretically, in patients taking senna with potassium-depleting diuretics cause excessive potassium loss. Also, laxative effect of senna reduces furosemide absorption in the intestine. In a study with 7 patients with cardiac arrhythmias taking sustained-release quinidine, senna reduced plasma quinidine levels, by about 25%. According to a case report, a 45-year-old female patient who used senna-based laxative was hospitalized because of diffuse abdominal pain. The patient was using warfarin regularly for six years. Blood tests showed a haemoglobin concentration of 84 g/L; the platelet count was normal, but INR was 11.9; the activated partial thromboplastin time was 92.4 s (control time 29.3 s). It has been reported that this effect was due to decreased vitamin K (which leads to the activation of factors II, VII, IX and X) by the laxative effect. Therefore, attention should be taken on concomitant use of warfarin with senna-based laxatives to prevent risk of bleeding. In a study with 40 premenopausal women, the decrease in intestinal transit time by senna significantly reduced serum oestrogen concentration. Theoretically, senna may reduce the effect of estrogen-containing contraceptives. Experimental evidences suggest that danthron that is anthraquinone found in senna reduces the absorptive permeability of ketoprofen by almost 30% and the senna leaf infusion enhances ketoprofen permeability by about 1,5-fold. In conclusion, care should be taken in patients using senna if patient has a concomitant drug use.

KEYWORDS

Senna, Drug interactions, laxative, sennosides

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Poster Session 9

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ANTIOXIDANT PROPERTIES OF FENUGREEK SEED

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ABSTRACT

Evaluating of natural antioxidant content of edible and medicinal plant materials are important for human health and food industry. The aim of this study was to determine antioxidant activity of fenugreek seed which is a spice and medicinal plant. Ten samples were analyzed in this study. The samples were extracted with 40% ethyl alcohol solution, and total phenolics content, 1,1-diphenyl-2-picrylhydrazyl (DPPH) free radical scavenging activity and ferric reducing antioxidant power (FRAP) analyses were carried out in the extracts. Total phenolics, DPPH and FRAP values were found as 3925-5950 mg Gallic acid equivalent (GAE)/100g (5125±605 mg GAE/100g), 215.25-558.64 µmol TE/g (418.02±107.55 µmol/g) and 4139.07-9519.87 µmol Fe²⁺/g (6800.87±1776.22 µmol/g) in dry matter, respectively. These results have showed that fenugreek seed is a good source in terms of antioxidant.

KEYWORDS

Fenugreek seed, antioxidant, health

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Poster Session 9

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A BIOACTIVE COMPOUND IN TEA: GAMMA-AMINOBUTYRIC ACID (GABA)

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ABSTRACT

Tea is a manufactured from the buds and leaves of *Camellia sinensis*. Tea contains many chemical compounds such as catechins, alkaloids, polysaccharides, amino acids, vitamins, minerals, and volatile oils. The free amino acids are particularly interesting because they are not only responsible for the taste of tea infusions, but also have various beneficial effects. Gamma-aminobutyric acid (GABA) is a four carbon free amino acid found in tea plant. GABA is produced by the decarboxylation of L-glutamic acid that catalyzed by glutamate decarboxylase enzyme. There is GABA in all tea types, but in GABA tea, the amount of GABA is much higher because of its special production technique. GABA tea is known as Gabaron tea in Japan. GABA tea is manufactured by fermenting fresh tea leaves under nitrogen gas. The taste of GABA tea is like oolong tea's. GABA tea is rich in antioxidants. GABA and GABA tea have numerous physiological functions and positive effects on many metabolic disorders such as hypotensive effect, reducing anxiety and stress, helping to modify sleep and mood, and alleviating postmenopausal depression. In this review, the characteristics and beneficial health effects of GABA and GABA tea are discussed.

KEYWORDS

Tea, aminoacid, GABA

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Poster Session 9

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ECHINACEA: PHARMACOLOGICAL PROPERTIES AND DRUG INTERACTIONS

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ABSTRACT

Echinacea is a group of American cone flowers from the Asteraceae (Compositae) family. Within the class, there are nine plant species. Three of these are usually found in herbal preparations: Echinacea purpurea (Purple Echinacea), Echinacea angustifolia and Echinacea pallida (Paleflowered Echinacea). Although E. purpurea is the most commonly used spicy, it is frequently combined with E. angustifolia. The active ingredients of the echinacea are polysaccharides, flavonoids, alkylamides, polyacetylenes and essential oils. Polysaccharides seem to be responsible for the immunostimulatory activity of the echinacea. The general preparations are prepared by fresh press or the ethanolic extract of the dried parts of the fibres, roots and flowers of the plant. Glycerol is used instead of alcohol, especially for children in flavoured liquid products. Echinacea increases the ability of granulocytes and macrophages to ward off the disease. Activated macrophages secrete interleukin-1, interleukin-6, and tumor necrosis factor- α , which stimulates the specific immune system and protects the cells from viral attacks. Caffeic acid derivatives such as chicoric acid and alkylamides are responsible for the antiviral effect of purple echinacea juice. Also, they inhibit hyaluronidase, thereby reduces the permeability of the blood vessels and inhibits the spread of local infection. Theoretically, echinacea may antagonize the effects of immunosuppressant medication. Animal studies have shown that the combination of powder extract of the root of E. purpurea and melatonin has an adverse effect on mature granulocyte levels in bone marrow and spleen. A potentially positive interaction between E. purpurea and phenytoin has been reported in mice. Phenytoin is known to increase the risk of cleft palate when used in pregnancy. According to this study, E. purpurea decreased the incidence of cleft palate caused by phenytoin. E. purpurea root has been shown to selectively modulate CYP3A activity in intestine (inhibition) and liver (induction) in a clinical study. This biphasic effect of E. purpurea root has been attributed to different ingredients in root content, differences in absorption rate of ingredients or a systematically formed metabolite. Echinacea purpurea root alters the metabolism of the probe drugs by the inhibition of intestinal CYP3A and hepatic CYP2C9 and CYP1A2. However, it has been shown that 400 mg Echinacea purpurea root treatment for 8 days resulted with hepatic CYP3A induction and increases clearance of intravenous midazolam. Echinacea may increase oral clearance of CYP3A substrates with a low clearance and high oral bioavailability such as alprazolam because of the hepatic induction of CYP3A. Conversely, for CYP3A substrates such as buspirone, simvastatin, and terfenadine, which have low oral bioavailability due to first-pass metabolism in the intestine, may result in increased serum concentrations of these substrates as a result of intestinal CYP3A inhibition when used with echinacea. Although details of the echinacea genus and its extract used are not specified, it has been reported that there may be an interaction between Echinacea and

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etoposide (CYP3A4 substrate) with a case report. A 61-year-old male patient was diagnosed with cell lung cancer and chemoradiotherapy was initiated simultaneously with cisplatin and etoposide. He was admitted to the clinic on the 8th day of her first recurrence because of thrombocytopenia. Platelet transfusion support was given. Although researchers have not confirmed the interaction between echinacea and etoposide, they concluded that warnings should be given to the use of CYP3A4 substrates (antracyclines, etoposide, vinca alkaloids, taxanes) and echinacea in patients receiving chemotherapy. Theoretically, chemotherapeutics etoposide, epipodophyllotoxin, cyclophosphamide, ifosfamide, vindesine, vinblastine, vincristine, vinorelbine, paclitaxel, docetaxel, irinotecan, tamoxifen, tipifarnib which are metabolized by CYP3A4 and dacarbazine which is metabolized by CYP1A2 may also interact with echinacea.

KEYWORDS

Echinacea, drug interactions, CYP3A4 induction

Poster Session 9

Submission ID: 1199

GINKGO BILOBA: PHARMACOLOGICAL PROPERTIES AND DRUG INTERACTIONS

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ABSTRACT

Ginkgo biloba, also known as a fossil tree, is the oldest living tree and leaf extracts have been used for centuries in the treatment of various diseases. In Chinese medicine tea is prepared for asthma and bronchitis treatment. In Germany and other European countries, it is frequently prescribed in form standard tablet or capsule form. Its major components are flavonoids, proanthocyanidins, terpene lactones including ginkgolide A, B, C and sesquiterpene bilabolides. The standardized Ginkgo extract contains 22-27% flavone glycosides and 5-12% terpene lactones which are main active ingredients. Flavonol glycosides, a component of the ginkgo leaf, improves blood circulation. Ginkgolid-B is a platelet activating factor antagonist. The main indications for Ginkgo are primary degenerative dementia, vascular dementia, absent state, confusion, lack of energy, fatigue, decreased physical performance, depressive mood, anxiety, vascular and dizziness and ear tinnitus, relieving the symptoms caused by the peripheral arterial occlusive disease. The most important interaction with Ginkgo biloba is the risk of spontaneous bleeding that can be observed when used with anticoagulants. A number of clinically significant cases of bleeding have been reported. A 70-year-old man started using 40 mg of standardized Ginkgo biloba extract twice a day. After one week he complained of recurrent blurred vision attacks in his right eye. He went to the clinic 2 days later and a red color change in the cornea was noticed. The only medication the patient used was a single dose of 325 mg aspirin, which is prescribed after coronary artery bypass surgery since 3 years. The patient did not have any eye trauma, ischemia or vascular occlusion in the past. The physical examination was entirely normal except for a fine stream of blood oozing down from the 12 o'clock position of the margin of the iris into the inferior angle, where a layering of blood was seen on gonioscopy. The patient stopped taking Ginkgo's extract but continued aspirin treatment. It has been reported that the bleeding did not recur during the three-month follow-up period. The injection of Ginkgo biloba extract to increase microcirculation due to anticoagulant effect with sodium aescinate obtained from horse chestnut seed approved by Chinese Food and Drug Administration for postoperative oedema treatment has resulted with severe nephrotoxicity. It has been reported that fetal intracerebral hemorrhage develops in a patient using nonsteroidal anti-inflammatory agent containing ibuprofen with Ginkgo biloba extract. The effect of Ginkgo biloba (daily 100 mg extract) was investigated with a placebo-controlled cross-blind study involving 21 patients receiving prolonged warfarin treatment, and it turned out that INR value did not change. Experimental studies show that Ginkgo biloba accelerated the onset of ototoxicity caused by amikacin and increases ototoxic adverse effect. Ginkgo biloba also increases the extrapyramidal adverse effects of haloperidol. Ginkgo biloba has been reported to cause priapism in a patient receiving risperidone treatment. The α -adrenergic properties of risperidone cause

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priapism very rarely. Possible vascular effects of *Ginkgo biloba* may increase the adverse effects of risperidone. *Ginkgo biloba* increases omeprazole metabolism by CYP2C19 enzyme induction and similarly enhances the metabolism of other proton pump inhibitor drugs which are also CYP2C19 substrate. It has been reported that co-administration with efavirenz results with virological failure. According to researchers, terpenoid ingredients in *Ginkgo biloba* causes CYP3A4 or P-glycoprotein induction. However, clinical trials have shown that *Ginkgo biloba* does not cause significant changes in the CYP1A2, CYP3A4, CYP2D6, or CYP2E1 enzyme phenotype. It has been reported that a 55-year-old female patient with glucose-6-phosphate dehydrogenase deficiency who has 17.5 mg of *Ginkgo biloba* leaf extract injection for dementia prophylaxis without doctor's advice developed hemolytic anemia. In 2013, the *Ginkgo biloba* extract by the International Agency for Research on Cancer has been classified as possibly carcinogenic to humans (Group 2B).

KEYWORDS

Ginkgo biloba, drug interactions, ginkgolide,

Poster Session 9

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GARLIC: PHARMACOLOGICAL PROPERTIES AND DRUG INTERACTIONS

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ABSTRACT

Allium sativum (garlic) have been used for medicinal purposes for a century. The active compounds of garlic include alliin, allinase, diallyldisulfide, ajoens. Alicin is major garlic constituent, which is also responsible for the aroma of fresh garlic, sulphur-like smell. When fresh garlic is chopped or crushed, the enzyme allinase converts alliin into allicin, The pharmacological effects of garlic are mainly linked to sulphur-containing components. Other sulphur compounds found in garlic are allylmethyltrisulfide, allylpropyldisulfide, diallyldisulfide, diallyltrisulfide, ajoene. It also contains glycosides, monoterpenoids, enzymes, flavonoids based on kaempferol and quercetin. Aged garlic extract (AGE) that prepared with the long-term extraction of fresh garlic (normally at 20 months) appears to be superior to normal garlic in its antioxidant properties. The most common known pharmacological effect is lowering total serum cholesterol levels, probably through the inhibition of cholesterol synthesis in the liver. Garlic's other pharmacological effects are its antibacterial, antiviral, antifungal, antihypertensive, hypoglycemic, antithrombotic, antimutagenic, and antiplatelet effects. Also in vitro studies have demonstrated that both garlic powder and garlic extract inhibit human lymphatic leukaemia cell growth. Garlic has been reported to have hepatoprotective effect against carbon tetrachloride induced acute hepatotoxicity model in rats. Interactions between garlic and warfarin (oral anticoagulant agent) may be clinically significant. Garlic reduces platelet aggregation and it may cause spontaneous bleeding even when used alone. Therefore, garlic may cause bleeding if concomitantly used with anticoagulant and non-steroidal anti-inflammatory drugs. Clinical studies showed that liquid, aged garlic extract inhibits platelet aggregation. Also, animal studies showed that ajoene and sulphur compounds derived from garlic possess antiplatelet and antithrombotic property. Studies suggest that AGE inhibits platelet aggregation via inhibition of GPIIb/IIIa receptor thus inhibits the binding of fibrinogen to platelet. Garlic ingestion should be stopped at least one week before surgeries. Although drug interaction of garlic and lisinopril has been associated significant hypotension and syncope has been reported, no interaction has been shown. When garlic is used with fish oil, it reverses the increasing effect of fish oil on low-density lipoprotein cholesterol (LDL) levels. Garlic supplements reduces LDL levels and fish oil reduces triacylglycerol levels but increases LDL levels. Combined use may be more beneficial in patients with high blood lipids. The effect of crude aqueous extract of garlic on the pharmacokinetic parameters of isoniazid and rifampicin was studied in rabbits. While oral administration of the garlic extract did not cause any changes in the pharmacokinetic parameters of rifampicin, it significantly reduced isoniazid bioavailability without causing any change in elimination rate. Crude aqueous extract of garlic reduced AUC and maximum serum levels of a single 30-mg/kg dose of isoniazid by about 55% and 65%, respectively, when

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compared with the levels after a single 30-mg/kg dose isoniazid. The use of garlic with protease inhibitor saquinavir may significantly reduce saquinavir plasma levels. The mechanism of this interaction is uncertain but garlic may be reducing saquinavir bioavailability by increasing its metabolism in intestine. Care should be taken on concomitant use of garlic with other CYP3A4 substrate protease inhibitors such as amprenavir, atazanavir, darunavir, fosamprenavir, indinavir, lopinavir, nelfinavir, ritonavir, tipranavir.

KEYWORDS

garlic, allium sativum, drug interactions

Poster Session 9

Submission ID: 1201

THE MEDICINAL AND AROMATICAL PLANT POTENTIAL IN TÜRKİYE AND CONSERVATION STUDIES

BELKIS MUCA¹

ABSTRACT

It is known that approximately 12,000 plant taxa have been distributed according to the data obtained in recent years in Turkey. It has been determined that up to 500 of these plants (about 300 are sold in import shop) are medicinal and aromatic plants. However, it is noteworthy that the number of medicinal and aromatic plants of an country rich in plant diversity is so little. This study is prepared to show the diversity of medical and aromatic plants in our country, the areas they spread and the conservation studies suggested for these plants. In our country, medicinal and aromatic plants show more spread in less soil, rocky and especially in steppe fields. The more challenging the habitat conditions, the higher the amount of essential substance in medical and aromatic plants. For this reason, there are some clustering points for these plants in our country. Eastern Anatolia, Southeastern Anatolia and the Lakes Region are some of these points. The commercial importance and diversity of medical and aromatic plants in our country is also remarkable. Although commercially valuable medicinal and aromatic plants are cultivated in some regions, natural collection in the whole country takes place at a higher rate. This jeopardizes both our plant diversity and our medical and aromatic potential. The model studies of the Ministry of Forestry and Water Affairs are inadequate with their existence. In our work, methods are proposed to evaluate the natural distribution of medicinal and aromatic plants. The work is expected to provide a source for medical and aromatic plant collectors, traders, healthcare users and researchers.

KEYWORDS

Medical Plant, Aromatic Plant, Distribution, Conservation, Türkiye.

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Poster Session 9

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CYTOTOXIC ACTIVITY OF THE ROOT AND FRUIT EXTRACTS OF NEOCRYPTODISCUS PAPILLARIS (BOISS.) HERRNST. & HEYN

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ABSTRACT

The aim of the present study is to investigate the cytotoxic activity of *Neocryptodiscus papillaris* (Boiss.) Herrnst. & Heyn (Apiaceae). The roots and fruits of *N. papillaris* were collected from Aşığı Dilimli village, Viranşehir, Şanlıurfa in June 2013. The plant materials were separately and sequentially extracted with dichloromethane and methanol at room temperature. The extracts were individually concentrated in a rotary evaporator under reduced pressure to dryness. Furthermore, methanol extract was dissolved in methanol/water (10:90) and then partitioned with ethyl acetate in a separatory funnel, the resulting extracts were separately concentrated in vacuo to dryness. These extracts were subjected to the cytotoxic activity testing. The highest activity was found in the dichloromethane extracts against the colon cancer COLO205 and KM12 cell lines. The dichloromethane extract of the root of *N. papillaris* showed cytotoxic activity with IC50 values of 23.0 and 14.0 ug/mL against the colon cancer COLO205 and KM12 cell lines, respectively. Whereas, the dichloromethane extract of the fruit showed cytotoxic activity with IC50 values of 23.1 and 17.2 ug/mL against the colon cancer COLO205 and KM12 cell lines, respectively.

KEYWORDS

Neocryptodiscus papillaris, cytotoxic activity

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Poster Session 9

Submission ID: 1203

ROSEMARY: PHARMACOLOGICAL PROPERTIES AND DRUG INTERACTION

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ABSTRACT

Rosmarinus officinalis (rosemary) is grown in the South and West Anatolian. The plant belongs to the family of Labiatae (Lamiaceae) which is a strong aromatic low evergreen shrub. Constituents include essential oil (1,8 cineole, α -pinene and camphor), diterpenes, rosmarinic acid that derivatives from caffeic acid, flavonoids and triterpenes. Rosemary is used for flavouring foods and in cosmetic products. In traditional medicine it is used as an antispasmodic in renal colic and dysmenorrhoea, in relieving respiratory disease, in supportive treatment of rheumatic disorder and for stimulating hair growth. Rosemary oil may irritate the skin and increases the circulation when applied topically. Major bioactive constituents of rosemary oil are rosmarinic acid, carnosolic acid and carnosol which are responsible from antioxidant, anti-inflammatory and anticarcinogenic effects. Rosemary oil possesses antibacterial and antifungal properties. Rosemary is an effective antimicrobial against *Staphylococcus aureus* when used as spices. It has been shown that the lyophilized aqueous extract of rosemary shows hepatoprotective effect by reducing t-butyl hydroperoxide induced malonaldehyde formation in rat hepatocytes in vitro. Also, it significantly decreases of the release of hepatic lactate dehydrogenase and aspartate aminotransferase. Carnosol, carnosolic acid and rosmanol in the diterpene structure of the lipophilic and hydrophobic fractions of rosemary shows inhibitory activity on superoxide anion production in the xanthine/xanthine oxidase system. The spasmolytic effect of 1,8-cineole and bornyl acetate in the ileum smooth muscle and atrium muscle was demonstrated in animal studies. It has been shown that rosemary extract treatment significant increases the uptake of radiopharmaceutical agent technetium-99m (^{99m}Tc) Sulphur Colloid in rat liver. These results indicate that rosemary extract or metabolites changes the biodistribution of ^{99m}Tc-Sulphur Colloid which is a commonly used radionuclide for diagnostic radiopharmaceuticals. The ethanol extract of rosemary and cefuroxime combination show synergistic activity against methicillin-resistant *Staphylococcus aureus*. It is speculated that the bioactive component in rosemary damages the cytoplasmic membrane of the bacteria and thus facilitates antibiotic influx. The rosemary is rich in phenolic acid and can cause a reduction in non-heme-iron absorption. Rosemary inhibits the binding of doxorubicin, vinblastine and azidopine to P-glycoprotein (P-gp) thus directly inhibits membrane P-gp efflux activity. This increases the intracellular accumulation of medicines by reducing P-gp mediated efflux. Theoretically, it is possible that rosemary can change the plasma levels of drugs that are P-gp substrates such as aliskiren, ambrisentan, colchicine, dabigatran, digoxin, everolimus, fexofenadine, imatinib, lapatinib, maraviroc, nilotinib, posaconazole, ranolazine, saxagliptin, sirolimus, sitagliptin, talinolol, tolvaptan, topotecan. Animal studies shows that rosemary has significant in vitro and in vivo antithrombotic activity. The antithrombotic mechanism can be

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explained by the direct inhibitory effect on platelets. Animal studies showed that oral rosmarinic acid reduces fibronectin and fibrin formation in the glomerulus. Theoretically, concurrent use of anticoagulant medications may increase the risk of bleeding. According in-vitro studies, the aqueous extract of rosemary can inhibit the angiotensin converting enzyme. In animal studies, it has been shown that rosemary has diuretic effects and lowers electrolyte levels. It has also been shown to increase permeability of furosemide in vitro in CaCO₂ monolayer cell-line. According to the case reports, rosemary treatment can induce lithium toxicity due to its diuretic effect.

KEYWORDS

Rosmarinus officinalis, rosemary, drug interactions,

Poster Session 9

Submission ID: 1204

CHEMICAL COMPOSITION AND ANTIOXIDANT ACTIVITY OF ESSENTIAL OIL OF ORIGANUM SIPYLEUM

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ABSTRACT

Turkey has a rich flora, in terms of, medicinal and aromatic plant diversity. The genus *Origanum* is a member of Lamiaceae family and represented by 32 taxon in Turkey and 21 of them are endemic for Turkey. *Origanum sipyleum* is an endemic species to Anatolia. It used as herbal tea, spicy and folk medicine by people in Turkey. The purpose of this study was investigate to the chemical composition and antioxidant activities of the essential oil of *Origanum sipyleum*. The plant was provided from Muđla in 2015. For obtain essential oil, aerial parts of *O.sipyleum* was hydrodistilled for 3h using a Clevenger type equipments. The essential oil was analysed by using GC-GC/MS. Antioxidant activities of extracts were performed by five complementary tests systems i.e. β -carotene linoleic acid, DPPH free radical scavenging, ABTS cation radical scavenging, cupric reducing antioxidant capacity (CUPRAC) and metal chelating assays. Twenty five components were identified by GC-GC/MS in essential of *O.sipyleum*. β -caryophyllene (22.2 %) , γ -terpinene (18.3%), carvacrol (8.8%) were found the major components of *O. Sipyleum*. According to antioxidant activity results, *O.sipyleum* exhibited, $63.85 \pm 1.54\%$, $12.17 \pm 1.01\%$, $46.15 \pm 1.04\%$ inhibitions and 0.38 ± 0.05 absorbance value in β -carotene linoleic acid, DPPH free radical scavenging, ABTS cation radical scavenging and cupric reducing antioxidant capacity (CUPRAC) assays respectively at 800 $\mu\text{g/ml}$ concentration.

KEYWORDS

Antioxidant activity, essential oil ,GC-MS, Origanum sipyleum

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Poster Session 9

Submission ID: 1205

HERBAL MEDICINE IN CHRONIC RENAL DISEASES

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ABSTRACT

Chronic renal diseases are important causes of morbidity and mortality. Here we report a case with glomerulonephritis who was treated with herbal medicine. A 62-year-old man was admitted to Nephrology Clinic with edema of lower extremities. Laboratory investigations and renal biopsy showed 'Membranoproliferative glomerulonephritis' (MPGN) disorder. His protein levels of 24-hour urine ranged from 8 to 15 gr/day under the treatment of diuretics and statins. An 2% infusion of *Solidago virgaurea* L. was given three times a day. At the fourth month of herbal infusion treatment, his 24-hour urine analysis for proteinuria was reduced to 2,5 gr/day. Thuji Q 6 homeopathy treatment was added after herbal infusion therapy and 24-hour urine analysis for proteinuria showed decreased protein levels to 1,5 gr/day. His clinical course is stabile for 13 years without any medical treatment. In conclusion chronic renal diseases have progressive course and herbal medicine and homeopathy are rarely being used in these disorders in Turkey. The aim of this case report is to point to the usage of *Solidago virgaurea* L. and homeopathy as an alternative treatment modality for MPGN disorder. Educational training programs need to be added in medicine schools in our country. By this way, further researchs will be done and these patients with chronic renal disease will have chance to use alternative treatment modalities like herbal infusions or homeopathy.

KEYWORDS

Glomerulonephritis, edema, Solidago virgaurea L.

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Poster Session 9

Submission ID: 1206

**DETERMINATION OF ANTIFUNGAL EFFECTS OF THYME,
ROSEMARY AND RED PEPPER AGAINST ASPERGILLUS NIGER,
PENICILLUM SSP. AND MUCOR SSP.**

ASLI ÇELİKEL¹, MUTLU BUKET AKIN¹, BÜŞRA GÖNCÜ¹

ABSTRACT

In addition to the taste and flavor characteristics herbal in the world is used for the treatment and protection during the long years. Herbal extracts and essential oils, which are derived from plants by various methods, has been proved by scientific studies to have antimicrobial effects. Thyme is a kind of spice that is widely used in food industry. Its composition contains 63.9% carbohydrate, 9.1% protein and 7.4% fat. It has been reported that thymol, carvacrol, p-cymene, α -pinene and camphene found in thyme essential oil, phenolic compounds and flavonoids of thyme have antimicrobial and antioxidant activity. The composition of rosemary (*Rosmarinus officinalis*), which has widespread use as a natural preservative, is 64.1% carbohydrate, 15.2% fat and 4.9% protein convenience. Rosemary essential oil generally contains 1,8-cineole, α -pinene, camphor, camphene, borneol, piperitone, linalol. Antimicrobial, antioxidant and antiviral effects of rosemary have been determined by many studies. Red pepper is a kind of plant species that grows annually depending on the genus *Capsicum* of the Solanaceae family. It is rich in ascorbic acid and carotene contents. Generally it is used as spice, feedstuff and antibiotic raw material in pharmaceutical industry. Mold is one of the types of microorganisms that can cause food spoilage. Some mold species produce secondary metabolites called "mycotoxins" that show toxic properties. *Aspergillus*, *Penicillium*, *Alternaria*, *Fusarium*, and *Mucor* are the most common molds that produce toxins In this study antifungal effects of mixtures of extracts and essential oils of thyme, rosemary and red pepper on *Aspergillus nigeri*, *Penicillium ssp.* and *Mucor ssp.* were investigated. According to the results, the highest antifungal effects were determined from the mixture of rosemary extract and rosemary oil against *Mucor ssp.* and from the mixture of thyme extract and thyme oil against *Aspergillus niger*.. It was also found that the lowest antifungal effect was shown from red pepper extract and rosemary extract and oils against *Penicillium ssp.*

KEYWORDS

Thyme, Rosemary, Red Pepper, Antifungal effect

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Poster Session 9

Submission ID: 1208

SAFFRON (CROCUS SATIVUS L.): ITS COMPOSITION AND CLINICAL PROPERTIES

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ABSTRACT

In our country, *Crocus Sativus L.* is known with different names such as saffron, saffron flower, saffron crocus and zagferan. It belongs to the family of Iridaceae as well as it grows naturally in India, the Balkans, and the Eastern Mediterranean, a perennial, 20-30 cm long bulb with a purple flower blooming in the autumn. Besides carbohydrates, polypeptides, lipids, H₂O, minerals and vitamins, there are more than 150 different compounds in saffron. Also, it contains three main bioactive components: crocin, safranal and picrocrocin. Crocin, a water-soluble carotenoid, is the glycosyl ester of crocetin and consists of two sugars responsible for the color of the compound, giving a typical reddish-yellowish color to safran. Safranal is a monoterpene aldehyde that is responsible for the characteristic aroma and odor of the saffron, and the bitter taste of the saffron is due to picrocrocin, which is the safranal glycoside. Saffron is a plant mostly used in Asia for digestion, inflammation and cerebral disorders. Positive anxiolytic and antidepressant-like effects of this plant have also been reported. This effect is due to safranal and croc. As a result of clinical trials, daily dosage of saffron extract used as a supplement in the treatment of depression is 30 mg. Satiereal, another component of saffron, is effective in weight management. In the studies, it was observed that the effects of satieral improved mental condition, increased satiety feeling and decreased snack feeling. It is therefore argued that a combination of a balanced diet and satieral supplementation in weight loss programs may help achieve the target weight. However, studies on this issue are insufficient and more research is needed. Despite the recent information about properties of saffron, the mechanisms for reducing the feeling of snacking remain speculative. It is expected that the central and/or environmental factors involved in neuropharmacology will be clarified in order to explain this effect. The anti-cancer properties of saffron were also investigated and substantial results were obtained. However, researchers say that the dose used during treatment should be doctor-controlled to prevent food-drug interactions in chemotherapy. Apart from such health effects, saffron has many other therapeutic effects. There are positive impacts on the digestive, cardiovascular, immune, respiratory, genital-urinary and central nervous system. In addition to these, it has a role in radical scavenging, genetic protective properties, inhibition of cell proliferation, inhibition of lipid peroxidation and anti-inflammatory processes. Saffron is used as a prophylactic and therapeutic agent against gastrointestinal system disorders. However, further clinical trials are required to confirm these effects.

KEYWORDS

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Saffron, Crocus Sativus L., health, crocin



Poster Session 9

Submission ID: 1211

**DETERMINATION OF FACTORS AFFECTING ON AVAILABLE
ALTERNATIVES IN MEDICINAL NEEDS OF STUDENTS: CASE
STUDY OF ATATÜRK UNIVERSITY**

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ABSTRACT

From time immemorial, medicinal aromatic plants have been one of the important treatment methods. People of our time because of their medicinal needs or in order to protect themselves from diseases alongside with going to a doctor or taking medicine without seeing a doctor refer to using medicinal plants. Similar situation is observed in university students too. The aim of this paper is determining factors influencing our future, university students', preferring one method over the other two when they have health problems. To achieve this aim, 445 students from 15 faculties representing Atatürk University were interviewed. Tobit method was used for identifying factors influencing student's choice of one method. It is necessary to do works for informing young people according to the results, obtained from this study.

KEYWORDS

Atatürk University, Students, Medical needs, Tobit

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Poster Session 9

Submission ID: 1213

CHAMOMİLE TEA; POTENTIAL EFFECTS ON HEALTH

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ABSTRACT

Chamomile tea is often preferred by consumers for consumption in tea. It is stated that chamomile was used in various medical treatments by ancient Egyptians, Greeks and Romans for thousands of years. Chamomile is said to be used for various skin diseases such as acne, eczema, colds, sore throat, abscess, gum inflammation, anxiety and mild burns. However, there is very little work done to determine this effect of the chamomile. In some studies in rats, it has been determined that chamomile is anti-inflammatory and anti-oxidant. There are some studies showing that it is effective in reducing the symptoms of mild to moderate severe anxiety disorder. Chamomile spread from Egypt to Europe. German chamomile are most commonly used in tea, with varieties such as German and Roman chamomile. The German chamomile tea contains apigenin, a flavanoid known to be a mild sedative effect. Chamomile flowers contain a large number of therapeutically active compounds, mostly categorized according to their polarities. The most important bioactive components are flavonoids. Anti-inflammatory effect of German chamomile is used to increase immunity against cancer, gastritis, chronic intestinal diseases. It also determined the effects of anxiety disorders and increased sleep quality. Camellias combined with valerian are a traditional plant that has been used since ancient times in the treatment of insomnia and many health problems. The chamomile flower has tea, extract and various forms of ointment. Chamomile is generally known as anti-inflammatory and emotional conditioner. Despite the calming effect of the calamus in studies, studies are needed to determine its effect on sleep quality.

KEYWORDS

chamomile tea, health

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Poster Session 9

Submission ID: 1214

LAMB BREAST MUSHROOM

MUSTAFA DEMİRBAŞ¹, REFIK ULUSOY¹

ABSTRACT

The Latin name is *Morchella esculenta*, a lamb breast mushroom with reddish yellow and irregular hollows. The lamb breast collected from the nature from the middle of spring is one of the most important fungus species exported in Turkey. It is a delicious mushroom species widely consumed in Turkey and in the world. It can be consumed fresh or dried. What kind of mantle is a jug? Lamb, which loves soils rich in nutritional components, grows in the openings of forests, on the sides of roads and water, in wildfires, under trees like maple, elm, hazelnut and beech. It is seen in the Aegean and Mediterranean regions, in the forested land, usually in the pine forests. The cause is not yet known but it is the most common type of fungus after forest fires. The growing season is between March and May. *Morchella conica*: It is a different breed with brown hats and regular cavities that are very similar to the lamb chest. In some regions, as a lamb breed, the genus is also the genus *Morchella esculenta*. Also known as lamb mushrooms, donut mushrooms. It grows in calcareous soil, in meadows and in bushes. It meets in April and May. How are lamb breasts grown? The fungi belonging to the genus *Morchella* belong to the mycorrhiza class. The ability of such fungi to survive depends on the presence of some trees and organic compounds. For this reason, despite the fact that they have been working on them for many years, the results of their cultural studies have not been successful. Culture studies of the lamb breast, which was first cultured in 1982, are carried out in order to increase the population of fungi in the natural environment today. **BENEFITS** - Kolesterol is good - Supports eye health - Supports thyroid health - Alleviate joint pain - Maintain side effects of drugs - Iron and phosphorus source -B and D are sources of Vitamin Supports liver health - Fights the cancer -He makes blood -The penalty is good Supports heart health

KEYWORDS

Lamb breast mushroom

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Poster Session 9

Submission ID: 1215

DRYING PROCESS IN MEDICINAL-AROMATIC PLANTS

RABIA SERPİL GÜNHAN¹, ASUMAN KAN¹

ABSTRACT

DRYING PROCESS IN MEDICINAL-AROMATIC PLANTS Günhan, R. S.1, Kan, A.1 1 Selcuk University, Vocational Higher School of Technical Sciences, Food Processing Department 42070, Campus, Konya rsgunhan@selcuk.edu.tr Phone:+90 533 6366616 Medical - Aromatic plants (TAB) constitute the most important inputs of herbal medicines, plant chemicals, food and additives, cosmetics and perfumery. These plants need to be in the required quantity and quality so that sustainable production and market potential can be adequately evaluated. One of the important process steps for quality and standard product is drying process after harvest. Drying is the heat and mass transfer event involving the transfer of the water in the dried product from the interior of the product to the surface and the evaporation from the surface. Drying is done to preserve the enzymatic and microbial activities and to extend shelf life of the product. Drying is to reduce the moisture of the product without harming the product quality to the final moisture content as soon as possible by consuming the least energy. Drying can be done naturally and artificially. The methods and conditions used in drying directly affect the quality of the product and the content of the active substance. In aromatic plants, the drying temperature should be kept low to prevent the loss of essential oil. For quality drying, thick and large drugs should be cut into pieces, branch pieces should be selected. One of the major risks during the drying of drugs is the occurrence of microbial activity, especially the formation of mycotoxin that is harmful to human health in the final product. In this context, the use of controlled drying systems is recommended. In addition, freeze drying is a recommended method for some drugs with low production volume and high economic value. As a result; The correct drying method should be selected and the correct drying conditions should be applied in order to have the product of the closest composition (phenolic compounds, volatile oils, resins, flavorings, colorants, vitamins, antioxidants and antimicrobial compounds etc.)to the fresh product after drying. Key words: Drying, Medicinal and Aromatic Plants, Preservation

KEYWORDS

Drying, Medicinal and Aromatic Plants, Preservation

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Poster Session 9

Submission ID: 1216

THE ROLE OF HAWTHORN IN THE DEVELOPMENT OF FUNCTIONAL FOOD

RABIA SERPİL GÜNHAN¹, SUZAN YALÇIN¹

ABSTRACT

THE ROLE OF HAWTHORN IN THE DEVELOPMENT OF FUNCTIONAL FOOD
Günhan, R. S.1, Yalçın, S.2 1 Selcuk University, Vocational Higher School of Technical Sciences, Food Processing Department 42070, Campus, Konya 2 Selcuk University , Department of Food Hygiene and Technology, Faculty of Veterinary Medicine , Campus, Konya rsgunhan@selcuk.edu.tr Phone:+90 533 6366616 Hawthorn is an important Medicinal-Aromatic plant that attracts the attention of the scientific world. In developed countries, the production and consumption of functional food and beverage whose added-value are high are gradually increasing by using of fruits, leaves and flowers of hawthorn. With the investigations it has been found that hawthorn has many functional properties and has become one of the most popular herbal treatment tools. It is used in the treatment of disorders such as heart failure, vascular occlusion, angina, dysrhythmia, gastrointestinal disorders and hypertension. The hawthorn is rich in Vit C, sugars (fructose, glucose, sucrose), organic acids (malic acid, citric acid, quinic acid), anthocyanins, flavonoids and phenols. Also hawthorn fruit contains high amounts of mineral matter. Over the world, hawthorn is used in the production of fresh fruit, dried fruit, juice, compote, marmalade, jam, crush, tea (fruit, leaf, flower), molasses, vinegar, sauce, powder of hawthorn; cakes, biscuits, confectionery and ice cream. It is stated that consuming hawthorn powder reduces significantly the level of low density lipoprotein in the body. The hawthorn vinegar contains a high amount of phenolic material and has high antioxidant capacity. Especially It has a positive effect on cardiovascular patients. In addition, the hawthorn vinegar causes weight loss and reduces the blood pressure, cholesterol, blood sugar, triglycerides. Dried leaves, flowers and fruits of the hawthorn are prepared like tea and it is used against throat inflammation, coughing, heart attack and arteriosclerosis. Finger hawthorn and soudjouk hawthorn are produced by compressing hawthorn pulp. Besides, candied apple produced by being dipped into hawthorn syrup or hawthorn fruit skewered by being dipped into thickened hawthorn syrup like the formed of hawthorn sweet is sold in markets. Hawthorn chocolate should not be forgotten. As a result; although hawthorn is naturally overgrown in our country, the value of it is not fully understood. Producing hawthorn plant which is a functional food in desired quality and quantity, providing continuity, evaluating the market potential is very important. In this regard, producers, consumers and enterprises should be informed adequately and the necessary benefits should be provided. Keywords: Hawthorn, Functional Food, Health

KEYWORDS

Hawthorn, Functional Food, Health

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Poster Session 9

Submission ID: 1217

COMPARISON OF ESSENTIAL OIL COMPOSITIONS OF FRESH AND DRIED PLANT OF SALVIA SCLAREA L. IN TURKEY

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ABSTRACT

In this study, essential oil compositions of *Salvia sclarea* L. (dried and fresh aerial parts) collecting from natural habitat was investigated. Essential oil was obtained by hydrodistillation for 3 h using Clevenger type apparatus and the compositions was determined in GC-MS. In this research, it was observed that the essential oil compositions varied with respect to be fresh or dry of the plant parts. The LSD test results revealed that the highest essential oil components were germacrene-D (46,62%), bicyclogermacrene (27,184%) and trans- β -caryophyllene (8,606%) in fresh aerial parts, while the highest components were germacrene-D (45,593%), bicyclogermacrene (19,741%) and α -copaene (3,997%) in dried part of the plant. Furthermore, some essential oil components were not found in the fresh aerial parts, while it was determined in dried parts of the plant. On the contrary, some components were observed in the fresh aerial parts, while it was not found in dried parts of the plant. The objective of the study was that the determination of the differences between the essential oil compounds and compositions varied according to be the plant fresh or dry.

KEYWORDS

Essential oil, endemic, fresh parts, dried parts, Salvia sclarea

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Poster Session 9

Submission ID: 1218

COMPARISON OF CHEMICAL CONTENT OF WILD AND CULTIVATED FORMS OF HYPERICUM PERFORATUM L.

SÜLEYMAN DOĐU¹, YAVUZ BAĐCI², YÜKSEL KAN³, SADIYE AYŞE ÇELİK³

ABSTRACT

In this study, essential oil compositions of the dried and fresh aerial parts of *Hypericum perforatum* L. collected from wild and cultivated in the research field was investigated. Essential oil was distilled by using Clevenger type apparatus for 3 h and the chemical compositions were detected in GC-MS. The oil yields of the collected and cultivated plant materials were observed to be 0.2 ml and 0,13; 0,1 ml and in amount tr in fresh and dried aerial parts, respectively. Drying of the material had negative effect on the oil yield both in the collected and cultivated plant materials. Besides essential oil yields, in this research the differences with respect to composition and components were detected between the cultivated and collected plants. On the other hand, in this study, it was determined that the essential oil compositions varied with respect to be fresh or dry of the plant parts. There were 9 and 63, 36 and 73 of essential oil components were observed in the fresh and dried parts of the collected and cultivated plant materials, respectively. It was observed that the major essential oil components were germacrene D, n-hexadecanoic acid, trans-caryophyllene, pulegone, 12-crown-4, 2,2-dimethyl-4,4,5,5-tetramethoxybiphenyl, carvacrol and para-menth-3-en-8-ol. The aim of the research to detect the differences between the essential oil compounds and compositions varied according to be the plant fresh or dry and wild or cultivated.

KEYWORDS

Essential oil, Hypericum perforatum, oil yields, components

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Poster Session 9

Submission ID: 1219

THERAPEUTIC USAGE OF BLACK CUMIN (NIGELLA SATIVA) SEED AND OIL

DR. EMRE ÖZTOPRAK¹, DOÇ. DR. BURAK CEM SONER², PROF. DR. AYŞE SAİDE ŞAHİN²

ABSTRACT

Black cumin plant (*Nigella sativa*; kalonji, black caraway, schwarzkümmel) is a member of Ranunculaceae family that grows widely in many countries, especially in Middle East, Eastern Europe and Eastern Asia countries. However the chemical content of plants varies generally according to the harvest season of the plant, species and the cultivated climate; black cumin plants are generally grown in countries like Egypt, Sudan, Ethiopia, India, Turkey and Syria. There are many different species of the plant such as *Nigella sativa* L., *Nigella damascena* and *Nigella arvensis*. In particular, the seeds of *Nigella sativa* L. are widely used as folk medicines for traditional herbal treatment and spices. The parts used as drug are the seeds and oil that obtained from seeds. Black cumin seed is a rich source of carbohydrates, fats, vitamins, minerals, proteins and amino acids. Black cumin seed contains 16-20% protein, 33-34% carbohydrate, 0.4-0.7% essential oil and over 30% fixed oil. Analysis by high pressure liquid chromatography showed that there are 4 main active substances in *Nigella sativa* seed oil. These are thymoquinone, dithymoquinone, thymohydroquinone (nigellone) and thymol. Thymoquinone is 2-isopropyl-5-methyl-benzoquinone. Black cumin seed oil is also very rich in unsaturated fatty acids. While the linoleic acid constitutes the main part of the unsaturated fatty acids, the oleic acid constitutes the lesser part. Other unsaturated fatty acids are arachidonic acid and eicosadienoic acids. It has also saturated fatty acids such as palmitic, stearic and myristic acid. Because of the wide variety of substances in the composition of *Nigella sativa* and the different therapeutic effects of each other, *Nigella sativa* has many different pharmacological effects. Although more detailed informations are needed about its pharmacological effect mechanisms; black cumin seed and oil has antitumoral, analgesic, antiinflammatory, antipyretic, antiallergic, antimicrobial, antiasthmatic, immunomodulator, antioxidant, antidiabetic, gastroprotective, radioprotective, hepatoprotective, nephroprotective, neuroprotective, antihypertensive, antiepileptic, lactagogue and antihyperlipidemic effects. *Nigella sativa* seeds and oil have been used by ancient Egyptian and Greek physicians to improve headache, nasal congestion, toothache, diarrhea and also as an anthelmintic and lactagogue agent. They are used in Middle and Far East countries at traditional treatment in many diseases such as bronchial asthma, headache, dysentery, infection, obesity, back pain, hypertension and gastrointestinal problems. In addition their use in skin diseases such as eczema has been accepted all over the world. In Turkey, there is also a *Nigella sativa* seed oil agent which licensed according to the Ministry of Health Traditional Herbal Medicinal Product Regulation and received 3 indications. These indications are allergic rhinitis treatment, regulation of blood lipid levels and strengthening the immune system. Dosage in these indications are determined as 1800-3600 mg/day for adults and 40-80 mg/kg/day for children. When its side effect profile is considered, no undesirable effects have been reported other than nausea, vomiting and diarrhea with unknown frequency. When all these

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informations are evaluated together, *Nigella sativa* seeds and oil are safe herbal agents which can be used as an adjuvant in the treatment of many diseases.

KEYWORDS

Nigella sativa, therapeutic effects

Poster Session 9

Submission ID: 1220

SOME TEA PLANTS TRADITIONALLY USED IN ELAZIĐ

UĐUR ÇAKILCIOĐLU¹, RIDVAN POLAT², EBRU YÜCE BABACAN¹

ABSTRACT

This study was conducted for the purpose of determining the usage of plants used as tea by the local community in Elazığ and central villages. The study was conducted in April-September, 2015. Villages were visited in the region throughout the study. As a result of investigations being carried out in the region, 19 plants from 8 plant families being traditionally used were determined. The plants were scientifically named by using the Flora of Turkey. In the study, local names, localities of plants, as well as their parts being used as tea and other data were recorded and tabulated.

KEYWORDS

Etnobotany, tea plants, traditional use, Elazığ

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Poster Session 9

Submission ID: 1221

SOME SPICE PLANTS TRADITIONALLY USED IN ELAZIĐ

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ABSTRACT

Abstract This study was conducted for the purpose of determining the usage of plants used as spice by the local community in Elaziđ and central villages. The study was conducted in April-September, 2015. Villages were visited in the region throughout the study. As a result of investigations being carried out in the region, 15 plants from 7 plant families being traditionally used were determined. The plants were scientifically named by using the Flora of Turkey. In the study, local names, localities of plants, as well as their parts being used as spice and other data were recorded and tabulated.

KEYWORDS

Etnobotany, spice plants, traditional use, Elaziđ

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Poster Session 9

Submission ID: 1222

THE HERBAL DERIVED NATURAL ANTIMICROBIALS

AYŞE AKAN¹

ABSTRACT

In this study, the different studies about the components that has obtained from extracts of herbal and spices and essential oils which has antimicrobial activities, the antimicrobial activities in food borne pathogens, the experiments to extend shelf lives of food, has been researched. The food consumers started to show interest to natural compounds, so that the studies about natural compounds to increase shelf life and quality of food has been increased. The herbal and spices has antimicrobial activities with the components as phenolic acids, flavonoids, tannins etc. However, there can be different results when the studies was done on food. The antimicrobial activities of natural compounds could be increased, if several antimicrobial components are used together or by evaluating the factors likewise pH of food, storage conditions, process of production.

KEYWORDS

Herbal, Essential oil, Antimicrobial activity

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Poster Session 9

Submission ID: 1223

THE ROLE OF SPICES IN THE TREATMENT OF HELICOBACTER PYLORI

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ABSTRACT

Helicobacter pylori, a gram negative pathogen bacterium, causes gastritis, reflux, ulceration in the stomach. This bacterium that colonizes in one out of every two individuals is quite resistant to antibiotics. Urease enzyme released by *H. pylori* converts urea into ammonia; thus, this bacterium survives in stomach inner wall thanks to formed ammonia which makes an alkaline environment. Therefore, inhibition effects of the bacterial urease are defined as an anti-bacterial activity. In this study was to be researched inhibition effect on the bacterial urease enzyme of some spices commonly used in human diet. For this purpose, inhibitory effects on the *Helicobacter pylori* urease of ethanolic extracts of spices such as thyme, clove, isot pepper, turmeric, mint, black sesame and cinnamon purchased from herbalist were investigated as a screening study. Enzyme inhibition was calculated with five different sample concentrations. It was found that all samples displayed inhibition effect at varying concentration on this enzyme and values of IC₅₀, defined as sample amount that reduces enzyme activity by 50%, ranged from 0.96 (mg/ml) to 5.05 (mg/ml). As a result, the highest activity from thyme and isot pepper samples were ascertained. Therefore, our studies proceed about antibacterial activity with thyme and isot pepper extracts.

KEYWORDS

Helicobacter pylori, urease, spices, antibacterial

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Poster Session 9

Submission ID: 1225

**THE USE OF PHYTOTHERAPY AND ALTERNATIVE MEDICINE BY
CANCER PATIENTS OUTPATIENT CHEMOTHERAPY UNIT IN
USAK UNIVERSITY MEDICINE SCHOOL EDUCATION AND
RESEARCH HOSPITAL**

AYŞE ÖZDEMİR¹, DUDU BAYRAKTAR DÖNDER²

ABSTRACT

With hundred of thousands of plant species on earth, We are bestowed with an glorious richness of medicinal remedies from Earth- Mother. The Herbal Medicine (Phytotherapy) and Alternative Medicine have been most commonly used to treat diseases thousands of years in our country and in the world. The interaction of herbal product and cancer drugs are not exactly known. The treatment of cancer is an important treatment that needs to be interrupted. Most poeple especially cancer patients use herbal products as a cancer treatment. Complementary and Alternative Medicine in cancer patients in this study was conducted to examine the methods of use 100 cases at Outpatient Chemotherapy Unit in Usak University Medical School Education and Research Hospital(1 January 2017- 25 March 2017). Methodology: The the sample of the research of planned at identifier type consisted of 100 cancer patients treated at Outpatient Chemotherapy Unit in Usak University Medical School Education and Research Hospital (January 2017- March 2017). During the research process was used questionnaire personal information form and alternative treatment. Results: Only 23 of the 100 patients in the sample uses alternative treatment methods. While 20 patients use herbal treatment, 3 patients use acupuncture. 13 of the 23 patients is women, and 10 of their is male.77 patients are not using any alternative treatment methods . Most of the patients who use alternative treatment are women and have lung and breast cancer. Today reactions against the use of synthetic drugs due to their severe side effects raised the interest in herbal products. Although many cancer types can be almost fully cured in early stages with cancer treatment in modern medicine, especially complementary therapy plays an important role in cancer treatment.

KEYWORDS

Cancer, Phytotherapy, Alternative Medicine, Complementary Medicine

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Poster Session 9

Submission ID: 1227

DETERMINATION OF ESSENTIAL OIL COMPOSITION AND INVESTIGATION OF THE PHENOLIC SUBSTANCE AND ANTIOXIDANT EFFECT OF "HELICHRYSUM STOECHAS" FROM HATAY

MAHIR TİMUR¹, İSMAIL AKÇA¹

ABSTRACT

DETERMINATION OF ESSENTIAL OIL COMPOSITION AND INVESTIGATION OF THE PHENOLIC SUBSTANCE AND ANTIOXIDANT EFFECT OF "HELICHRYSUM STOECHAS" FROM HATAY Mahir Timur*, İsmail Akça Mustafa Kemal University, Altınözü Vocational School, Department of Food Process, Hatay, Turkey *E-mail: mahirtimur@gmail.com People traditionally benefit from medical herbs to protect themselves from diseases. Antioxidants are the protective or inhibiting compounds that help to heal in medical plants. Antioxidants can prevent or reduce oxidative damage even at low concentrations(1). It has been pointed out that compounds such as polyphenolic substances, vitamins and enzymes, which are found in the structure of plants consumed as food, are directly related to the antioxidant effects of plants. This antioxidant effect can significantly prevent the damages caused by reactive oxygen species and reactive nitrogen species which cause oxidative stress. (2,3). Helichrysum Stoechas is an expectorant and is used in the treatment of colds. [4] In this study, it was aimed to determine the essential oil composition, phenolic substance and antioxidant activity of Helichrysum Stoechas, locally known as kudama, growing in the region of HATAY Antakya Castle. Helichrysum Stoechas' essential oil was obtained by using Clevenger apparatus and found to be 0.3% on dry matter. The essential oil composition was determined by gas chromatography and the essential oil was found to be D-FENCHONE 0.77%, Caryophyllene 1.10%, 2-Naphthalenemethanol 2,3,4,4a, 5, 4.89%, benzene 1,2,3,4-tetramethoxy--5-(2-propenyl) %34.69, Benzene, 1,2,3-trimethoxy-5-(2-propenyl) % 3.24 Myristicin % 23.35, Lauric acid % 1.17, Apiol %27.38, Myristic acid % 1.38. Methanol extract was obtained for phenolic substance and antioxidant capacity assay. The portion of the plant dissolved in methanol was found to be 15.3% on dry matter. The total phenolic substance concentration was determined according to the Folin-Ciocalteu method and the total amount of phenolic substance in the methanol extract was calculated as 256 mg / g gallic acid equivalent (GAE). The free radical scavenging effect was determined according to the DPPH method and the results were compared with BHA and BHT. Plant extract; 94.28%, 94.49%, 92.16%, 67.80%, 34.11%, BHA; 91.13%, 90.67%, 89.61%, 86.01%, 78.60%, BHT; , 91.95%, 89.23%, 68.64%, 53.39% and 29.23% inhibition values, respectively. The DPPH removal activity of the standards and plant extract was found to decrease as plant extract> BHA> BHT. The effective antioxidant concentration EC50 values required for the 50% inhibition of the DPPH radical in the reaction medium were found to be BHA: 0.022, plant: 0.038 and BHT: 0.057 (µg / mL), respectively. The low EC50 value is indicative of the high radical scavenging activity. Total antioxidant activity was determined by beta-carotene linoleic acid method. Antioxidant activity values

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were calculated as BHT: 73.33%, plant: 68.75% and BHA: 63.15%. Reductive Antioxidant Capacity was made according to CUPRAC Method (Güçlü et al., 2006). from the Trolox calibration curve CUPRAC activity TEACCUPRAC:71,65 µg / mL was found. It is obvious that the obtained result shows that Helichrysum stoechas has an effect close to the synthetic antioxidants BHT (Butylated Hydroxytoluene) and BHA (Butylated Hydroxanisole). Nowadays, as the tendency of natural treatment methods increases, the composition of medicinal and aromatic plants should be determined and their use efficiency will be increased according to active compounds. References: 1- VAYA J and AVİRAM M. 2001, Curr. Med. Chem. – Immun.,Endoc. & Metab. Agents, 1, 99-117. 2-SOONG YY, BARLOW PJ, 2004. Food Chemistry 88, 411–417 3-NAWAZ H, SHİ J, MİTTAL GS, KAKUDA Y, 2006, Separation and Purification Technology 48: 176–181, 4-Grieve A., 1984, Modern Herbal. Penguin ISBN 0-14-046-440-9 Not so modern (1930's) but lots of information, mainly temperate plants. 5-Güçlü, K., Altun, M., Özyürek, M., Karademir, S. E. and Apak, R. 2006. Food Science and Technology, 41: 76-85.

KEYWORDS

medicinal and aromatic plants, essential oil, phenolic compounds, antioxidant effect

Poster Session 9

Submission ID: 1229

NOVEL METHODS FOR QUALITY ANALYSIS OF ESSENTIAL OILS PRODUCED AS FOOD SUPPLEMENT

KADIR GÜRBÜZ GÜNER¹, H. MURAT VELİOĞLU²

ABSTRACT

Recent trends of natural diet and curing have provoked the use of herbal products and food supplements in the society. Therefore, essential oils that are produced and consumed as food supplement are of great interest to the consumers. Turkey has a great biodiversity in the meaning of aromatic plant cultivation and many of essential oil plants grow naturally. The use of essential oils in food, medicine and perfume industries has been increasing in recent years. In this context, the number of exported aromatic plant species has reached to almost 100 in Turkey which yield an income of USD 100 million annually. Nowadays, consumers are increasingly concerned about the quality and safety of food products. Hence, the origin and health effects of food constituents are being discussed in public media. Essential oils are more expensive than the other vegetable oils and that is why the determination of fraudulent malpractices is important in these products. The addition of cheaper oil in expensive one is very well known adulteration for essential oils which affects not only the consumers' health but also causes an unfair profit. There is a need for rapid and economic analysis methods for determination of essential oil quality. Gas chromatography / mass spectroscopy (GC/MS) is still remain as a golden method. However, chromatographic methods are time consuming, costly and they need a specialist for the analysis which make them disadvantageous compared with spectrophotometric methods. Raman, Fourier transform infrared reflectance (FTIR) and near infrared reflectance (NIR) spectroscopies have been gaining great interest during the recent years. As rapid and sensitive techniques, spectroscopic methods can give biochemical finger prints of the material. Additionally, these methods are suitable for applications which require green chemistry limitations. In the present paper, the novel spectroscopic methods in determination of quality of essential oils were summarized and exemplified using literature studies.

KEYWORDS

Essential oil, quality, spectroscopy

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Poster Session 9

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A DIFFERENT PERSPECTIVE ON SAGE (SALVIA SP.): 'USAGE IN LANDSCAPE ARCHITECTURE'

MERT ÇAKIR¹, ŞİRİN DÖNMEZ¹

ABSTRACT

Turkey, with rich flora, reserves lots of medicinal and aromatic plants within its structure. The purpose of the plants with their therapeutic purpose is as old as history of humanity. Despite significant developments in medicine, today, the traditional usages of medicinal herbs are very important and are accepted as a scientific discipline. In the past centuries, medical and aromatic plants have been used in traditional house gardens for both ornamental and utility purposes. Today, medicinal and aromatic plants take place in parks and thematic garden designs and are very interesting. It is known that sage, which is widely used as a medicinal and aromatic plant, is close to 100 species naturally distributed in our country. Especially, because of their nice smells and flowers, they can be suitable for use in landscape areas. However, except for very special gardens, these plants are rarely used. Within the scope of this study, sage species which spread naturally in Turkey will be evaluated in terms of shape, form and flower characteristics and their use in plant design has been determined.

KEYWORDS

Sage, plant design, landscape architecture

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Poster Session 9

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SCREENING OF ANTIOXIDANT, ACETYL- AND BUTYRYL- CHOLINESTERASE INHIBITORY ACTIVITIES OF ENDEMIC BUNIAM CRASSIFOLIUM BATT. GROWING IN ALGERIA

NABILA SOUILAH¹, ZAIN ULLAH², KUBRA ELİK², KAMEL MADJROUBI¹, SALAH AKKAL¹, MEHMET ÖZTÜRK²

ABSTRACT

Screening of Antioxidant, Acetyl- and Butyryl-Cholinesterase Inhibitory Activities of Endemic Bunium crassifolium Batt. Growing in Algeria Nabila SOUILAH¹, Zain ULLAH², Kubra ELİK², Kamel MADJROUBI¹, Salah AKKAL¹ and Mehmet ÖZTÜRK² 1Department of Chemistry, Faculty of Sciences, University of Constantine 01, 25000, Constantine, Algeria 2Department of Chemistry, Faculty of Sciences, Muğla Sıtkı Koçman University, Kötekli-48000, Muğla, Turkey zainullah@posta.mu.edu.tr The Bunium genus contains aromatic and medicinal plants such as Bunium crassifolium Batt. The Bunium genus contains aromatic and medicinal plants such as Bunium crassifolium Batt. This study evaluates the antioxidant and anticholinesterase activities of Bunium crassifolium, which is an extremely rare endemic species of the Bunium genus. The plant sample was collected at full flowering stage from Séraïdi (Annaba), in the north eastern of Algeria in May 2015. The aerial part of the plant was dried under shadow and grinded (65 g), afterwards macerated in methanol (100 %) at constant stirring rate (200 rpm) for 24 hours, then filtered by Whatman N01 filter paper and evaporated the solvents with rotary vacuum evaporator and named as B.C-100. For a 2nd extraction the grinded dried aerial parts of the plant (10 g), was macerated in boiling methanol and distilled water (70:30) followed by the same procedure and named as B.C-70. DPPH, ABTS, β -carotene-linoleic acid, acetyl- and butyryl cholinesterase activities were used to evaluate the antioxidant and enzymes inhibitory potential of the obtained extracts. The B.C-70 extract showed more potential against ABTS, β -carotene and butyryl choline esterase with an IC₅₀; 12.69 \pm 3.78, 68.15 \pm 1.02 and 19.41 \pm 0.41 μ g/mL respectively. Against DPPH and acetyl cholinesterase B.C-100 was more potential with an IC₅₀: 49.83 \pm 2.37 and 20.15 \pm 2.71 μ g/mL, respectively. Since Bunium crassifolium exhibited significant antioxidant and anticholinesterase activities, further studies by activity guided fractionation are necessary. Bunium crassifolium containing antioxidant and anticholinesterase compounds can be used in pharmaceutical and food industries. Acknowledgements: Authors are thankful to TUBITAK for financial supporting of Graduate Scholarship Programme for International Students TUBITAK-BIDEB-2215. Authors also thankful to the Chemistry departments of Constantine University and Muğla Sıtkı Kocman University for providing lab facilities. Keywords: Bunium crassifolium, Antioxidant activity, Anticholinesterase activity References Öztürk M, Tel G, Aydoğmuş-Öztürk F, Duru ME (2014). The cooking effect on two edible mushrooms in Anatolia: Fatty acid composition, total bioactive compounds, antioxidant and anticholinesterase activities. Rec. Nat. Prod 8 (2), 189-194. Quezel P, et Santa S (1963). Nouvelle Flore de l'Algérie et des Régions Désertiques Méridionales. Edition du Centre National de la Recherche Scientifique Paris 7, Tome II.

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KEYWORDS

Bunium crassifolium, Antioxidant activity, Anticholinesterase activity

Poster Session 9

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EFFECT OF THE ANTIOXIDANT PROPERTY OF EXTRACT OBTAINED FROM PAPAVER SOMNIFERUM LEAF

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ABSTRACT

In this study, the antioxidant efficiency of poppy plant (*Papaver somniferum*) were analysed with different methods. For this purpose, the extractions of the papaver plant that reached to 10-15 cm of length and was ground by drying were carried out by using ethanol, methanol and ethyl acetate solvents. Afterwards, With Folin-Ciocalteu reagent the total phenolic compound, and with 1,1-Diphenyl -2- picrylhydrazyl (DPPH) free radical eliminating activity, superoxide radical eliminating activity and Beta-carotene bleaching method the antioxidant properties were identified. The results obtained were evaluated by comparing with ascorbic acid, butyl hydroxytoluene (BHT) and butylated hydroxyanisole (BHA) standard substances. It was specified that as gallic acid equivalent, the total phenolic substance amount changes between the ranges of 63,4 – 82,5 and is found to be maximum in the ethanol extract. It was seen that all the extracts show super oxide and DPPH radical elimination efficiency and at the same time the maximum efficiency is in the ethanol extract. Similarly, in the determination of antioxidant activity that was realized by using β -Carotene bleaching method, it was determined that all the extracts show antioxidant efficiency. As a result it was understood that although the *Papaver somniferum* extracts are weak in terms of phenolic substance content, they show antioxidant efficiency and ethanol is the most suitable solvent for antioxidant efficiency

KEYWORDS

Papaver somniferum, poppy, antioxidant activity, phenolic substance

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Poster Session 9

Submission ID: 1238

DETERMINATION OF THE ANTIOXIDANT EFFICIENCY OF MYRTLE (MYRTUS COMMUNIS L.) ESSENTIAL OIL

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ABSTRACT

In this study, it was aimed to identify the phenolic substance content and antioxidant property of Myrtle (*Myrtus communis* L.) essential oil. With Folin-Ciocalteu reagent the total phenolic substance content and with 1,1- Diphenyl -2- picrylhydrazyl (DPPH) free radical elimination, superoxide radical elimination activities and beta-carotene bleaching method, the antioxidant properties were identified. The results obtained were evaluated by comparing with ascorbic acid, butyl hydroxytoluene (BHT) and butylated hydroxyanisole (BHA) standard substances. The density of myrtle essential oil obtained by hydro distillation method was specified as 0.897 g/ml. It was found that as gallic acid equivalent, the total phenolic substance amounts in the oil is 128,12 µg/ml; and by DPPH free radical and superoxide radical elimination activities the antioxidant efficiency was respectively found as 33,8% ; 43,4% and 38,9%. In conclusion, while there is phenolic substance at a moderate level in the myrtle essential oil (*Myrtus communis* L.), it was also identified that it has strong antioxidant efficiency.

KEYWORDS

Mersin, (Myrtus communis L.), antioksidan etkinlik, fenolik madde

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²MERSİN, (MYRTUS COMMUNIS L.), ANTIÖKSİDAN ETKİNLİK, FENOLİK MADDE

Poster Session 9

Submission ID: 1240

MUTAGENIC AND ANTIMUTAGENIC POTENTIAL OF SOME COMMERCIAL PHENOLIC COMPOUNDS (CATECHIN, EPICATECHIN, CAFFEIC ACID)

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ABSTRACT

There are approximately 300,000 documented species of higher plants on the planet, which synthesize an enormous number of chemicals of diverse structure and class (more than 200,000 isolated and identified individual chemical entities). These compounds can be further divided into primary and secondary metabolites. Secondary metabolites are structurally and chemically much more diverse than the primary metabolites and refer to compounds present in specialized cells that are not directly essential for basic photosynthetic or respiratory metabolism but are thought to be required for plants' survival in the environment. Secondary metabolites apparently act as defense (against herbivores, microbes, viruses, or competing plants) and signal compounds (to attract pollinating or seed dispersing animals), as well as protecting the plant from ultraviolet radiation and oxidants. In this study, catechin, epicatechin and caffeic acid obtained commercially and found in plants were evaluated for their potential of mutagenic and antimutagenic activities by Salmonella/microsome test system both in the presence and absence of metabolic activation enzymes (S9 mix). Chemicals were tested for their toxicity before and non-toxic doses (5000, 1000 and 500 µg/plate) of them were used in the test. Salmonella typhimurium TA98 and TA100 strains did not increase in the number of revertant colonies compared to the negative control when the bacteria were treated with three phenolic chemicals. In other words, catechin, epicatechin and caffeic acid were not found to be mutagenic for TA98 and TA100 strains in Ames test. Because of the compounds were not mutagenic, antimutagenicity of phenolics were determined. It was determined that catechin and epicatechin revealed strong antimutagenicity against 4-nitrophenylendiamine in the absence of S9 mix for TA98 at doses of 5000, 1000 and 500µg/plate (for catechin 69%, 73%, 49% inhibition; for epicatechin 68%, 56%, 53% inhibition, respectively). Caffeic acid manifested moderate antimutagenicity with rates of 36% and 33% inhibition at doses of 5000 and 1000 µg/plate. By the addition of S9 mix antimutagenic actions of the compounds decreased and showed weak antimutagenicity against 2-aminoflourene except for 5000µg/plate dose of catechin and epicatechin for TA98. Only epicatechin exhibited strong antimutagenicity against sodium azide with a rate of 46% at a concentration of 5000µg/plate for TA100 without S9 mix. The strongest antimutagenicity (88%) was revealed by catechin in the presence of metabolic activation enzymes for TA100 at a dose of 5000µg/plate. Also epicatechin and caffeic acid manifested strong antimutagenicity against 2-amino anthracene at the same dose with rates of 67% and 46% inhibition, respectively. It was concluded that catechin, epicatechin and caffeic acid, plant secondary metabolites, have moderate to strong antimutagenic action against well-known mutagens. Plant including this phenolics may be the natural source of antimutagens and used in pharmaceutical industry.

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KEYWORDS

Phenolics, antimutagenicity, epicatechin, catechin, caffeic acid

Poster Session 9

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EFFECTS OF PUNICA GRANATUM PEEL POWDER ON HUMORAL IMMUNITY OF LAYER HENS*

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ABSTRACT

Effects of Punica Granatum (Pomegranate) peel added to layers' rations with 1.5 % ratio on humoral immunity were investigated. A number of 24 Hy-line layer were used. Trial was carried out in Hümeyra Özgen Research and Application Farm, Veterinary Faculty of Selçuk. Some amount of fresh Punica Granatum was supplied by local market, peeled, dried in oven and then powdered by means of grinder. Except one of the control, the others were fed on ratios supplemented with 1.5% powder of Punica Granatum peel. The vaccine groups were administered by La Sota strain through drinking water at the beginning of the study against New Castle Diseases (ND) virus. Humoral immune response to ND virus were measured at d 30 and d 60 from serum samples by Hemagglutination Inhibition (HI) assay. In the trial, supplementation of ration with 1.5% powder of Punica Granatum peel suppressed the specific humoral response against ND virus ($P<0.01$). To detect effects of this supplement in lower quantities are subject of future work . *The results discussed by this presentation is a part of the research (15401148) supported by BAP (Selçuk Üniversitesi).

KEYWORDS

Laying hens, Punica granatum, humoral immunity

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Poster Session 9

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THE EFFECT OF CAPSAICIN ON HEALTH

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ABSTRACT

Red pepper bitter (*Capsicum annuum*) is cultivated for 7000 years in various parts of the world such as South Asian countries and South-East Anatolia region of South America, and belongs to the Solanaceae family and it is used as seasoning and sauce in foods due to its sharp and bitter flavor. Red Pepper has been widely used in the treatment of various diseases for a long time and used since ancient times to give flavor to food. Bitterness of capsicum fruits are due to their capsaicin content. Red pepper contains essential oil, fixed oil and pigments while fruits vitamin C content is rich in green. Pepper is also an important vegetable in terms of human health. It has been reported that capsaicin alkaloid is an important antioxidant against cancer diseases which gives bitter and spicy taste in hot pepper. It is stated that the hot pepper is good for digestion, appetizing, muscle pain and rheumatism, nervous system, red eye disease and seasickness. These effects are generally thought to originate from bitterness components. Briefly, it is investigated that the capsaicin has anticarcinogenic, antilipemic, antioxidant, energy balance, anti-dyspeptic, anti-bacterial, immunosuppressive effect. The purpose of this work is to compile studies on these properties of the capsaicin.

KEYWORDS

Anti-carcinogenic, antioxidant, capsaicin, Capsicum annuum, pepper

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Poster Session 9

Submission ID: 1243

APHID (HEMIPTERA: APHIDIDAE) SPECIES DETERMINED ON SOME MEDICINAL AND AROMATIC PLANTS WITH NEW HOST PLANTS FOR TURKEY

N. ZÜLAL ELEKCİOĞLU¹, IŞIL ÖZDEMİR²

ABSTRACT

The aphids are fed by sucking the sap of host plants. Due to loss of juice, they cause wilting and drying out of young shoots and leaves. By preventing fruit growth, important crop losses occurs. They cause the spread of various plant diseases by carrying and infecting viruses. This study was carried out in 2015-2016 to determine the aphid species found on some medicinal and aromatic plants in Adana (Sarıçam, Karaisalı provinces). In the study, 26 plant species were examined and a total of 24 aphid species belonging to 4 subfamily and 18 genus were identified. *Cynara scolymus* L., *Mentha piperita* L., *Achillea asplenifolia* L., *Linum usitatissimum* L., *Thymus serpyllum* L., *Origanum majorana* L., *Perovskia atriplicifolia* Benth., *Dracocephalum moldavica* L., *Melissa officinalis* L., *Salvia officinalis* L., *Salvia fruticosa* Mill., *Origanum onites* L., *Origanum vulgare* L., *Matricaria chamomilla* L., *Coriandrum sativum* L., *Calendula officinalis* L., *Digitalis purpurea* L., *Origanum syriacum* var. *bevanii*, *Echinacea purpurea* (L.), *Rosa damascena* Miller, *Kitaibelia balansae* Boiss., *Pelargonium graveolens* L., *Artemisia annua* L. and *Trigonella foenum-graecum* L. are determined as the new hosts in Turkey for the aphid species which they have been detected on.

KEYWORDS

Medicinal plant, aromatic plant, aphid, new host

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Poster Session 9

Submission ID: 1244

CHERRY LAUREL

SÜMEYYE ŞİMŞEK¹, RECEP PALAMUTOĞLU¹, CEMAL KASNAK¹

ABSTRACT

Free radicals cause serious problems such as cancer, cardiovascular diseases, Alzheimer's disease, aging. Antioxidants react with free radicals, making them ineffective and preventing them from harming the cells. Thus, deterioration of cell structure and cancer formation risk reduces. As they reduce cell destruction, they delay aging and provide a healthy lifestyle. While antioxidants neutralize free radicals, there is a constant need for antioxidants in the body because they will be oxidized. Some of the need can be met by dietary nutrients. Antioxidants can be obtained either synthetically from outside or naturally from fruits and vegetables. Especially the amount of antioxidants in fruits and vegetables that are consumed raw is quite high. With the increasing importance of healthy nutrition, there is an important trend in our country for herbal medicines and organic fruit and vegetable market. The different species of cherry laurel (*Laurocerasus officinalis*) that grows widely in our country in the east of the Black Sea, Toros, North and East Marmara are grown in different parts of the world. Cherry laurel leaf, fruit and kernel are used in different forms. In particular, the fruit is consumed raw, but also the dried, salted forms, marmelade, jam and pickles are often consumed by local people. Fruit is used among people because of eczema, stomach ulcer, treatment of digestive system problems. In this study, it is aimed to compile the health effects of the cherry laurel fruit.

KEYWORDS

Anticarcinogenic, antioxidant, cherry laurel, health

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Poster Session 9

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CAPSAICIN AND ITS EFFECTS ON APPETITE

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ABSTRACT

Capsaicin, which gives chili peppers their hot and pungent taste, is an alkaloid found in the genus *Capsicum*. Capsaicin is a naturally occurring phytochemical, which is an odorless, white crystal with harsh flaring pungency. Even a solution with 1 in 17,000,000 concentration causes pain in humans. Its effects on the human body have been studied for over a century. This compilation aims to study the effects of capsaicin on appetite. It is widely accepted that the main mechanism of action for capsaicin is through the activation of the TRPV1 receptor (Transient receptor potential vanilloid receptor-1) on sensory afferents. Transient receptor potential vanilloid receptor-1 stimulation in intestinal enteroendocrine cells with capsaicin causes the calcium dependent secretion of glucagon like peptide 1 (GLP-1), which facilitates sensation of fullness. Although the exact mechanism is still not clear, it is reported that capsaicin affects appetite by increasing the concentration of anorexigenic hormone GLP-1 and decreasing the concentration of orexigenic hormone ghrelin. In a study by Smeet et al. on 30 individuals in the Netherlands, the subjects were randomly divided into two groups. One group (CAPS) received capsaicin (1.03 g red pepper; 80 000 SHU) and the other was the control group. While lunch content for both groups was the same (60% of energy from carbohydrates, 10% from proteins and 30% from fat), the CAPS group also received a capsaicin tablet with their lunch. Fifteen minutes after lunch, GLP-1 was significantly higher ($p < 0.05$) in the CAPS group, while ghrelin showed a tendency to decrease ($p = 0.07$). In another study by Smeet et al. on 24 individuals, daily consumption of 2 red peppers containing 1030 mg of capsaicin increased sensation of fullness. In a study by Janssens et al. on 15 individuals, subjects consumed 1,03 g of red pepper (2,56 mg capsaicin, 39.050 SHU) at each meal. These subjects consumed 7,68 mg/day of capsaicin in total over three meals. Capsaicin consumption was shown to increase sensation of fullness and to inhibit the urge to overeat. In summary; although the daily dosage and method of consumption of red pepper and capsaicin differ in studies, it is evident that red pepper and capsaicin consumption suppresses appetite and increases sensation of fullness. However, due to the variations mentioned above, daily dosage of red pepper and capsaicin required to affect appetite is not exactly clear. Further experimental study is required to precisely declare the effects and dosage of red pepper and capsaicin.

KEYWORDS

Capsaicin, TRPV1, appetite, fullness, GLP-1

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Poster Session 9

Submission ID: 1247

NATURAL SWEETENER STEVIA

BEYZA MORAL¹, RECEP PALAMUTOĐLU¹, CEMAL KASNAK¹

ABSTRACT

One of the most fundamental objectives of the food industry is to guide the work aimed to the changing consumer needs. In recent years consumers have turned to sweeteners because of the expression that the negative effects of sugar on health in our country and in the world. Today, there are many sweeteners that are used instead of sugar. Stevia rebaudiana is a natural sweetener, belongs to the family of the Asteraceae (Compositae) and the motherland of the plant is Paraguay, and the Amami mountains on the border of Brazil. The plant used in the treatment of diabetes for a long time in South America. It has been reported that the plant contains diterpens which are the secondary metabolites that give the sweet taste. The main sweetening compounds are stevioside and Rebaudioside A. Other sweet compounds are present in Stevia at low concentrations. It has been found that stevia is more sweet 250-300 times than sucrose, and dont gives metallic taste in the mouth. Different products produced for consumers such as powder, liquid and dried forms of Stevia rebaudiana. Studies showed that extracts from dry stevia leaves contain flavonoids, alkaloids, water soluble chlorophyll and xanthophylls, hydroxycinnamic acid (caffeic, chlorogenic, etc.), neutral water soluble oligosaccharides, free sugars, amino acids, lipids, essential oils and trace elements (aluminum, iron, zinc, etc.). It is believed that Stevia has positive effects on diabetes, high blood pressure, constipation, depression and nervous disorders, and the stomach and intestinal flora preserve the acid alkali balance. It does not contain calories so its use has been the mainstay of dietary treatment in recent times. It has been reported that Stevia leaves used in the treatment of cardiovascular diseases, as well as plaque relief, anti-caries, pain relief. It has been stated that it is used as a garnet for the antibacterial effect by the people, participates in the combination of toothpastes, is used in eczema and acne treatment, is a calcium antagonist and has a positive effect on the nervous system. The aim of this study is to compile studies on the health effects of Stevia plant.

KEYWORDS

Stevia rebaudiana, sweetener, natural, diabetes

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Poster Session 9

Submission ID: 1248

HERBAL THERAPIES IN HEMODIALYSIS PATIENS

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ABSTRACT

End stage renal disease is characterized by gradual deterioration of kidney function and is often associated with a wide range of complications, such as hypertension, anemia, malnutrition, and decreased quality of life. Hemodialysis is the primary treatment for patients with end stage renal disease, designed to replace kidney function, and it is the most extensively used technique worldwide. The increasing incidence of chronic kidney disease demands more effective treatment approaches. Herbal therapies, are extremely popular worldwide and have been important among hemodialysis patients from medical, sociological and economic perspectives. Herbal therapies may provide new therapeutic opportunities for hemodialysis patients with the target of enhancing quality of life and improving symptoms. There is increasing evidence that shows the potential benefits of these products for patients with chronic kidney disease. Some studies have shown the beneficial potential of these products in hemodialysis patients suffering complications such as muscle cramps, pruritus, and inflammation. It is considered that herbal therapies are an option to decrease health problems of hemodialysis patients, such as gastrointestinal, psychiatric and neurologic symptoms. Turmeric, garlic, linden, asparagus, parsley and stinging nettle are mainly used herbal products because of antiinflammatory, antioxidant and diuretic effects. Astragalus is another plant that is used in many countries and has been used for centuries in traditional Chinese medicine in combination with other herbs. Astragalus has been used as a dietary supplement for many conditions, including for diarrhea, fatigue, anorexia, upper respiratory infections, heart disease, hepatitis, fibromyalgia, and cancer. There are no high quality studies in people of astragalus for any health conditions. It suggested that astragalus may help infections for patients with health problems related to kidney damage are susceptible to infections. Pomegranate and pomegranate juice are another products used in this patient group because it is thought to improve inflammation. The use of herbal medicine in hemodialysis patients seems to have more risk susceptibility in comparison with that in the general population. It is mainly due to their loss of kidney function as the most important toxin excretion system, leading to accumulation of toxic material of herbal remedies. Volume overload and hyperkalemia are the other important considerations of herbal therapies in these patients. Oral herbal medication has certain limitations, such as the occurrence of side effects and potential herb-drug interactions. Multiple treatment approach incorporating herbal medicine may offer more benefit to patients. However studies on herbal therapy for starting multiple treatment are still inadequate.

KEYWORDS

Hemodialysis, chronic kidney disease, herbal therapy

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Poster Session 9

Submission ID: 1249

ESSENTIAL OIL AND FATTY ACID COMPOSITION OF *CENTAUREA SOLSTITIALIS* SSP. *SOLSTITIALIS*

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ABSTRACT

Centaurea is a widespread genus from Asteraceae family in Turkey(1). There are plenty of researches about fatty acid and essential oil profiles of Centaurea species(2,3). Essential oils were obtained using a Clevenger apparatus by hydrodistillation from Herba part of the plant. The essential oil composition of the plant was identified by GC-MS using FID detector. 31 compounds representing 91.5% were identified. Hexadecanoic acid (50.2%) and tetradecanoic acid(10.1%) were found to be the major compounds. For fatty acids, fatty acid methyl esters (FAMES) were prepared. The fatty acid compositions were analyzed by GC. Saturated fatty acids (SFAs) were totally 25.05%, monounsaturated fatty acids (MUFAs) were 19.60% and polyunsaturated fatty acids were 19.86%. The major compounds were found as oleic acid (18.54%), linoleic acid (10.07%), palmitic acid (8.28%), stearic acid (6.82%) and γ - linoleic acid (6.75%). 1. Davis PH. Flora of Turkey. Edinburgh; 1975. p. 484–585. 2. Senatore F, Arnold NA, Bruno M. Volatile components of Centaurea eryngiodes Lam. and Centaurea iberica Trev.var. hermonis Bois. Lam., two Asteraceae growing wild in Lebanon. Nat Prod Res. 2005;19(8):749–54. 3. Erdogan T, Gonenc T, Cakilcioglu U, Kivcak B. Fatty Acid Composition of the Aerial Parts of Some Centaurea species in Elazig, Turkey. Trop J Pharm Res. 2014 May 28;13(4):613.

KEYWORDS

Centaurea; essential oil; fatty acid

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Poster Session 9

Submission ID: 1250

COMPOSITION OF ESSENTIAL OIL AND FATTY ACID OF CENTAUREA PICHLERI SSP. PICHLERI

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ABSTRACT

In Asteraceae family *Centaurea* genus is represented with 192 taxa in Turkey, 114 of which are endemic. Many species of the genus *Centaurea* have traditionally been used for their antirheumatic, diuretic, choleric, stomachic, astringent, cytotoxic, antibacterial, antipyretic and tonic properties. The essential oil compositions of some *Centaurea* species from Turkey have been investigated. Generally, germacrene D, hexadecanoic acid, caryophyllene and caryophyllene oxide were reported to be the major volatile components in the earlier studies. In *Centaurea* genus, *Centaurea pichleri* ssp. *pichleri* is known as “gelin düğmesi, peygamber çiçeği” in Turkey. In this study, the essential oil of *Centaurea pichleri* ssp. *pichleri* was obtained by hydrodistillation using a Clevenger-type apparatus. The oil was analyzed by GC and GC/MS system. The components were separated as for adherencing to column and evaluated as for relative rate. Mass spectrums of each component were taken. GC and GC/MS analyses of the essential oil from *Centaurea pichleri* ssp. *pichleri* were determined the identification of 48 components representing 86.9 % of the oil. With this analysis, the major component was found as hexadecanoic acid (31.4 %). Subsequent to this component, other major components were caryophyllene oxide (6.4 %), spathulenol (6.2 %) and dodecanoic acid (4.5 %). In addition to this, fatty acid methyl esters (FAMES) from *Centaurea pichleri* ssp. *pichleri* were prepared for analysis of fatty acids. By this test the amount of saturated fatty acid (SFA) was found as 47.79 % with major fatty acid was stearic acid (18.64 %). The amount of monounsaturated fatty acid (MUFA) was found as 16.88 % with major fatty acid was oleic acid (14.20 %). The amount of polyunsaturated fatty acid (PUFA) was found as 21.29 % with major fatty acid was linoleic acid (15.20 %). The results from this work were compared with the previous works in terms of essential oils and fatty acids. References 1. P.H. Davis, R.R. Mill and K. Tan (1988). In: Flora of Turkey and the East Aegean Islands, ed: P.H.Davis, Edinburgh University Press, Edinburgh, Vol.10, pp.489-501 2. A. Güner, N. Özhatay, T. Ekim and K.H.C. Başer (2000). Flora of Turkey and the East Aegean Islands. Edinburgh University Press, Edinburgh, Vol.11, pp.163. 3. G. Wagenitz (1975). *Centaurea* L. In: Flora of Turkey and the East Aegean Islands, ed: P.H. Davis, Edinburgh University Press, Edinburgh, Vol.5, pp.536. 4. T. Baytop (1999). Türkiye’ de Bitkilerle Tedavi (Geçmişte ve Bugün), Nobel Tıp Kitabevleri, İstanbul, pp. 316. 5. E. Yeşilada, E. Sezik, G. Honda, Y. Takaishi, Y. Takeda and T. Tanaka (1999). Traditional medicine in Turkey. IX: Folk medicine in Northwest Anatolia. J. Ethnopharmacol. 64, 195-210. 6. G. Zengin, A. Aktumsek, G.O. Guler, Y.S. Cakmak and Y. Kan (2012). Composition of essential oil and antioxidant capacity of *Centaurea drabifolia* subsp. *detonsa* Wagenitz, endemic to Turkey. Nat. Prod. Res. 26 (1), 1-10. 7. S.B. Erel, B. Demirci, S. Demir, C. Karaalp, K.H.C. Baser (2013). Composition of the essential oils of *Centaurea aphrodisea*, *C. polyclada*, *C. athoa*, *C. hyalolepis*, *C. iberica*. J. Essent. Oil Res. 25 (2), 79-84. 10. A. Altıntaş, Y.B.

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KEYWORDS

Centaurea pichleri ssp. *pichleri*; essential oil; GC; GC/MS; fatty acid.

Poster Session 10

Submission ID: 686

P-CYMENE PRODUCTION FROM ORANGE PEEL ESSENTIAL OIL ON DIFFERENT CATALYSTS IN THE SUPERCRITICAL ETHANOL

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ABSTRACT

Orange is the most produced type of citrus fruits. Global orange production exceeded 64.9 million tons in 2010/2011 season. The large part of the product is used as fruit or juice. On the other hand, peel essential oil which is a by-product of the juice production is used in various fields like food, cleaning, cosmetic and pharmacy directly or indirectly. Essential oil content is 1.45 ± 0.16 ml per kg of raw orange peel. 90-95% of the oil consists of limonene that can be transformed into different compounds. In our study, it was worked that processing of orange peel oil which had been produced by cold pressure technique. Catalytic reactions of limonene carried out in a packed bed reactor using Pt/Al₂O₃, Ni/Al₂O₃ and Pd/Al₂O₃ catalysts in over supercritical conditions of ethanol that its critical point is $\sim 241^\circ\text{C}$ and ~ 62 bar. The effects of temperature, pressure and retention time on yield were investigated for each catalyst used. Isobaric pressure of experiments for temperature and retention time scanning was selected as 65 bar. All in all, Ni/Al₂O₃ was ineffective but Pd/Al₂O₃ was the most effective catalyst for conversion of limonene. In the Pt/Al₂O₃ used experiments, it was seen that 10 s retention time was not enough for difference of composition in the oil. In addition to that limonene transformation occurred over the 280°C , limonene ratio in the product decreased to 50% and 20% as the temperature was 340°C in the retention times of 30 s and 50 s, respectively. p-Cymene that was 0.02% in the raw material, came to nearly 40% at 340°C in the 50 s retention time. Thus, p-cymene was the main component at the last point. Owing to Pd/Al₂O₃, it was achieved that conversion of limonene was up to 100% in very short times. p-Cymene ratios were above the 80% at 340°C in the all retention times. It was detected that there was a special point for composition of the product in the midst of 280°C and 300°C . Consequently, thanks to this catalyst, p-cymene was gained as the most quickly and the most selectively in nearly all conditions studied. Points to consider about choosing the temperature and the retention time for the process are very important with regards to being suitable for purposes of using. Physical and chemical structures of the oil spoiled at the high temperatures. On the other hand, limonene conversion was not adequate at the short retention times. While it was studied at 80 bar in the conditions of 300°C and 50 s, it was found that conversion of limonene has a peak value with Pt/Al₂O₃ and Pd/Al₂O₃ catalysts. In the end of reactions on Pt/Al₂O₃ at that pressure, limonene ratio was 33% and p-cymene ratio was half of it. However Pd/Al₂O₃ was more effective and selective than Pt/Al₂O₃. Thus, limonene hardly ever was found in the product at the same conditions when p-cymene ratio was 80%.

KEYWORDS

Orange peel oil, Supercritical ethanol, Limonene, Pt/Al₂O₃, Ni/Al₂O₃, Pd/Al₂O₃

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Poster Session 10

Submission ID: 755

THE USE OF THYME AND PEPPERMINT (MENTHA PIPERITA) OF THE LAMIACEA FAMILY, WHICH ARE OFTEN USED IN FOLK MEDICINE, AS DYE SUBSTANCES IN WOOLLEN TEXTILE PRODUCTS

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ABSTRACT

All animals, plants and people live within a certain balance in nature. According to archaeological findings from ancient times, people have always used plants, not only as food but also in the treatment of health problems and for the dyeing of textiles. Due to the current intense use of synthetic dyes, the use of natural dyes has become secondary. However, the importance of natural dyes has increased with the emergence of the negative effects of synthetic dyes on human health. In this study, an examination was made of the dye properties and colour and friction fastness values of mint (*Mentha piperita*) and thyme (*Thymus vulgaris*) plants. According to the data obtained, the colours obtained as a result of the use of acetic acid, copper II sulphate, zinc chloride, iron II sulphate, potassium aluminium sulphate, potassium bi chromate, citric acid and tartaric acid mordants for thyme and mint plants were determined to be olive green, black olive, cumin, coffee bean, kiwi peel, white coffee, dark chocolate and cooked apple. The highest colour fastness values for mint were determined as copper II sulphate (7), iron II sulphate (7), and potassium bi chromate (7) mordants. The highest friction fastness value was obtained from iron II sulphate (5) mordants. The highest colour fastness value for thyme was obtained from iron II sulphate (7) mordants and the highest friction fastness value from iron II sulphate (5) mordants.

KEYWORDS

Thyme, Peppermint, Light fastness value, Friction fastness value, Mordan

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Poster Session 10

Submission ID: 756

THE COLOURS AND FASTNESS VALUES OBTAINED FROM BASIL (OCIMUM BASILICUM) AND LEMON BALM (MELISSA OFFICINALIS) PLANTS OF THE LAMICIAEAE FAMILY

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ABSTRACT

Until the invention of synthetic dye substances, natural dyes, most of which have medicinal and aromatic properties, were used for the purpose of dyeing in industries such as textiles, food, medicine and cosmetics. With the introduction of synthetic dyes, their use increased and the demand for natural dyes decreased. However, as a consequence of studies made, the carcinogenic properties of synthetic dyes were revealed and that they could create serious problems for human health. Therefore, plant dyes that do not have negative effects on humans and other living organisms have come to the fore again. Most plants which are known to have medicinal and aromatic properties also have a dye property. In this study, an examination was made of the dye properties and colour and friction fastness values of basil (*Ocimum basilicum*) and lemon balm (*Melissa officinalis*) plants. According to the data obtained, dyeing made with basil (*Ocimum basilicum*) and lemon balm (*Melissa officinalis*) with acetic acid, copper II sulphate, zinc chloride, iron II sulphate, potassium aluminium sulphate, potassium bi chromate, citric acid and tartaric acid mordants gave colours of boiled chickpeas, allspice, coffee bean, olive green, light green, arabic green, and potato peel. The highest colour fastness values for basil were seen to be obtained with copper II sulphate, iron II sulphate, potassium bi chromate and citric acid mordants. The highest friction fastness values were obtained with copper II sulphate, potassium aluminium sulphate and citric acid mordants. For the lemon balm, the highest colour fastness values were obtained with all the mordants and the highest friction fastness values with acetic acid and citric acid mordants.

KEYWORDS

Basil ,Lemon Balm, Light fastness value, Friction fastness value

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Poster Session 10

Submission ID: 765

PRODUCTION TECHNIQUES OF MADIMAK TEA (POLYGONUM COGNATUM MEISSN)

EMRE HASTAOĞLU¹, MERYEM GÖKSEL SARAÇ¹, BURAK DİNCEL¹

ABSTRACT

The production of medicinal and aromatic plants in the world and our country and the consumption of the products obtained from these plants are increasing day by day. Medicinal and aromatic plants are widely used in food industry, too. The main reason for these plants to be consumed directly as food products is that these plants have antioxidant, antimicrobial properties. One of these product groups is herbal teas used in immunotherapy or treatment of diseases due to factors that have been in existence since prehistoric times. It is known that plants selected as medicinal herb tea generally have high anticancer and antiaging properties in addition to their antioxidant activities. Madimak (*Polygonum cognatum* Meissn) belongs to Polygonaceae family and is widely grown in the inner Anatolia region. In middle Anatolia, it is collected from the nature and consumed as the basic nutrient. Madimak plant is rich in antioxidants, flavonoids, phenolic compounds and carotenoids. The polar and apolar antioxidant compounds found in ether, ethanol and water extracts have shown that madimak is a potential antioxidant source. Among these samples, water extracts were found to have the highest antioxidant activity. At the same time, it has been found that it is also effective against to Gram positive bacteria. Especially, ether and ethanol extracts were found to be effective on *Staphylococcus aureus* and *Bacillus subtilis*. In studies conducted on mice with colitis patients, the madimak plant extract has the effects of reducing regulatory and oxidative stress in the intestinal colon. Madimak tea can be used as an alternative to herbal teas. In this context; it is important to cultivate the madimak plant and to produce madimak tea to protect both the cultural richness and to create the regional market.

KEYWORDS

madimak (Polygonum cognatum Meissn), antioxidant, antimicrobial, drying, herbal tea

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MACRO, TRACE AND TOXIC ELEMENTS OF 4 DIFFERENT EDIBLE WILD PLANTS FROM KARADENİZ REGION

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ABSTRACT

The study was conducted to assess the content (mg kg⁻¹ fresh wt.) of macro, trace and toxic elements in the 4 different edible wild plants. The percentage of dry matter and ash ranged from 6.77 to 20.56 and 0.79 to 2.26, respectively. The contents of Ca (1074), Fe (160.5), Mn (18.21), Ni (6.11), B (2.61), Cr (0.93), Co (0.50), Mo (1.80), Be (0.009) and Se (0.076) of *U. diocia* were richer than in other plants. Other hand, K (7742), Mg (954), Al (10.79), V (9.77) and Ag (0.109) in *T. orientalis*, Zn (12.47), Cu (9.98) and Ba (130.3) in *O. umbellatum* were taken the highest value. Also As, Hg, Tl, Cd and Pb were determined mg kg⁻¹ level in fresh plants. Conversely, antimony (Sb) in wild plants could not be detected by ICP-MS. The results of statistic analysis of forty plants showed that moisture, total dry matter, ash, K, Ca, Mg, Fe, Zn, Cu, Mn, Ba, Ni, Al, V, B, Cr, Co, Mo, Be, Se, Ag, As, Tl, Cd and Pb contents were varied significantly compared to plant species except for Na and Hg (P<0.05). Consequently, wild plants may be used as popular vegetables in many people diet as a source of minerals (Fe, Cu, Mn, Cr, Mo, K, Zn and Mg). Excessive plant consumption may be adversely affected human health with Cd, As, Hg, Tl and Pb.

KEYWORDS

Edible wild plants, Macro-Microelements, Toxic elements, ICP, Traditional foods

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Poster Session 10

Submission ID: 1252

ANTIOXIDANT ACTIVITY OF GILABURU

AYŞE FİDAN¹, RECEP PALAMUTOĐLU¹, CEMAL KASNAK¹

ABSTRACT

Plants are used for therapeutic purposes since very ancient times. In our country, some plants are referred as medicinal herbs among the people, also used in the treatment of many diseases. *Viburnum opulus* (gilaburu) belongs to *Caprifoliaceae* family. The stem, bark and fruits of *Viburnum opulus* has a wide usage in pharmacology. Gilaburu are naturally grown in the provinces of Kayseri, Bursa, Tokat, Sivas, in our country. Many compounds have been identified in the bark, shell and fruit of the gilaburu. Gilaburu has anticarcinogenic, antimicrobial and antioxidant activities because of the organic acids content. Antioxidants bind to free radicals in the body and stop many adverse health effects. Traditionally this fruit juice is consumed especially in the province of Kayseri. There are beliefs in this region that gilaburu is good for stomach discomfort and has the capacity to dissolve kidney stones. This fruit is also called "kidney doctor" in this region. The fruit is collected by hand, from October according to its maturity status. The aim of the study is to compile information about antioxidant capacity of gilaburu, its health effects and usage areas among the public.

KEYWORDS

Gilaburu, Antioxidant, Health

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plants have important effects in terms of water and soil retention of plants. In a study conducted on this purpose, various elements were analyzed from the upper and lower layers of the soil in which *Iris histrioides* Foster grew in the Black Sea Region, and it was reported that the % N, P and K components in the upper layer of the soil were high (Kandemir and Engin, 2000). Again, a study was conducted by Balak and Misra (2004), and it was reported that German chamomile played important role in breeding soil. In addition, the industrial wastes of medical and aromatic plants may be used as organic fertilizers (Bağdat and Karık, 2009). With the help of the chemicals released by medical and aromatic plants, it is possible to attract the harmful insects that are in a certain population intensity in a field to trap plants, and decrease their population intensity by mixing them with the soil (Güçlü et al., 1997; Hilker and Meiners, 2011). In previous studies, it was reported that mustard was used successfully both as a trap plant and as a green fertilizer in decreasing the intensity of grain and beet cyst nematodes in the fields. These plants are sensitive to these nematodes and ensure that cysts are activated and make the larvae invade the roots and when they are mixed with the soil in accurate time, they killed young nematodes (Özer et al., 2003; Hilker and Meiners, 2011). In this study, the data on the potential use of medical and aromatic plants in biological fight in organic agriculture have been compiled.

KEYWORDS

Allelopathic Effect, Secondary Metabolite, Organic Agriculture, Trap Plant

Poster Session 10

Submission ID: 1257

BIOTECHNOLOGICAL METHODS AND BREEDING IN MEDICAL AND AROMATIC PLANTS

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ABSTRACT

The lack of adequate variety and seeds of medical and aromatic plants whose culture is performed makes it difficult to have them under culture studies and sustain them. For this reason, studies that will be conducted on plant breeding for these plants become extremely important (Baydar and Telci, 2015). However, the breeding of medical and aromatic plants has fallen back when compared with the other culture plants. One of its reasons is the difficulty in developing breeding methods that are specific to each plant due to the extensive variety of medical and aromatic plants. In addition, the data on quality parameters on agricultural properties and on relevant genes are extremely limited. The second important reason is the fact that these plants are grown in limited areas and for this reason, the final situation of the investments and the return of the breeder share are extremely low. Aside from these, the necessity for making the quality analyses, the expensive equipment and substances needed make it difficult to breed these plants (Arslan et al., 2015). Medical and aromatic plants are used as raw materials in food, medicine, cosmetics and many other industries. (Başer, 1997; 1998). For this reason, these industrial branches require the use of materials that are within certain standards, and therefore, in order to obtain high-yield and high-quality raw drug from medical and aromatic plants, there is a need to develop the variety of standards. In breeding medical and aromatic plants, not only the drug yield but also the active substance yield is important at a great deal. In breeding hashish (*Papaver somniferum*), breeding methods aim to improve the alkaloids like morphine, codeine, thebaine, noscapine and papaverin as well as improving the capsule yield (Gümüşçü and Arslan, 2008). In this way, higher-level alkaloid yield may be achieved without being dependent on cultivation areas (Baydar and Telci, 2015). Completely eliminating or decreasing the amount of substances that have negative effects on health in medical and aromatic plants is among the most important purposes of breeding works. As an example, it is possible to give the study conducted to breed species of medical sage (*Salvia officinalis* L.) that do not have camphor due to its toxic effects or that have camphor rates below 0.5% (Dudai et al., 1999). In plants like mint and melissa, the breeding works continue for the purpose of making these plants acquire endurance against disease factors, and in rosemary, the works are still being continued to make it acquire endurance against cold. In addition, it is also aimed to detect medical and aromatic plants that have stronger antimicrobial and antioxidant effects and to develop new genotypes with increased effects (Yarnell and Abascal, 2004; Altındađ and Aslım, 2005; Hussain, 2011; Baydar and Telci, 2015). The breeding works in medical and aromatic plants are close and similar to those applied in classical breeding methods. Aside from these, many works like genotype detection, adulteration and quality control, GDO test, genetic relations may be done by using DNA markers. In breeding works, natural plant populations that are extremely important in genetical terms and local (village) species are used. One of the most important advantages of the breeding of the plants is their having a wide variation and being prone to develop

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with a simple selection. 70-80% of the medical and aromatic plants in the world are obtained from natural populations, local species or from introduction materials with simple selection method. (Pank, 2006; Arslan et al., 2015). Today, bio-technological methods are used for the purpose of performing plant production with higher quality and quantity in a more economical way by solving the problems, which are not solved with known traditional methods, in this process (Uçar and Turgut, 2009). In breeding medical and aromatic plants, bio-technological methods are also made use of as well as classical breeding methods. Detecting and improving the genotypes that can endure salinity, drought, diseases and hat will bring several benefits such as secondary metabolite production with plant cell cultures. Biotechnological methods are used successfully especially in the production of secondary metabolites in in vitro conditions, in eliminating environmental actors, producing crops in the desired amount and standard quality, or in producing semi or fully synthetic secondary metabolites (Baydar, 2013). In this study, the data on breeding methods and biotechnological methods applied on medical and aromatic plants have been compiled.

KEYWORDS

Medical and Aromatic Plants, Breeding, Secondary Metabolite.

Poster Session 10

Submission ID: 1259

THE EFFECTS OF DIFFERENT CULTIVATION AND ECOLOGICAL CONDITIONS ON YIELD AND QUALITY OF *CARTHAMUS TINCTORIUS L. (SAFFLOWER)*

UMMAHAN ÖZ ARIK¹

ABSTRACT

Carthamus tinctorius L. (Safflower) is an industrial plant with a high medical potential. Safflower give positive results in the treatment of acute appendicitis, women's period, cardiovascular disease, fever reduction, asthma, osteoporosis, rheumatoid arthritis. The cultivation of the Safflower is important because of its industrial use and pharmacological properties. Cultural practices vary from region to region. Depending on the ecological conditions of each region, types of the cultivation changes. Sowing time and sowing frequency are effective on yield. Generally, the autumn planting is more suitable from spring planting for the development of plant characteristics and seed yield. Nitrogen , phosphorus and humic acid applications were positively effect oil yield . This review was carried out to determine the effect of different cultivation and ecological conditions on yield and quality of Safflower.

KEYWORDS

Carthamus tinctorius, Safflower, cultivation, yield, quality

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Poster Session 10

Submission ID: 1260

BIOACTIVE PROPERTIES AND ANTIMICROBIAL ACTIVITY OF SOME HYPERICUM SPECIES GROWING WILD IN BLACK SEA REGION OF TURKEY

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ABSTRACT

The aim of this study was to investigate total phenolic contents, antioxidant and antimicrobial activities of some *Hypericum* species growing wild in Blacksea Region of Turkey. For determining all these functional properties, ethanolic extractions of both leaves and flowers of four wild *Hypericum* species (*H. perforatum* L., *H. aviculariifolium* Jaup. and *Spach* subsp. *depilatum* (Freyn and Bornm.) Robson var. *depilatum*, *H. organifolium* Wild. and *H. linarioides* Bosse) were performed separately by maceration method. Total phenolic contents of these flower and leaf extracts were found between 148.04-83.89 and 202.83-48.03 mg gallic acid equivalents (GAE) /g dry weight, respectively. *H. linarioides* was determined as the *Hypericum* specie getting highest total phenolic content. Antioxidant activities of both flower and leaf extracts were determined by DPPH assay. According to the results, antioxidant activities of the flower extracts were determined between 24.94-17.14 mg trolox equivalent /g dry weight and for the leaves, the values were found between 39.35-8.63 mg trolox equivalent /g dry weight. The highest antioxidant activity was observed on the leaf extract of *H. linarioides*. Antimicrobial activities of the extracts were evaluated by minimal inhibitory concentrations (MIC) against 9 pathogenic and/or food spoiling bacterial strains (*Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Bacillus pumilis*, *B. subtilis*, *B. licheniformis*, *Listeria innocua*, *Esherichia coli*, *B. cereus* and *L. monocytogenes*). MIC results show that the flower extracts generally exhibited higher antimicrobial activity than the leaf extracts. And especially, the flower extract of *H. perforatum* showed strong inhibition effect against all strains except *E. coli*.

KEYWORDS

Hypericum spp., total phenolic content, antioxidant activity, antimicrobial activity

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Poster Session 10

Submission ID: 1261

EFFECTS OF DIFFERENT PLANT DENSITY AND CUTTING TIMES ON YIELD OF STEVIA

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ABSTRACT

Stevia (*Stevia rebaudiana*Bertoni) is perennial, shrub form plant, belonging to Asteraceae. It is indigenous to Paraguay and Brazil. Stevia is a natural sweetening, and it has using potential to diets of obesity patients with non-caloric speciality and treatment of diabetes with insulin secretagogue speciality. In this study, the effects of different planting spaces and two cutting times on yields of two-year old stevia plant were investigated. The highest dry leaf yield (515.96 kg/da) was obtained from blooming stage, cuttingsin spring and 30x60 cm planting density.

KEYWORDS

Stevia rebaudiana, planting space, cutting times.

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SOME FUNCTIONAL AND TEXTURAL PROPERTIES OF GUAR AND XANTHAN GUM UTILIZED EGGLESS CAKE

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ABSTRACT

Cake; a ready-to-eat food product produced in many countries in a wide variety of shapes, formulations and high nutritional value. Eggs are often used in cake formulations, which can cause allergic reactions in some people, especially in children. In this study, eggless plain cakes were produced using guar (GG) and xanthan (XA) gums with ratios of 0.0%, 1.0%, 1.5% and 2.0% and some functional properties of cakes were examined. The cakes were stored for 48 hours and some properties were determined at 1., 24. and 48 hours. GG and XA gums did not significantly affect the cooking efficiency ($p>0.05$). It was observed that the pH value decreased with the addition of gums in all samples. It has been found that the pH value decreased during storage for GG 1.0% and XA 1.0% samples. According to acidity results acidity did not change in control samples during storage. The usage of gums has increased the acidity of all samples. Acidity generally increased during storage and it was found that acidity of GG samples was higher than that of XA samples. It was determined that brightness of samples slightly increased during storage according to color measurements. Gum addition showed an increase in brightness. With the use of gums, the a^* value is generally increased, while the maximum redness was reached by XA 2.0%. While b^* values of XA were found to be lower than that of GG samples, no significant changes were observed during storage in b^* values ($p>0.05$). According to the texture results it was determined that the GG samples were harder than the XA samples for each time period during storage. GG 1.5% and GG 2.0% were statistically higher than other samples at 1. hour ($p<0.05$). It has been recorded that flexibility increased during storage. The addition of XA resulted in more sticky cakes than GG. It was observed that the gummy property increased gradually during storage while the GG samples more gummy as average to the XA for each storage period. The chewiness of cakes increased during storage and it was determined that the use of gums increased the chewiness. Generally, chewiness values of GG samples were higher than those of XA samples. Gum added cakes were found to be more elastic than the control samples and it was determined that XA increased the elasticity more than GG. The lowest elasticity was determined in the control samples at the 1. and 24. hours of storage. According to the sensory evaluations, the control samples were most favored in terms of taste-aroma. GG and XA samples were similarly liked by the panelists. There were no significant differences in cake color, pore structure and odor evaluations among the cakes in sensory evaluations.

KEYWORDS

Cake, gum, guar, xanthan

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Poster Session 10

Submission ID: 1263

USE OF SOME ESSENTIAL OILS IN GRAPE STORAGE

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ABSTRACT

Medical and aromatic plants are generally used in fields such as food, spice , medicine, beverage and cosmetics. Nowadays , there are numerous studies on the antimicrobial and insecticidal properties of essential oils and extracts from these plants. The investigations indicate that medicinal and aromatic plants can be used to increase the shelf life, especially in fruit preservation. This studies show that the essential oils extracted from medicinal and aromatic plants such as thyme, caraway and carnation are effective in the suppression of fungi such as *Botrytis cinerea*, *Aspergillus niger*, *Alternaria alternata*, *Colletotrichum gloeosporioides*, *Lasiodiplodia theobromae*, *Penicillium digitatum*, *Phomopsis viticola* and *Rhizopus stolonifer* which reduce the shelf life in grape preservation, but it does not negatively effect the sensory properties of the grape. This review is intended to reveal the use of certain essential oils in grape storage.

KEYWORDS

Grape, storage, medical and aromatic plants, essential oil, Botrytis cinerea

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Poster Session 10

Submission ID: 1264

AS A NUTRACEUTICAL: CHLORELLA

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ABSTRACT

Today, “nutraceuticals” is described as “The food that provides beneficial effects by generating one or more physiologic functions like enhancing healthy or creating decrease the risk of being exposed to some diseases”. Physiologic benefits of the nutraceuticals are determined and revealed the usage utility nutraceutical contributions that show the protection to any chronic diseases suchlike drugs-one of them is microalgae originating from sea. Because of including sufficient level of functional ingredients such unsaturated fatty acids, omega-3 fatty acid, B-caroten and other pigments, sulfates, polysaccharide(antiviral) and sterols(antimicrobial); the microalgae are used quite frequently. Chlorella is a type of microalgae, is known the most common species in this group by considering the farming. Also, it is used as a nutraceutical in medicine, cosmetics and pharmaceuticals. It is obviously seen from some scientists works that Chlorella which has 3 types “ellipsoidea, pyrenoidasa and vulgaris” has positive effects on human health like regulating blood pressure, decreasing the level of cholesterol, avoiding some viral diseases and reinforcement of immune system. Since Chlorella has these properties, it became popular almost all over the world as a functional and nutraceutical food.

KEYWORDS

chlorella, cancer, chlorella vulgaris, nutraceutical, functional food

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Poster Session 10

Submission ID: 1266

EFFICACY OF SUCROSE AND THIDIAZURON ON IN VITRO SHOOT REGENERATION OF FENUGREEK (*TRIGONELLA FOENUM- GRAECUM* L.)

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ABSTRACT

Fenugreek (*Trigonella foenum-graecum* L.) is an important medicinal and edible legume which is also used as spice, forage and green manure. It contains important bioactive compounds like galactomannan, saponins, mucilage, alkaloids and volatile oil. Due to its highly economic value, there is need to apply biotechnological tools for variety improvement and obtaining secondary metabolites. Keeping in view, the present study was designed to develop an efficient regeneration protocol of fenugreek. Cotyledonary nodes and leaf explants taken from 18-20 days old seedlings were cultured on phytagel solidified MS medium enriched with different concentrations of sucrose (1.5, 3.0, 4.5 and 6.0%). Medium was also enriched with 0.40, 0.80 and 1.20 mg/l Thidiazuron (TDZ) and 0.20 mg/l NAA. 100% callus induction was recorded on both explants with no shoot regeneration from leaf explants. However, cotyledonary nodes generated 100% shoot buds which later turned into shoots. Maximum number of 18.75 shoot buds were recorded on medium supplemented with 0.40 mg/l TDZ+0.20 mg/l NAA with 1.5% sucrose concentration. Explants were subcultured after 6 weeks of culture to MS medium which turned the shoot buds into well developed shoots. Explants were left in Magenta vessels for further growth for other studies.

KEYWORDS

Callus, In vitro, Fenugreek, Medicinal, Shoots, Regeneration

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Poster Session 10

Submission ID: 1267

POTENTIAL USES OF ESSENTIAL OIL COMBINATIONS AS SURFACE DISINFECTANT

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ABSTRACT

In the present work, the antimicrobial activity of essential oils including cinnamon, peppermint, oregano, nettle seed and clove oils, and different combinations of these essential oils were investigated. In the first stage of the study, the antimicrobial activity of essential oils against seven bacterial strains (*Listeria monocytogenes*, *Enterococcus faecalis*, *Bacillus subtilis*, *Staphylococcus aureus*, *Escherichia coli* O157:H7, *Salmonella Typhimurium*, *Escherichia coli*) was determined by minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) assays. MIC value was determined for each microorganism using a 96-well microtiter plates. Essential oils, except peppermint and nettle seed oils, exhibited inhibitive effect on all test microorganisms at concentrations ranging between 0.156 and 10% (MIC, v/v). The highest inhibitive effect on test cultures was observed in oregano oil with MIC values in the range of 0.156-0.625%. When the essential oils were used in combinations, the MIC values of both prepared formulations were ranged between 0.625-2.5% and 0.312-2.5%. In the second stage of the study, the most effective formulation containing oregano, cinnamon and clove oil (1:1:1) was used as the surface disinfectant at 10, 20 and 30% concentrations for 1 and 5 min treatment time. The analyze results showed that the selected formulation used at 10% concentration was effective against *E. coli* inoculated on working surface (4.59 log CFU/25 cm²), which reduced the cell numbers to an undetectable level for 1 min application. On the other hand, 96% alcohol application reduced the cell numbers by 1.15 and 1.30 log units for 1 and 5 min treatment times, respectively. When the effects of solutions were compared in terms of the numbers of total mesophilic aerobic bacteria that naturally found on surfaces, the disinfection effect of the prepared essential oil formulation was found higher than 96% alcohol. These results showed that essential oils used in combinations might be a good alternative in the disinfection of surfaces.

KEYWORDS

essential oils, combination, antibacterial, surface disinfection

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EFFICACY OF EXPLANT AGE, SUCROSE AND THIDIAZURON ON IN VITRO SHOOT REGENERATION OF FENUGREEK (TRIGONELLA FOENUM-GRÆCUM L.)

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ABSTRACT

Fenugreek (*Trigonella foenum-graecum* L.) belongs to Fabaceae family is an important medicinal plant that is used as vegetable and making pickles in Indo-Pak subcontinent. It contains important biologically active secondary metabolites like alkaloids, galactomannan, saponins, mucilage, and volatile oil that increase the value of the plant. However, there is need to use biotechnological tools in order to produce more elite plants and to isolate secondary metabolites. In this study, we used 10 and 20 days old cotyledonary nodes explants from in vitro grown seedlings and cultured on gelrite solidified MS medium fortified with 0.40, 0.80 and 1.20 mg/l Thidiazuron (TDZ)+0.20 mg/l NAA with different sucrose concentrations (1.5, 3.0, 4.5 and 6.0%). Callus induction followed by somatic embryogenesis (100 %) was recorded after 4 weeks of culture which later on turned into shoots or shoot buds. 20 d old explant regenerated more number of shoots compared to 10 d explant. Maximum number of shoots/shoot buds were achieved on medium fortified with 0.80 mg/l TDZ+0.20 mg/l NAA provided with 4.5 % sucrose. Explants were left for growth for further studies.

KEYWORDS

Fenugreek (Trigonella foenum-graecum L.) belongs to Fabaceae family is an important medicinal plant that is used as vegetable and making pickles in Indo-Pak subcontinent. It contains important biologically active secondary metabolites like alkaloids, galact

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Poster Session 10

Submission ID: 1269

SOME MEDICINAL AND AROMATIC PLANTS VISITED BY BUMBLE BEES IN TURKEY

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ABSTRACT

Bumble bees (*Bombus* sp.) are large, colorful, ubiquitous pollinators which found throughout the Holarctic, Oriental, and Neotropical regions of the world, especially in alpine and arctic zones. They like to be found in open meadows, which provide abundant amounts of nutrients throughout the flight, and tend to go with long corolla bushes belonging to the family of Lamiaceae and Fabaceae in these habitats. Turkey is one of the richest countries in the world in terms of medicinal and aromatic plants, and there are about 12 000 plant taxa naturally grown. Of these, 3750 are endemic and the endemism rate is very high when compared to European countries. Hundreds of plant species naturally grown in Turkey, especially endemic plants that have high medicinal and aromatic value. About 500 plant species in Turkey are being utilized in the context of folk medicine or traditional medicine applications. In this study, 10 of the medicinal and aromatic plants that *Astragalus* sp., *Thymus fallax* Fisch.&Mey., *Salvia officinalis* L., *Centaurea solstitialis* L., *Lavandula angustifolia* Mill., *Rosmarinus officinalis* L., *Papaver somniferum* L., *Pimpinella* sp., *Acacia cyanaphylla* L., *Shymphytum* sp. were handled and their relation to bumble bees were compiled from various sources.

KEYWORDS

Medicinal and aromatic plants, Bumble bees, Turkey

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Poster Session 10

Submission ID: 1270

DIETARY FIBERS AND BIOACTIVE COMPOUNDS IN GRAPE POMACE

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ABSTRACT

Lifestyle changes, including healthy diets and exercise, constitute the most powerful tools to fight against many chronic diseases (Urquiaga et al. 2015). Mediterranean diets are considered as valuable preventive measures as several studies have proven that their intake is associated with lower occurrence and prevalence of chronic diseases (Keys 1970) and longer life expectancy (Trichopoulou 2004). Antioxidants, fiber, unsaturated fats and phytochemicals are the bioactive components of Mediterranean diets that apparently support the human health (Simopoulos 2001). Grape pomace (GP), a rich source of antioxidant and fiber, is used as an ingredient for functional foods and as a dietary supplement to increase the intake of dietary fiber and bioactive compounds. Jiménez et al. (2008) found that fibers from GP show high reducing efficacy in lipid profile and blood pressure due to combined effect of dietary fiber and antioxidants. GP as antioxidant dietary fiber also helps to enhance the gastrointestinal health of the human by promoting a beneficial microbiota profile (Pozuelo et al., 2012). Antioxidant dietary fiber may be incorporated with flour for making high dietary fiber bakery goods, while the polyphenols in antioxidant dietary fiber could contribute as antioxidant for improving aroma, color and taste of the product. For example, GP was mixed with sourdough for rye bread (Mildner-Szkudlarz et al. 2011) and grape seed flour for pancakes and noodles (Rosales Soto, Brown and Ross, 2012). Aside from promoting human health, GP plays important role as antimicrobial agent to maintain the shelf-life of foods. Goni et al. (2009) and Sánchez-Alonso et al. (2007) revealed that GP added into minced fish and chicken breast delayed the lipid oxidation. Also, GP extract exhibited antimicrobial effect against foodborne pathogens when added into beef patties (Sagdic et al. 2011). There are increasing interests in applying GP, grape processing wastes, as functional food ingredients because they are rich source of dietary fiber, and most of the beneficial bioactive compounds are remained in the byproducts.

KEYWORDS

antioxidant dietary fiber, grape pomace, bioactive compounds

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Poster Session 10

Submission ID: 1271

LATHYRUS CZEZOTTIANUS: CAN BE NEW SOURCE OF NATURAL ANTIMUTAGENIC AGENTS IN PHARMACOLOGY?

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ABSTRACT

Human environment consists mutagenic and carcinogenic agents. Moreover, several well-known mutagenic risk factors are closely connected with a modern lifestyle and their entire eradication appears to be very burdensome, even unattainable. Therefore, there exists a need to reduce genotoxic effects of mutagenic and carcinogenic factors by the regular intake of antimutagenic agents. Recently, it has been accepted that plants and their products represent one of the main sources for compounds with antimutagenic potential and, indeed, several secondary plant metabolites have demonstrated chemo-preventive activities. Thus, there is an increasing interest in the investigation of naturally occurring antimutagens from plants. So, *Lathyrus czechottianus* methanol and water extracts were evaluated for their potential mutagenic and antimutagenic activities by Ames test in the present study. *Salmonella typhimurium* TA98 and TA100 strains used for determining the frame shift and base pair exchange type of mutations, respectively. The Ames test was conducted both in the presence and absence of metabolic activation enzymes. The result of the mutagenicity test showed that methanol and water extract of *Lathyrus* did not increase the revertant colony numbers when compared with control plates. We concluded that plant extracts were not mutagenic in the Ames test. Because of these extracts were not mutagenic, so antimutagenic potentials of them were studied at doses of 10000 µg/plate, 5000 µg/plate, and 1000 µg/plate. For TA98 methanol extract was moderate antimutagenic (37%, 30%, respectively) at doses of 10000 and 5000 µg/plate, while water extract showed moderate antimutagenicity (33%) at the highest concentration. After addition of S9 mix, methanol extract revealed strong antimutagenicity (73%, 63%, 57%) at all test doses against 2-aminoflourene. Similarly water extract exhibited the greatest antimutagenic potential (85%) at a dose of 10000 µg/plate with S9 mix for TA98 and followed by 5000 µg/plate dose with 41% inhibition making the extract a very strong antimutagen. Associated with sodium azide, methanol and water extracts were moderate antimutagenic at a dose of 10000 µg/plate in the absence of S9 enzymes for TA100 strain. The methanol extract manifested strong antimutagenicity at concentrations of 10000 (78%) and 5000 µg/plate (54%), and it alleviated the mutagenic action of 2-aminoanthracene in the presence of metabolic activation system. It was observed that metabolic activation enzymes were increased the antimutagenicity of the extracts and it can suggested that *Lathyrus* extracts may be the natural source of antimutagenic agents against well-known mutagenic substances.

KEYWORDS

Antimutagenicity, Mutagenicity, Lathyrus czechottianus, Ames test

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Poster Session 10

Submission ID: 1272

COMPARISON OF THE FLAXSEED OILS OBTAINED BY USING COLD PRESS AND SOLVENT EXTRACTION METHODS

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ABSTRACT

Flax (also known as common flax or linseed), *Linum usitatissimum*, is a member of the genus *Linum* in the family *Linaceae*. Flaxseed oil is widely used in food industry due to its high content of unsaturated fatty acids. In this study, oil was obtained by cold pressing and solvent extraction methods. Cold pressing is completely a mechanical process without chemical application. In cold pressing, the highest temperature which the product is exposed to, is 40°C. During cold pressing, flavor, aroma, nutrients and natural values of the plant are not lost. In the solvent extraction, solvents are used to extract oil from seeds. In the present work, oils extracted by two different methods, cold pressing and solvent extraction, were compared by analyzing several quality parameters of the oils such as free fatty acid composition, antioxidant capacity, total phenolic content, peroxide value and refractive index. Protein content of the flaxseed was found to be 14.5% While the yield of the cold pressing was 21%, and that of solvent extraction was 34.8%. Antioxidant capacity was determined as 2.126 mmol TE/L for the oil extracted by the cold pressing and 2.144 mmol TE/L for the oil extracted by solvent extraction. Total fenolic contents of the oil obtained by both cold pressing and solvent extraction were 132.42 mgGA/L and 153 mgGA/L, respectively. There was not a significant difference between the refractive indices of the oils extracted by both methods (determined as 1.48nd). There was no active oxygen in the oil because it was stored in a dark refrigerator at 3°C. According to the characterization of fatty acids, the oils obtained by cold pressing contained 9.98% SFA, 19.81% MUFA and 68.99% PUFA. Majority of these were α -Linolenic acid (54.91%), oleic acid (17.65%), linoleic acid (13.67%), palmitic acid (5.47%) and stearic acid (4.15%). SFA, MUFA and PUFA contents of the oils extracted by solvent extraction were 10.77%, 18.06% and 70.30% PUFA, respectively. Majority of the oils extracted by solvent extraction were α -Linolenic acid (54.08%), oleic acid (17.75%), linoleic acid (15.09%), palmitic acid (5.65%) and stearic acid (4.57%). This study shows that flaxseed oil is a health-promoting ingredient for food industry because it contains significant amounts of unsaturated fatty acids (especially α -Linolenic acid) and protein.

KEYWORDS

Flaxseed, Fatty acids, Oilseeds, Phenolic compound, Protein content

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Poster Session 10

Submission ID: 1273

ESSENTIAL OILS AS NATURAL PRESERVATIVES IN MEAT AND MEAT PRODUCTS

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ABSTRACT

Abstract Essential oils are aromatic and complex mixture of volatile compounds and can be obtained from different parts of plants: leaves, peels, roots, flowers, seeds, fruits and woods. Essential oils are substantiated to have antiviral, antimycotic, antiparasitic, antioxidant, and insecticidal properties in addition to the antibacterial action due to the phenolic functional groups. Production of safe and high quality meat and meat products is a growing thought over the worldwide. There has been increasing trend in essential oils as natural food preservatives in meat and meat products due to the concern about negative consumer perception of synthetic preservatives. Use of synthetic food preservatives can cause adverse health effects and remained a challenge to the meat industry. Unlike synthetic compounds, essential oils are rich in phenolics and they can enhance the overall quality of food by decreasing lipid oxidation, microbial growth and overall acceptability. This review is covers up to date literatures on essential oils used as natural preservatives in meat and meat products.

KEYWORDS

Essential oils, meat, meat products, preservatives.

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Poster Session 10

Submission ID: 1275

DETERMINATION OF TEA CONSUMPTION VARIETY AND FREQUENCY OF PEOPLE LIVING IN AKŞEHİR

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ABSTRACT

Introduction Since time immemorial, tea is consumed frequently as curative and daily liquid intake. Black tea is one of the common tea type, hence it is the most consumed tea in Turkey. Preferability of tea is increased by people, as its positive effects on health issue became more topical. Herbal teas consumptionability and conservationability is practical, therefore its consumption rate has increased day by day. **Objective** In this study, the aim is to determine the tea consumption rate and frequency of people who live in Akşehir town center. **Method** The study is made between February 2017 and March 2017. 320 people randomly selected for the study as 265(82.8%) women and 55(17.2%) men. By the survey research, participants' demographic informations and habits related with tea consumption are investigated. In order to analyze the data collected, SPSS 22.0 statistic program is used. **Results** Age average of the people attended to the survey is 29.6±5.6. When the education level of the people is investigated, the highest percentage belongs to high school graduates by 82.2%. When the tea consumption rates in the survey are respectively sorted from high rate to low rate; black tea(84.4%), linden tea(44.7%), green tea(39.7%), sage tea(33.2%), rose hip tea(29.1%), mint tea(20.0%), chamomile tea(18.1%), apple tea(13.4%) and thyme tea(11.3%). Other teas consumptions rates are found below 10%. 75.6% of the people who consume black tea prefers bulk tea, 24.4% prefers tea bag. 32.8% of these people drink minimum 3 tea glass, 44.4% drink minimum 1 tea glass of black tea. 17.1% drink minimum 1 tea glass and 80.3% use green tea bag and 19.7% use bulk green tea of people who consume green tea. Along the people who consume linden tea, 11.1% drink minimum 1 tea glass and 69% of them use bulk linden tea and 30.7% use linden tea bag. **Conclusion** Black tea consumption is the top consumed tea type as like people who live in all around Turkey. The consumption rates of the other tea types after black tea are respectively, linden tea, green tea and sage tea. Tea has lots of positive effects on health, especially due to its polyphenol content. However, too much consumption of tea is not suggested, because it increases caffeine intake and has diuretic effects. When consuming herbal teas, attention should be paid to the consumption amounts according to the tea types.

KEYWORDS

Black tea, linden tea, green tea, herbal tea

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¹SELÇUK ÜNİVERSİTESİ AKŞEHİR KADİR YALLAGÖZ SAĞLIK YÜKSEKOKULU BESLENME VE DİYETETİK BÖLÜMÜ

Poster Session 10

Submission ID: 1276

HEALTH BENEFITS OF RESVERATROL; A PLANT PHYTOALEXIN IN GRAPES AS A FUNCTIONAL FOOD

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ABSTRACT

Functional foods, derived from plants that naturally contain compounds beneficial to human health (Boue et al. 2009), have been a developing area of food science research for the past decade since consumer interest has shifted toward achieving and maintaining good health. Studies on cardioprotective potential of dietary components supports the development of functional foods and nutraceuticals. Plant phytoalexins as nutritional components has opened up a new area of food science. On this point, resveratrol (3,5,4-trihydroxy-trans-stilbene), a natural phenol found in grapes, has a calorierestriction effect and influences energy metabolism by improving insulin sensitivity, lowering plasma glucose, and increasing mitochondrial (O’Riordan et al. 2009). Experiments revealed that this stilbenoid exerts antibacterial, antioxidant, anticancer and antiproliferative effects (Jang et al. 1997). It has also been shown to extend the life span of several short-living species of animals (Valenzano et al. 2006). Recent studies also revealed that resveratrol has curative effect for Alzheimer’s disease. Resveratrol is necessarily digested after ingestion and diffuses into blood rapidly. It maintains the active form in foods due to its high resistance to heat (Keskin et al. 2009). These studies on the health benefits of resveratrol spurred consumer interest in grapes as a functional food. Resveratrol is present at high concentrations in the skin of grapes, depending on the grape variety. Experimental studies have demonstrated that elicitor treatment can increase resveratrol concentrations of postharvest grapes. The ability of UV irradiation to induce the synthesis of the phytoalexin resveratrol was first reported by using leaf disks and immature grape berries (Langcake and Pryce 1977). In fact, many agents have been proven to be effective for increasing the resveratrol content of grapes. Thus, recent studies propose a new area within functional food research called phytoalexin-enriched foods that utilize induced plant compounds or phytoalexins created either pre- or postharvest that have been considered in terms of beneficial health effects.

KEYWORDS

Functional foods, grapes, resveratrol, antioxidant, health

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Poster Session 10

Submission ID: 1277

ANTIMICROBIAL EFFECTS OF ESSENTIAL OILS

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ABSTRACT

Plant essential oils have been used for many purposes since many years, especially in scientific and commercial areas. At the beginning of these usage areas are cosmetics, medicine, food industry, aromatherapy and phytotherapy. Essential oils have recently attracted the attention of many scientists, because it has a wide use area, and the chemical structures of these essential oils have been a subject of curiosity about the investigated biological activities. Essential oils are obtained from various organs such as flowers, leaves, bark, branches or fruits of some plants and often referred to by the name of the plant. These substances, called essences, are essentially terpene blends. Water drifted with steam, insoluble in water, easily soluble in organic solvents. Essential oils are produced by the pressurization of plant parts by means of organic solvents, water vapor distillation or extraction. In recent years, the insufficiency of synthetic drugs and the detection of side effects against increasing diseases have increased the necessity of using natural products. For this purpose many plants are being investigated from microbiological and pharmacological aspects. Since essential oils are complex mixtures containing different compounds, they also differ in their biological effects. The effects are different according to the substances, many essential oils, have antimicrobial, carminative, coloretic, sedative, diuretic, antispasmodic effects. Due to the increase in antibiotic-resistant infections in recent years, studies on the search for new drugs in combating these infections are a great necessity. In this regard, the plant essential oils have a great precaution and have been reported by many researchers as antimicrobial agents. As in all the countries of the world, plants that are important in Turkey for medical purposes have been used for centuries as a treatment for diseases among the people. As a potential source of new antimicrobial compounds of these plants, which are traditionally envied, it is very important to investigate scientifically.

KEYWORDS

Essential oil, herbal, antimicrobial

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Poster Session 10

Submission ID: 1278

USAGE AND ECONOMIC IMPORTANCE OF MEDICINAL AND AROMATIC PLANTS IN THE LAST FIVE YEARS

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ABSTRACT

With the developing world, the importance of medical plants is increasing considerably. According to World Health Organization (WHO) researches, the number of plants used for therapeutic purposes is around 20.000 and 80% of the population living in developing countries rely on traditional herbal medicines for essential health needs. A lot of drug, still used in medicine, are made of plants. For herbal product in intended property, quality medicinal plant is required. Turkey is one of the important countries where medicinal plants grow with its geographical position, climate, vegetation cover, agricultural potential for medicinal plants grow. Turkey has a lot of share in the trade of medicinal and aromatic plants because it has many aromatic plants in its flora. Since ancient times, these medicinal plants grown in our country have been benefited from various areas such as medicine, food, cosmetics. The current increase in the popularity of medicinal plants results from resistance developed by diseases. Extracts made from medicinal plants are effective against new breeds. For this reason, there has been a serious return to herbal preparations in recent years. In this study, the last five years and economic importance of medicinal and aromatic plants have been investigated because of their increasing value.

KEYWORDS

medicinal and aromatical plants, economy, herbal extract

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Poster Session 10

Submission ID: 1279

DETERMINATION OF FATTY ACIDS AND ELEMENTS IN CYCLOTRICHIMUM NIVEUM (BOISS.) MANDEN. ET SCHENG.

AHMET ÖZKAYA¹, AHMET ZAFER TEL², UMUT YILMAZ HAN¹

ABSTRACT

Cyclotrichium genus is a member of the Lamiaceae family and its six species present in Turkey. *C. niveum* and *C. organifolium* and *C. longiflorum* are endemic for Turkey. *C. niveum* is popularly known as "dag nanesi" (Gulcin et al., 2008). *C. niveum* is a perennial plant and is used in the treatment of traditional pain, flu, nausea and irregular muscle pain. The plant, which has mint flavor, is used in making soup, as a medicinal tea and as a spice in Turkish foods (Çetinus et al., 2007). In recent years, the chemical composition of *C. niveum* has been studied. Pulegon and isomenthol compounds are considered to be main ingredients in *C. niveum*. In addition, flavonoids and triterpenoids are detected in other *C. niveum* species (Gulcin et al., 2008). Baser et al. (1994) have reported essential oils of *C. niveum* for the first time (Başer et al., 1994). *C. niveum* has 32.5-56.1 g / 100 pulegon and 33.8-35.4 g / 100 isomenthol as the main ingredient in the essential oil (Gulcin et al., 2008). The chemical components of *C. niveum* have been antioxidant effected (Alim et al., 2009). In this study, we performed first literaturally known fatty acid and trace element analyses of the *C. niveum*. *C. niveum* plants were collected from Adiyaman/Nemrut mountain. After the plants were picked up, they were naturally dried in a shady. The levels of trace element and fatty acid of *C. niveum* endemic plant leaf in Turkey were determined by using ICP-OES and GC, respectively. Among fatty acid levels, caprylic acid, undecanoic acid, palmitic acid, stearic acid, oleic acid, linoleic acid and alfa-linolenic acid levels were determined as 11.19%, 10.27%, 14.01%, 3.58%, 8.14%, 6.54% and 15.69%, respectively. The plant leafs were found containing Ni, Pb, Zn, Cr, Ba, Al, Cu, Fe, and Mn with respective quantities of 3.00, 0.07, 30.54, 122.17, 66.90, 319.98, 5.60, 334.52, 72.72 µg/g, and K, Na at 47.47, 0.09 mg/g (dry matter) quantities, respectively. For the following medicinal studies, we think that the obtained result parameters may be valuable. REFERENCES [1] Gulcin, I., Tel, A. Z., Kirecci, E., (2008). Antioxidant, antimicrobial, antifungal, and antiradical activities of *Cyclotrichium Niveum* (BOISS.) Manden and Scheng, International Journal of Food Properties, 11: 450–471. RC Patra, D Swarup, SK Dwivedi, Toxicol., 162(2):81–88 (2001). [2] Çetinus, Ş.A., Göze, İ., Saraç, B., Vural, N., (2007). Scavenging effect and antispasmodic activity of the essential oil of *Cyclotrichium niveum*, Fitoterapia, 78:129-133. [3] Baser, K.H.C., Sarikardagoglu, S., Tümen, G., (1994). The essential oil of *Cyclotrichium niveum* (Boiss.) Manden & Scheng, Journal of Essential Oil Research, 6:9-12. [4] Alim, A., Goze, I., Cetin, A., Atas, A.D., Vural, N., Donmez, E., (2009). Antimicrobial activity of the essential oil of *Cyclotrichium niveum* (Boiss.) Manden. Et Scheng, African Journal of Microbiology Research, 3 8:422-425. Acknowledgments: This research was supported by the ADYUBAP project, number FEFYL 2012/0011.

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KEYWORDS

Cyclotrichium niveum, element, fatty acid

Poster Session 10

Submission ID: 1281

SEVERAL PROPERTIES OF OILS EXTRACTED FROM TEREBINTH BY COLD PRESSING AND SOLVENT EXTRACTION

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ABSTRACT

Medicinal and aromatic plants are the botanical sources used for, maintaining human health, prevention and treatment of diseases. People have tried to cure diseases using plants or centuries. Because of the success in these attempts, the use of plants in treatment of disease has continued up to date. These medicinal plants are not only be used in medicine but they are also employed in nutrition, beverage and cosmetic industries, organic farming and animal breeding. Among 350,000 identified species, 35,000 are used for medicinal purposes. Only 5 % of these are chemically characterized. Turkey is the gene pool of several plants and it includes several geographical regions where endemic species grow. There has been special interest for the oils extracted by cold-pressing by consumers for the last decades. Oils which are generally used in pharmaceutical and cosmetic industries has now started to be consumed in our meals. Since oils extracted by cold pressing are not exposed to high temperatures (maximum 40-50 °C), solvents are not employed for oil extraction and higher amounts of natural antioxidants, phosphatides, cerebrosides, carotenoids and phytosterols which are partly lost due to refining in conventional oil production are present in cold-pressed oils, these oils has received special interest in term of nutritional properties. Trebinth, a most-widely grown wild type of Pistachia in Turkey, is a good candidate for consumption as food according to its properties. Among these properties the oil content of trebinth is the most important. In this study, oils from terebinth were first extracted from trebinth seed by cold-pressing and solvent extraction, several properties of extracted oils were then characterized. Saturated and unsaturated fatty acid ratios were determined by analyzing fatty acid compositions of the oils. The crude oil yield of terebinth was found to range between 30 and 35 %. Both protein and moisture contents of terebinth were determined as 5 % in average. Saturated, mono-unsaturated and poly-unsaturated fatty acid contents of terebinth oil obtained by cold pressing were 23.43, 38.08 and 28.26 %, respectively. Oil extracted by solvent extraction however had 9.99 % saturated, 23.81 % mono-unsaturated and 52.93 % poly-unsaturated fatty acids. Essential fatty acids in both oils obtained by cold pressing and solvent extraction were oleic (37.6 and 52.5 %, respectively), palmitic (21.1 and 20.4 %, respectively) and linoleic (26.9 and 15.5 %, respectively) acids. Additionally, free fatty acids, color, refractive index values were measured, antioxidant capacity and total phenolic contents of the oil were determined by DPPH and Folin methods. Total phenolic contents of oils extracted by cold-pressing and solvent extraction were found to be 289.7 mgGA/L and 244.1 mgGA/L in average while total antioxidant capacity of respective oils were determined as 653.5 µmol TE/L and 547.3 µmol TE/L, respectively.

KEYWORDS

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Medicinal Aromatic Plant, Terebinth, Fatty Acid, Cold Pressing

Poster Session 10

Submission ID: 1282

THE USE OF AROMATIC PLANT OILS IN THE PROCESSING OF TROUT EGGS AND THEIR EFFECT ON SENSORY PREFERENCES

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ABSTRACT

Today's consumers are more knowledgeable and careful about their health; this is why they avoid synthetic food additives (Mastromatteo et al., 2011; Holley and Patel, 2005). Therefore to reduce food borne pathogens new ways to reduce food borne illness must be put into practice, which can be used together with other hurdle technologies (Burt, 2004). Caviar can undergo pasteurisation but their taste is not well appreciated by consumers. Also, the salt concentration and storage temperatures are not always efficient to preserve caviar (Fioretto et al., 2005). The use of essential oils for food preservation has triggered a lot of interest (Holley and Patel, 2005). They are Generally Regarded as Safe (GRAS) and are good alternative to synthetic antibiotics (El et al., 2014). Essential oils have antimicrobial properties and can prolong the shelf-life of seafood alone or when used together with other processing techniques (Mejlholm and Dalgaard, 2002) and can inhibit food borne pathogens and spoilage microorganisms (Baydar et al., 2004). The fish roes were treated with thyme oil and lemon oil. To the control group, no essential oil was applied. Panelists were asked to evaluate the appearance, taste, texture and odour of the eggs. Out of the three groups, most of the panellists preferred the group which was treated with lemon oil. Using essential oils together with fish roe, both of which have functional properties ensures that the product is of the best quality and also might provide more benefits for human health by preventing some diseases. Furthermore, the taste of the product might also be enhanced and this might also create a new value added product.

KEYWORDS

Aromatic Plants Oil, Trout eegs, Processing, Sensory

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Poster Session 10

Submission ID: 1283

THE USE OF ESSENTIAL OILS IN INCUBATOR DISINFECTION

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ABSTRACT

The aim of this study was to develop a novel disinfectant derived from natural sources. The formulation was prepared by combining equal portions of oregano, cinnamon and clove oils, which has fresh odor and previously confirmed antimicrobial properties. The solutions prepared at different concentrations (1%, 2%, 3%, 4% and 6%) were sprayed in incubators. To detect the microbial density of incubator air, settle plates (30 min exposure) and air sampler (flow rate: 100 L/min) were used together. Air sampling was performed before and 2 h after disinfection. Prior to disinfection, the total mesophilic aerobic bacteria counts of incubator air were ranged from 35-43 CFU/plate for plates sampled by air sampler and 13-28 CFU/plate for settle plates. Mold and yeast counts of incubator air sampled by settle plates and air sampler were ranged between 3-8 CFU/plate and 1.5-5.5 CFU/plate, respectively. No growth was observed on mold and yeast plates inoculated after disinfection application in incubators. On the other hand, the formulation was found less effective on the total mesophilic aerobic bacteria count (maximum reduction of 82.9%) than mold and yeast count. The results indicated that the combination of essential oils could be effectively used in reducing the microbial loads of incubator air. This application could be especially useful to prevent the mold contaminations and also applicable for room disinfection.

KEYWORDS

incubator, air, disinfection, essential oil, air sampler

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USING MEDICINAL AND AROMATIC PLANTS IN FUNCTIONAL EGG PRODUCTION

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ABSTRACT

Hen's egg is a cheap, healthy and nutritious conventional food supplying several essential nutrients, excellent protein quality and low energy content. In addition, egg contains some biologically active compounds (lysozyme, ovalbumin, ovomucoid, ovomucin, ovotransferrin, cystatin, avidin, phosvitin etc.) which might have a role in the therapy and prevention of chronic and infectious diseases. In many scientific reports, it was indicated that these compounds has antimicrobial, immunomodulator, bone growth promoting, antioxidant, anticancer and antihypertensive properties. Taking into account the presence of all these components, the use of egg is becoming increasingly widespread in cosmetic, pharmacology, medicine, biotechnology, nutraceutical. Egg has been described (defined) as a "Nature's original functional food" because of providing a number of beneficial nutrients to sustain life and growth. Nevertheless, in recent years, egg industry is developing new functional eggs to meet the growing demands of health conscious consumers. In these eggs, some of biological active compounds are enhanced by dietary manipulation. Eggs enriched with n-3 fatty acids, antioxidants, carotenoids and minerals have attracted a lot of attention in nutritional sciences. The content of n-3 fatty acids in eggs could be increased by adding fish meal/oil, flaxseed (linseed), canola (rapeseed) and marine algae to diet. In egg enhanced with n-3 fatty acids, oxidative sensitivity has increased and shelf life has been shortened. Thus, the antioxidant status should also be subjected in eggs altered fatty acid profile by dietary manipulation. Currently, natural antioxidants are in high demand because of their health-enhancing and disease-risk-preventing properties. Globally, medicinal and aromatic plants or their extracts has been supplemented to diets for improving the antioxidant capacity of eggs. In recent years, several in vitro and in vivo studies have been conducted to determine the antioxidant effects of aromatic plants and spices, especially in cinnamon, cumin, laurel, mint, oregano, rosemary and sage. In this review, it would be given information about medicinal and aromatic plants or their extracts using in functional egg production.

KEYWORDS

Functional egg, medicinal and aromatic plant, antioxidant.

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KEYWORDS

Tea seed, Antioxidant, Fenolic compounds, Fatty Acids, Cold Pressing

TRACE ELEMENT AND FATTY ACID LEVELS OF FRITILLARIA PINARDII BOISS. PLANT SEED AND BULB

AHMET ÖZKAYA¹, AHMET ZAFER TEL², Umut YILMAZ HAN¹

ABSTRACT

Plants are important food sources for the people. Therefore, many studies are devoted to quality and nutritional values of plant [1]. Fatty acids and trace elements are very important for human life [2, 3]. The levels of fatty acid and trace element of *Fritillaria pinardii* BOISS seed and bulb in Turkey were determined by using ICP-OES, and GC, respectively. In this study, we performed first literaturally known fatty acid and trace element analyses of the *Fritillaria pinardii*. These plants were collected from Adiyaman/Nemrut mountain. After the plants were picked up, they were naturally dried in a shady. Among fatty acid levels of the plant bulb, at highest rates, was found containing 18.30% palmitic acid, 15.01% stearic acid, 19.71% oleic acid, 9.23% eicosatrienoic acid and 8.74% docosahexaenoic acid. The plant bulb was found containing Ni, Zn, Cr Ba, Al, Cu, Fe, and Mn, with respective quantities of 1.17, 24.45, 1.89, 8.15, 5.94, 0.75, 8.57, 19.69 µg/g, and K, Na at 19.56, 0.01 mg/g (dry matter) quantities, respectively. The fatty acids contained in the seed of that plant were found to be 14.23% palmitic acid, 4.13% stearic acid and 17.01% oleic acid, 53.59% linoleic acid and 2.93% alfa-linolenic acid. In the seed of plant, the quantities of Ni, Zn, Cr, Ba, Al, Cu, Fe and Mn were determined as 2.22, 27.26, 1.39, 15.27, 40.95, 3.47, 79.81, 32.62 µg /g, respectively while the quantities of K and Na levels were at 43.47, 0.07 mg/g (dry matter). From these results, it can be important for the future medicinal studies. Key Words: *Fritillaria pinardii*, element, fatty acid

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KEYWORDS

Fritillaria pinardii, element, fatty acid

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Poster Session 10

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PHENOLIC COMPOUNDS CONTENT AND ANTIOXIDANT CAPACITY IN FRUITS OF SOME EGGPLANT (*SOLANUM MELONGENA* L.) CULTIVARS*

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ABSTRACT

Aim of the study: Eggplant (*Solanum melongena* L.) is one of the most commonly consumed vegetable crops worldwide, and one with important beneficial effects on human health. These benefits are mainly due to eggplant's highly bioactive antioxidant constituents, such as phenolic compounds including flavonoids and anthocyanins. The objective of this study was to determine and compare the phenolic compound content and antioxidant capacity of seven commercial eggplant fruits in Turkey. Materials and Methods: The seeds of seven common eggplant cultivars (Aydın siyahı, Pala 49, Super pala, Kemer 27, Kadife kemer, Topan, and Kadife) were grown in soil, and seedlings were obtained from each cultivar using standard cultivation techniques for eggplant. The fruits were harvested when they reached commercial market size. The fruit was treated with liquid nitrogen and stored at -80 °C until analysis. Standard methods were used to determine total phenolic compounds (TPC), flavonoid (TF) and anthocyanin (TACY) contents and antioxidant capacity (DPPH, FRAP, and CUPRAC) values. All results were expressed as dry weight (dw). Results: The TPC content (mg GA/100 g) in the cvs. ranged from 1019.51 to 613.20 (average, 862.58), and the TF content (mg QE/100 g) from 244.76 to 184.13 (average, 225.86). Super pala had the highest TPC and TF contents (1019.51 and 244.76 mg/100 g, respectively). The highest TACY content was determined in Kemer 27 (221.02 mg/100 g) eggplant. DPPH radical scavenging activity ranged from 54.30 to 37.31 $\mu\text{mol TEAC/g}$, FRAP from 106.93 to 53.83 $\mu\text{mol TEAC/g}$ and CUPRAC from 126.11 to 50.57 $\mu\text{Mol TEAC/g}$. Super pala had the highest DPPH radical scavenging activity (54.30 $\mu\text{mol TEAC/g}$), and FRAP (106.93 $\mu\text{mol TEAC/g}$) and CUPRAC (126.11 $\mu\text{mol TEAC/g}$) levels. In conclusion, eggplant can be beneficial to human health because of its high phenolic contents and antioxidant capacity values. *Acknowledgment: Financial support for this study was provided by the Research Fund of Karadeniz Technical University in Turkey (Project No: 2008.111.004.04).

KEYWORDS

Eggplant, Solanum melongena, Antioxidant, Phenolic, Anthocyanin

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Poster Session 10

Submission ID: 1289

DEVELOPMENTS IN MEDICINAL AND AROMATIC PLANT PRODUCTION IN TURKEY

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ABSTRACT

Day by day attention to medicinal and aromatic plants increases causing rise in commerce and production of these plants. Turkey has features of three old continents and flora of three phytogeography. Turkey's flora includes many herbal products that constitute input for herbal medicine, herbal chemicals, food and additives, cosmetics and fragrance industry of developed countries. A significant part of rich plant diversity is used as medicinal and aromatic plants. Medicinal and aromatic plants that are collected from the nature and cultured have a lot of economic potential. Among agricultural plants, opium, cumin, anise, thyme and rose (for oil) take place on top. In addition, it is not possible to reach the data for the plants that have small breeding areas and production amount. According to the data of TUIK, in Turkey although the breeding area of medicinal and aromatic plants (poppy (seed/capsule), lupin hop, melissa, nettle, sage, rose (for oil), lavender, anise, cumin, thyme, blackcumin, fenugreek, fennel, coriander, heather, capers, dill, parsley, mint, purslane, rocket, water cress, sweet potato) was 93.633 ha in 2016 that is 2.401 ha less than the previous year, production decreased by 3.809 tones. For all that an increase is seen in the last five years. Poppy, cumin and thyme contributed a lot to the increase in the breeding area and production amount. Additionally, increase in blackcumin and fenugreek cannot be denied. When compared to other countries it is seen that Turkey cannot benefit economically from rich medicinal and aromatic plant diversity. For sustainable production of medicinal and aromatic plants, agriculture should become widespread.

KEYWORDS

Medicinal and aromatic plant, collecting from nature, production, plant diversity

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Poster Session 10

Submission ID: 1290

HYALURONIC ACID EXTRACTION FROM KOMBUCHA SYMBIOSIS

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ABSTRACT

Kombucha is a kind of mushroom tea which can be used to alternative drug in folk remedies. Kombucha was originated East Asian firstly and then coming to Russian. Kombucha mushroom is living a solution of sugar and varieties organism and produce continuously. Kombucha contains over 50 different kinds of probiotics, organic enzymes, amino acids and vitamins components. Especially, kombucha contains hyaluronic acid and glucosamine which is why it's so effective in relieving joint pain. Hyaluronic acid is a linner polysaccharide which used to be cilinically drug and dermatology. Previous studies were found to hyaluronic acid in kombucha symbiosis and generally using at cosmetic industry effectively. In our laboratories we produced the kombucha mushroom suitable fermatation and conditions so that we had so many kombucha teas for drinking and testing. In this project, we will be try to isolated from hyaluronic acid both of kombucha mushrooms and teas firstly. After that we are going to purity of hyaluronic acid from kombucha samples and prepare the most suitable extraction of hyaluronic acid. GC-MS and HPLC will be used for structure and quantities of samples How the hyaluronic acid will be determined in kombucha samples then need to compare with commercially hyaluronic acid. Also some biological parameters as DNA protection activity and antimicrobial activities will be find from this extractions. We believe that this project is very important for cosmetic and drug industry.

KEYWORDS

Kombucha, Hyaluronic acid, GC-MS, HPLC

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Poster Session 10

Submission ID: 1291

ESSENTIAL OIL COMPOSITION OF CHONDRILLA JUNCEA L. FROM İSTANBUL

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ABSTRACT

Chondrilla juncea of Asteraceae is an invasive plant species native to Europe, Asia and North Africa. This plant finds edible use in the Mediterranean countries. However there is only few reports on the chemistry of this species. Previously isolation of triterpene, phenolic and sesquiterpene glycoside types of compounds were reported from *C. juncea*. To the best of our knowledge this is the first report on the essential oil composition of *C. juncea*. Chondrilla juncea was collected during the flowering period from İstanbul. Essential oil was obtained with a cleverger apparatus by 3h distillation. Yield of the essential oil was <0.01%. The GC-MS analysis of the essential oil was performed with an Agilent 5977 MSD system operating in EI mode. Essential oil sample was diluted 1:10 (v:v) with n-hexane. Injector and MS transfer line temperatures were set at 300 and 250°C respectively. Splitless injection was employed. Innowax FSC column (60 m x 0.25 mm, 0.25 µm film thickness) and helium as carrier gas (1 mL/min) were used in GC-MS analyses. Oven temperature was programmed to 60°C for 10 min. and raised to 220°C at rate of 4°C/min. Temperature kept constant at 220°C for 10 min. and then raised to 240°C at a rate of 1°C/min. Mass spectra were recorded at 70 eV with the mass range m/z 35 to 425. Relative percentage amounts of the separated compounds were calculated from integration of the peaks in MS chromatograms. Identification of essential oil components were carried out by comparison of their relative retention indices (RRI) obtained by series of n-alkanes (C5 to C30) to the literature and with mass spectra comparison. Thirty six compounds were identified representing 87.5% of the essential oil of Chondrilla juncea. The main components of Chondrilla juncea were identified as hexadecanoic acid 20.2%, heneicosane 18.2%, hexahydrofarnesyl acetone 5.4%, octadecane 5.2%, heptacosane 4.5% and phytol 3.7%.

KEYWORDS

Chondrilla juncea, essential oil, hexadecanoic acid, heneicosane, hexahydrofarnesyl acetone

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Poster Session 10

Submission ID: 1292

ESSENTIAL OILS OF SOME SPICES AND MEDICINAL PLANTS

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ABSTRACT

Essential oils are generally volatile and odorous mixture that are liquid form in normally, which is obtained by, water, or water vapor distillation solvent extraction and presson method from plants or some parts. Many substances of essential oils are widely has been used in the food, pharmaceutical, paint, mining and cosmetic industries. Essential oils have anti-spasm, irritant, antiseptic, mutagenic, antimutagenic and antimicrobial properties. There are also many researches have been effects of essential oils against on the microorganisms which cause food spoilage and poisoning. The composition and amount of essential oils are cahged depends plant's type, plant's part, the region, the production place and production methods. Some of plant species widely produced in the World are sage, carnation, saffron, turmeric, cinnamon, etc., and contained essential oil. About 500 of Sage species have been identified so far. These species are distributed in tropical and subtropical regions. It contains essential oil components such α -tuyo of sage, β -tuyo of 1,8-cineol, camphor, borneol and β - pinene etc. Studies have shown that essential oils containing tuyen, camphor and caryophile in sage (*Salvia officinalis*) have antifungal activity. It was determined that $\rho + \beta$ tuyen, 1,8-cineol, limonene and camphor materials ,which constitute the main components of *Salvia officinalis* L. (sage) essential oil, did not show mutagenic properties when they used separately. But if they used together, they would give positive results except antimutagenicity tests (except camphor) Cloves have appetizing, digestive stimulant and antiseptic properties. Overall it have included essential oil components of eugenol, caryophyllene, eugenyl acetate, humulrn, ylang and methoxybenzaldehyde. Studies have shown that mixtures of cloves, thyme, mint and lemon essential oils reduce the number of *Clostridium perfringens*. Saffron is a dried stigma of *Crocus sativus* L species. It's the most important essential oil is safranal. Turmeric (*Curcuma longa* L. (saffron root, Indian saffron)) is commonly used instead of saffron plant as a spice. The most important components of turmeric essential oil are Turmeron, zingiberen, kurukumen, bizabolen, zingeron, atlaton, kurkumin, 1,8 cineol, α -felandren, caryophyllene, p-cymene and farnesen. It has been reported that the component of curcumin essential oil obtained from *Curcuma longa* L plant had strong antioxidant activity. Cinnamon is obtained from the dried shell of *Cinnamomum* (Lauraceae) type plant. Ibn-i Sina reported in the book *al-Kânûn fi't-Tıbb* that the effects of cinnamon are refreshing and heating up and eliminated the bad effects of diseases. Some important essential oil components found in cinnamon are cinnamic aldehyde, eugenol, cinnamyl, acetate and hydrocyanic aldehyde. Mint (*Menta*) plant contains significant amount of essential oil and main components of its essential oil are menthol, menthol, menthofuran, menthyl acetate, γ -terpinene, α - and β -pinene, 1,8-cineole, limonene, linalool, ethyl amylcarbinol, pulegone and piperidone. It has been reported that different types of mint have some positive effects on humans such as antimicrobial, antispasmodic, coleretic, carminative.

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KEYWORDS

Essential oils, Sage, Cinnamon, Mint, Clove.

Poster Session 10

Submission ID: 1293

"KANLICA MASHROOM" THAT A WILD EDIBLE MUSHROOM VARIETIES FROM KASTAMONU: SPECIES, FUNCTIONAL PROPERTIES AND ALTERNATIVE USES

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ABSTRACT

Wild edible mushrooms have been collected and consumed by people for their nutritional value and they are occasionally consumed for their supposed medicinal value. They are known as highly valued non-wood forest products today, thus wild edible mushrooms have played an important role in providing new sources of income in the whole World. Turkey has also very large variety of wild edible mushroom, especially in Black Sea Region. Kanlıca mushroom, also known as pine mushroom and Çintar mushroom, is from Russulaceae family. It has *Lactarius deliciosus*, *Lactarius deterrimus*, *Lactarius salmonicolor* and *Lactarius semisanguifilius* species. It is seen in leafy tree forests, pine forests and meadows in the world, after spring and autumn rains. It is grown in Kastamonu, Sinop, Bursa and Balıkesir in the interior parts of the West and Central Black Sea. It is among the wild edible mushrooms and has an important place among the non-wood forest products in Kastamonu. The mushroom has local consuming causes and consumption patterns around Kastamonu. The vast majority of harvest and consumption takes place in August and November by the local people from their natural environment. Moreover, conservation in saline water is quite common. The direct consumption is not appropriate since it has a bitter taste. It is usually consumed after boiling in water. The taste resembles meat. The mushroom boiling water is also used for facial treatment for acne treatment by the local people. Kanlıca mushroom is a protein source, and rich in amino acids, mineral substances and vitamins (B1, B2, C vitamins and niacin). Morphologically and visually it is quite different from cultured mushrooms and many wild mushrooms. It has 5-15 cm diameter and the middle part is concave. The mushroom hat is orange and yellow, the lamellas are reddish yellow and white, and the handle is wine red and turmeric. They are characterized by the unique ability to produce a red milky fluid, if cut or broken. The crumb of Kanlıca mushroom is fruit-smelling, soft, reddish yellow-white. In this study, the types of Kanlıca mushroom in Kastamonu region, food and non-food alternative consumption reasons and functional qualities have been investigated.

KEYWORDS

Wild edible mushrooms, Kanlıca mushroom, Çintar, pine mushroom, Kastamonu

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¹KASTAMONU ÜNİVERSİTESİ MÜHENDİSLİK VE MİMARLIK FAKÜLTESİ GIDA MÜHENDİSLİĞİ BÖLÜMÜ

PHENOLIC COMPOUNDS CONTENT AND ANTIOXIDANT CAPACITY OF ENDEMIC TRIPLEUROSPERMUM BAYTOPIANUM AND T. REPENS (ASTERACEAE) FROM TURKEY*

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ABSTRACT

Aim of the study: Many edible plants play a protective role in the maintenance of human health due to the antioxidant properties of their biologically active compounds known as “plant phenolics”. They also contribute an important part of plant secondary compounds with a significant impact on defense mechanisms in plants. The genus *Tripleurospermum* (Asteraceae) is of considerable medicinal value. Its phytochemical profiles, mostly consisting of volatile/oil components, exhibit a range of health benefits including anti-inflammatory, antiseptic, antifungal, antibacterial, antiulcer and antioxidant activities. This study investigated the phenolic compounds content (TPC) and antioxidant capacity (AC) of endemic *T. baytopianum* E. Hossain and *T. repens* (Freyn & Sint.) Bornm. for the first time in the literature. Materials and Methods: *T. baytopianum* and *T. repens* specimens were collected from different habitats in Turkey. The whole plant, including root, shoot and leaf, was fully dried in the shade at room temperature and low humidity and stored until analysis. The capitulum was separated and used in the extraction procedures. TPC and AC values assayed with DPPH radical scavenging activity, ferric reducing antioxidant power (FRAP) and cupric reducing antioxidant capacity (CUPRAC) were measured using standard methods published elsewhere. Results were expressed as dry weight (dw) units. Results: TPC and AC values differed significantly between the species. TPC content was 32.8 mg GA/g dw in capitulum in *T. repens*, higher than in *T. baytopianum* (14.1 mg GA/g DW). AC values ($\mu\text{mol TE/g dw}$, DPPH, CUPRAC, FRAP) also differed between the species. *T. repens* exhibited higher AC values (4.2 DPPH, 12.0 FRAP and 3.7 CUPRAC) than *T. baytopianum* (2.0, 8.1 and 2.8, respectively). *Acknowledgments: The authors thank the Scientific and Technological Research Council of Turkey (TUBITAK, project no: 102T162) for its financial support.

KEYWORDS

Antioxidant, Tripleurospermum baytopianum, Tripleurospermum repens, Phenolics, Antioxidant

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Poster Session 10

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ESSENTIAL OIL COMPOSITION OF *SCILLA AUTUMNALIS* L. FROM İSTANBUL

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ABSTRACT

Previously essential oil composition of *Scilla autumnalis* was not reported. However there is considerable amount of report on the chemistry of non-volatile secondary metabolites of *Scilla* species. Until now homoflavonoids, stilbenoids, alkaloids and cardiac glycosides were isolated from *Scilla* species. *Scilla autumnalis* was collected during the flowering period from İstanbul. Essential oil was obtained with a cleverger apparatus by 3h distillation. Yield of the essential oil was <0.01%. The GC-MS analysis of the essential oil was performed with an Agilent 5977 MSD system operating in EI mode. Essential oil sample was diluted 1:10 (v:v) with n-hexane. Injector and MS transfer line temperatures were set at 300 and 250°C respectively. Splitless injection was employed. Innowax FSC column (60 m x 0.25 mm, 0.25 µm film thickness) and helium as carrier gas (1 mL/min) were used in GC-MS analyses. Oven temperature was programmed to 60°C for 10 min. and raised to 220°C at rate of 4°C/min. Temperature kept constant at 220°C for 10 min. and then raised to 240°C at a rate of 1°C/min. Mass spectra were recorded at 70 eV with the mass range m/z 35 to 425. Relative percentage amounts of the separated compounds were calculated from integration of the peaks in MS chromatograms. Identification of essential oil components were carried out by comparison of their relative retention indices (RRI) obtained by series of n-alkanes (C5 to C30) to the literature and with mass spectra comparison. The GC-MS analysis of *S. autumnalis* essential oil presented the main components as heptacosane 21.5%, pentacosane 12.5%, nonacosane 7.3%, hexadecanoic acid 4.0%, hexahydrofarnesyl acetone 3.4% and hexadecanoic acid methyl ester 2.7%.

KEYWORDS

Scilla autumnalis, essential oil, heptacosane, pentacosane, nonacosane

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Poster Session 10

Submission ID: 1296

CORIANDER SEED OIL: THE BENEFITS ON SKIN REGENERATION

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ABSTRACT

Coriandrum sativum L. belongs to the Apiaceae family, but its origins are still indefinite. The Coriander genus was represented in Flora of Turkey with two different species as *C. sativum* and *C. tordylium*. The major component was determined as linalool (% 60-70) in the essential oil of the coriander. It also contains fatty acids, coumarins, flavonoids, polyphenols in the extracts. Moreover, it is known as a medicinal plant used in many disorders. The coriander has been used in various fields especially in food and pharmaceutical markets. This current study is concentrated on methods of obtaining essential or fatty oils from coriander seeds for use in prescriptions. That is why, we believe that in this presentation we will put forward the features of the skin regeneration, derive the methods of obtaining and we will discover all the interesting effects of coriander, discover effects together with formulations.

KEYWORDS

Apiaceae, Coriander, Oil, Coriandrum

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Poster Session 10

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SUGARS AND ORGANIC ACIDS IN BERRIES OF ERZINCAN BLACK GRAPE (*VITIS VINIFERA* □ KARAERİK □)*

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ABSTRACT

Aim of the study: Grapes (*Vitis* spp.) are one of the most important and nutritious horticultural crops. They are often used in diets and are widely regarded as beneficial for human health and as preventing various degenerative diseases due to their polyphenol content. Sugars and organic acids are natural components of black grapes and play a significant role in determining nutritional value and maintaining fruit quality, flavor and stability. The Erzincan black grape (*Vitis vinifera* 'Karaerik') is a patented and certified agricultural product in Turkey. The aim of this study was to examine some physicochemical (pH, TA, etc.) parameters and the sugars and organic acids in different parts of the black grape, which grows naturally in Erzincan province, Turkey. Materials and Methods: Grape berry samples, at commercial maturity stage randomly harvested from different locations in Erzincan, were immediately frozen in liquid nitrogen. Sugars and organic acids in the grape berry parts were separated and quantified using HPLC and the physicochemical parameters measured by using standard published methods (pH, TA, MC, DM, FD, etc.) All results were expressed as fresh weight (fw). Results: The pH values and TA contents in berries of the black grape were 3.50 and 0.59 g citric acid/100 g, respectively. The berry diameter (FD, 20.17%), moisture content (MC, 81.06%) and dry matter (DM, 17.51%) were also determined. Fructose (peel, whole grape and seed; 188.86, 126.05, and 13.69 g/kg fw, respectively) and glucose (peel, whole grape and seed; 152.6, 105.6, and 9.9 g/kg fw, respectively) were the most abundant sugars, and tartaric acid (peel, whole grape and seed; 6.78, 2.81, and 1.98 g/kg fw, respectively) and malic acid (peel, whole grape and seed; 2.6, 2.6, and 6.87 g/kg fw, respectively) were the major organic acids identified. In conclusion, the black grape contains high levels of fructose and can be used as part of a healthy diet since the consumption of fructose-rich foods is recommended. *Acknowledgment: Financial support for this study was provided by the Scientific and Technological Research Council of Turkey (TUBITAK- Project number: 115Z365).

KEYWORDS

Grape, Vitis vinifera, Sugar, Organic acid

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Poster Session 10

Submission ID: 1299

HERBAL NUTRACEUTICALS

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ABSTRACT

Nutraceutical, a portmanteau of the words “nutrient” and “pharmaceutical”, was coined by Stephen DeFelice, who defined nutraceuticals as “foods (or part of a food) that provide medical or health benefits, including the prevention and/or treatment of a disease”. The European Nutraceutical Association (ENA) defines nutraceuticals as substances that markedly contrast pharmaceuticals, which are “synthetic substances or chemical compounds formulated for specific indications”. Nutraceuticals are, hence, “nutritional products that provide health and medical benefits, including the prevention and treatment of disease”. There are numerous classifications and categorizations of nutraceuticals, functional foods and dietary supplements. In the case of nutraceuticals and functional foods, however, consumer acceptance is considered to be overwhelmingly positive throughout the US, Canada, Europe and Japan, though Europeans tend to be more critical of new food products and technologies. Functional foods and beverages for cholesterol and diabetes, cognitive functions, are those related to the digestive system. Most common nutraceuticals are dietary support products, minerals and vitamins, protein and herbal support. Another type of compounds commonly referred to as “nutraceuticals” which also present a nutritional value are pre- and probiotics. Tea, rosemary, soybean, flaxseed, yellow centaur, tomato, garlic, ginkgo, echinacea, ginseng, dietary fiber are some important herbal nutraceuticals. The effective components of tomato, grape seed, green tea and soybeans are lycopene, resveratrol, EGCG (Epigallocatechin gallate) and isoflavones, respectively, which are considered as nutraceuticals. Herbal nutraceuticals can be used as food supplements.

KEYWORDS

Nutraceuticals, herbal nutraceuticals, effective components

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THE INVESTIGATION OF SOME YIELD AND YIELD COMPONENTS OF POPPY (*PAPAVER SOMNIFERUM L.*) CULTIVARS GROWN IN YOZGAT ECOLOGICAL CONDITIONS

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ABSTRACT

Poppy (*Papaver somniferum L.*), which is a member of the Papaveraceae, this is both a medicinal and edible oil plant. There are 5 genus in Turkey belonging to this family. The poppy plant (*Papaver somniferum L.*) is been the purple and white flowers, with a closed capsule, annual, and herbaceous plant with a length of 60-200 cm. Turkey which import oil seed sand crude oils every year for the Exchange pay sout over 1,5 billion dolar is a net importer of the oil seed sand crude oils. There is a great vegetable oil in our country and the amount of imported 755 thousand tons of raw vegetable oil per year is 1542 thousand tons imported from abroad. With increased demand for oil and vegetable oil for fuel needed in our country, increased the production of oil seeds is required. For the cultivation of poppy, Turkey has a very favorable climatic and soil conditions. Seed and oil yield, fatty acid composition and oil – fuel related characteristics, which are affected by variety and environmental conditions. In this study, registered in our country 2 poppy varieties (Ofis-8 ve TMO-1) aimed to determine in Yozgat ecological conditions the morphological characteristics such as plant height, capsule yield per plant, capsule width, capsule length, capsule yield, seed yield and weight of 1000 seeds and oil ratio in varieties were examined. The highest yield in this study, carried out between 2015 and 2016, was obtained from TMO-1.

KEYWORDS

Poppy, variety, Yozgat, yield, oil rate

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USE OF GOJI BERRY AS FUNCTIONAL FOOD

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ABSTRACT

Goji berry is a perennial woody plant belonging to the family Goji berry solanaceae and has two species, *Lycium barbarum* L. and *Lycium chinense* L.. These are the two closest color box types found in Solanaceae, in the abstract family. The family includes potatoes, tomatoes, eggplant, belladonna, pepper and tobacco. Originated from the Asian continent, this plant is now produced in China's Tibetan region. Goji berry (Wolfberry, *Lycium barbarum*) grows about 1-3 meters in length. Goji berry is 1-2 cm long, bright orange-red elliptical fruit. The Goji berry contains 68% carbohydrate, 12% protein, 10% lipid and 10% fiber. Vitamins and minerals are also rich in Goji berry. It contains beta-sitosterol, Vitamin B complex, Vitamin E, Vitamin C, Zeaxanthin, Carotenoids, Beta-sitosterol, Cyperone, Solavetivone, Physalin, Betaine, and a large number of phenolic acids and. *Lycium barbarum* (Goji fruit or wolfberries, Solanaceae family) is a chemical rich resource with health promoting properties, Goji berry, used in liver, kidney and eye treatment in traditional Chinese medicine, has become very popular over the past few years with its nutritional value and content. As a result of the clinical studies, there was a decrease in the complaints of goji berry patients neurological / psychological features, joint / muscle functions, sleep quality, ability activities, gastrointestinal system problems, fatigue, headache, depression, diabetes, glaucoma, impaired concentration, memory loss and shortness of breath. These recent studies show that Goji Berry has anti-aging, anti-myelosuppression, pro-apoptotic, anti-tumor, neuroprotective effect, immunomodulation, blood sugar and serum lipid lowering effects besides antioxidant effect. While Goji berry offers many benefits and advantages in terms of health, it can have some side effects depending on the person's health conditions and consumption pattern. Goji fruit is harmful to diabetes patients because it affects the functioning of the pancreas and the production of insulin. Goji berry, blood thinner like warfarin, prevents blood clotting. It can negatively affect the body's blood pressure levels and cause hypertension. Excessive consumption can lead to severe side effects such as dizziness, eye disturbance, blurred vision and hallucinations. Since the beginning of the 21st century, interest in wolfberries has increased due to innovation and the value of the foreseen food. Goji berry plant can be widely consumed in the form of dried fruit, marmalade or fruit juice. Goji berry can be used as functional food because of its high antioxidant and phenolic content.

KEYWORDS

Goji Berry, composition, health benefits, functional food

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Poster Session 10

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POLYAMINES AND PHENOLIC COMPOUNDS CONTENT IN THE FRUIT OF NATURALLY GROWING MALUS SLYVESTRIS L. IN GÜMÜŞHANE (TURKEY)*

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ABSTRACT

Aim of the study: Antioxidants are disease-fighting compounds that help prevent and repair oxidation damage. Phenolic compounds and polyamines also exhibit various therapeutic effects (such as diuretic properties, toxin removal and reducing the risk of cancer). Apple is in great demand by consumers in all countries due to its high phenolic and polyamine content. The purpose of this study was to determine the polyamines and total phenolics of a wild type of increasingly cultivated apple (locally known as the □□Göbek□ apple) in the province of Gümüşhane in Turkey. Materials and Methods: Apple samples of the same maturity to be used in analyses were collected from different habitats in Gümüşhane. These were treated with liquid nitrogen and then stored at -80° C until analysis. Standard methods of analysis were used to determine polyamine and phenolic contents in the peel and flesh. Results: The polyamine (nmol per 1 g fw) with the highest content in the Gümüşhane apple was spermidine in the peel and flesh (188.27 and 79.45, respectively), while putrescine represented the least abundant polyamine in the fruit parts (35.17 and 21.61, respectively). The total phenolic compounds and flavonoid contents in the fruit evaluated were 3267.66 and 200.94 mg 100 g⁻¹ in peel and 1614.66 and 14.24 mg 100 g⁻¹ of fw in the flesh. Apple peel exhibited higher antioxidant activity (µM Trolox equivalents (TE)/g fw) than the flesh; antioxidant capacity values in peel were 0.37 for DPPH and 22.51 for FRAP. In conclusion, the apple cv that grows naturally in Gümüşhane and that is also increasingly widely cultivated has high polyamine and phenolic contents. It may also be beneficial to human health and have good commercial potential as a promising antioxidant for use in food preparation. *Acknowledgment: Financial support for this study was provided by the Research Fund of Karadeniz Technical University (KTU-BAP Project No: 6443).

KEYWORDS

Apple, Malus sylvestris, Phenolics, Polyamines

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ANTIMICROBIAL ACTIVITY OF POMEGRANATE PEEL EXTRACTS

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ABSTRACT

Mastitis is an intramammary infectious disease that is common in dairy cattle farming all over the world and causes major economic losses in the dairy industry. *Staphylococcus aureus* is one of the most prevalent contagious pathogens causing clinical and subclinical bovine mastitis [1, 2]. *S. aureus* has a great ability to acquire resistance to antibiotics, in particular to methicillin. Methicillin-resistant *Staphylococcus aureus* (MRSA) is a pathogen emerging in community and livestock as well as hospitals [3]. Even though pharmacological industries have produced a number of new synthetic antibiotics in the last three decades, antibiotic resistance of microorganisms against these drugs has also increased [4]. There has been an increasing interest in recent years on antimicrobial compounds obtained from natural sources that are not toxic and with lesser costs rather than developing new synthetic antibiotics to combat the disease. The use of plant extracts and phytochemicals, both with known antimicrobial properties, can be of great significance in therapeutic treatments in the last few years. Pomegranate is a good natural resource of pharmaceutical, nutraceutical and biologically active ingredients showing high antioxidant properties as well. Pomegranate peel methanol extract contains high concentration of tannins, like punicalin and punicalagin, elagic acid and gallic acid showing antioxidant activity [5]. In the current contribution, phenolic compounds of pomegranate peel were obtained using alcoholic and hydroalcoholic extractions. The antimicrobial effect of these extracts against five *S.aureus* strains, isolated from subclinical bovine mastitis, was also investigated using agar well-diffusion method and minimum inhibition concentration. It has been observed that the pomegranate peel extracts have antimicrobial effect on all microorganisms, giving inhibition zones ranging in size from 14 mm to 22 mm. The MIC values for active pomegranate extracts ranged between 0.0625-0.25 mg/ml. The current results show that pomegranate peel extracts have a potential to be used as an antimicrobial agent against MRSA. References: 1. YANG, F., et al., Penicillin-resistant characterization of *Staphylococcus aureus* isolated from bovine mastitis in Gansu, China. *Journal of Integrative Agriculture*, 2017. 16(2): p. 60345-7. 2. Marques, V.F., et al., Biofilm production and beta-lactamic resistance in Brazilian *Staphylococcus aureus* isolates from bovine mastitis. *Brazilian Journal of Microbiology*, 2017. 48(1): p. 118-124. 3. Sowash, M.G. and A.-C. Uhlemann, Community-associated methicillin-resistant *Staphylococcus aureus* case studies. *Methicillin-Resistant Staphylococcus Aureus (MRSA) Protocols*, 2014: p. 25-69. 4. Thenmozhi, M. and S. Rajeshwari, Phytochemical analysis and antimicrobial activity of *Polyalthia longifolia*. *International Journal of Pharma and Bio Sciences*, 2010. 1(3): p. 1-7. 5. Howell, A.B. and D.H. D'Souza, The pomegranate: effects on bacteria and viruses that influence human health. *Evidence-Based Complementary and Alternative Medicine*, 2013. 2013.

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KEYWORDS

Pomegranate, Subclinical mastitis, S.aureus, MRSA, Antimicrobial agent

ANTIMICROBIAL ACTIVITY OF MEDICINAL MACROFUNGI

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ABSTRACT

Today, antimicrobial agents are commonly used against infections but the frequently usage of these substances caused that pathogens gain resistance to them and reduced the effect of these substances. In order to come over this problem, most of the researchers try to find new organisms that produce antimicrobial agents. Until today some studies have done about medicinal plants showing antimicrobial activity. Some fungal strains are investigated that produce antimicrobial agents. One study reported that the ethyl acetate obtained from extracts of macrofungi called *Russula delica* had antimicrobial activity on *Corynebacterium xerosis*. Another study showed that *Reishi* extracts had antimicrobial activity on fish pathogens called *Listonella anguillarum* and *Yersinia ruckei*. Another study investigated that the essential lipid chemical compound called *Levofloxaci* obtained from dried misels of *G. japonicum* fungi showed antimicrobial activity on methicilin resistant strains of *S. aureus* and *E. coli*. The results of these studies showed that some of the macrofungi produced agents showing antibacterial, antiviral, antifungal vs. activity. The agents obtained from macrofungi are useful for human to treat infections. The aim of this study is to examine the fungi that showed antimicrobial activity in literature. The results obtained this study showed that there is not enough study on this subject. New researches are needed for future about antimicrobial activity of macrofungi.

KEYWORDS

Antimicrobial activity, Macrofungi, Pathogen

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Poster Session 10

Submission ID: 1308

POLLEN MORPHOLOGY OF NATURAL DISTRIBUTED TWO DAUCUS (APIACEAE) TAXA IN TURKEY

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ABSTRACT

This study aims to find out palynological properties of *Daucus broteri* Ten. and *Daucus guttatus* that are grown in Osmaneli (Bilecik). For palynological analysis of plant materials, pollen preparations of each taxon were prepared for light microscopy research according to the Wodehouse and Erdtman methods and measurement of the morphological characters of pollen were carried out. Pollen grains of each taxon ,which adhesive on the stap mounted directly, were also taken microphotography in Scanning Electron Microscope (SEM) for detailed exine ornamentations. It was revealed that the pollen of two *Daucus* taxa was infratectate, tricolporate type, prolate shaped and regulate ornamentation. In addition to the systematic features of the taxa pollen morphologies is also distinctive. It was also revealed that this study will help to sort out phylogenetic relationships of between studied taxa.

KEYWORDS

Daucus, Apiaceae, Pollen Morphology, Light Microscope, SEM, Turkey.

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Poster Session 10

Submission ID: 1309

ANTIOXIDANT AND ANTIMICROBIAL ACTIVITY OF MESPILUS GERMANICA (L).

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ABSTRACT

Mespilus germanica L. which has an edible fruit is a medicinal plant whose therapeutic effects have historically been emphasized. In this study, we determined antioxidant capacities of methanolic extracts obtained from *M. germanica* fruits and seeds by using DPPH assay and Folin-Ciocaltaeu method. It was revealed that the total phenolic contents of methanolic extracts of *M. germanica* seeds (22.94 mgGAE/g extract) were higher than *M. germanica* fruits (4.67 mgGAE/g extract). Also, the seed extract (9.33 mgTE/g extract) exhibited stronger free radical scavenging activity in DPPH assay as compared to fruit extract (6.67 mgTE/g extract). Moreover, we determined antimicrobial activity of methanolic extract obtained from *M. germanica* fruits and seeds against 16 different bacteria by the microdilution method. While the extract of *M. germanica* obtained from seeds used in study did not have any effects against bacteria, it was shown that the fruit extract was effective against five bacteria in 32 mg/ml concentration and against eleven bacteria in 64 mg/ml concentration. Our findings could provide a starting point for further studies on *M. germanica*.

KEYWORDS

Mespilus germanica, Antioxidant, Antimicrobial, Free Radical Scavenging, Phenolic Contents.

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Poster Session 10

Submission ID: 1311

ANTIMICROBIAL EFFECTS OF THYME OLEORESIN AGAINST *B. COAGULANS*

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ABSTRACT

Oleoresins (OR) are defined as a mixture of oil and resin extracted from different plants containing essential oil. Oleoresin has characteristics flavor and aroma of spices which are the same as the original. Oleoresin extraction is generally done with organic solvents, such as ethylene dichloride, acetone, ethanol, methanol, hexane, ether and isopropyl alcohol. Rosemary, garlic, ginger, thyme, basil, cumin, dill, mustard, coconut, black pepper, red pepper, celery, clove, cocoa and coriander are among the commercial oleoresins. Oleoresins and essential oils are used in processed meat, fish, vegetables, sodas, sauces, cheeses and other dairy products, floury foods, candy, snacks and beverages. Natural essential oils and oleoresins have antimicrobial and antioxidant properties and are effective against microorganisms that cause food poisoning. Sauces are a permanent food media for fortification with all three of these plant materials or oils/oleoresins of these spices. Tomato sauce is an acidic product and is under risk of *B. coagulans* because spores of *B. coagulans* are able to germinate and grow at pH values as low as 4. This is an acidophilic and thermotolerant spoilage bacterium which causes foods to go flat and sour and is particularly reported for tomato based products. There is a lack of information in literature about the influence of these spice oleoresins and there are limited studies about the effects of the essential oil forms of these spices on this bacteria. Thyme (*Thymus vulgaris* L.) was preferred for providing the sensory properties of foods and also its antimicrobial effects are well known. In addition the antioxidant and antibacterial activities of thyme essential oil and oleoresin also have been previously mentioned several times. For this reason in this study, the antimicrobial activity of thyme (*Thymus serpyllum*) oleoresin against *Bacillus coagulans* in a tomato based sauce was investigated. The inhibitory and bactericidal effect of oleoresin against *B.coagulans* ATCC 7050 was tested in the sauce media (pH 4.2 and °Brix 10). As a result, thymol as a major component of thyme oleoresin similar to its essential oil was identified with gas chromatography-mass spectrometry (GC-MS). Minimum inhibition concentration (MIC) was found as 2.5 ml/100 ml sauce for the thyme. In addition at the the end of 8 hours, with thyme 3.20 log reduction was provided.

KEYWORDS

Oleoresin, thyme, essential oils, tomato sauce, MIC (Minimum Inhibition concentration), B. coagulans

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Poster Session 10

Submission ID: 1312

SOME MEDICINAL FEATURES OF SPIROGYRA MAJUSCULA AND ZYGNEMA PECTINATUM

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ABSTRACT

In this study, some medicinal features of *Zygnema pectinatum* and *Spirogyra majuscula* were investigated. Vitamin A, E capacity and antioxidant properties of *Z. pectinatum* and *S. majuscula* isolated from Ataköy Dam Lake (Tokat) were examined by HPLC and spectrophotometer. As a result of the research, *Z. pectinatum* was found to be richer than *S. majuscula* in terms of the amount of vitamins (A, E) and antioxidant properties.

KEYWORDS

Zygnema pectinatum, *Spirogyra majuscula*, *Chlorophyta*, *Vitamins*, *Antioxidant Properties*

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Poster Session 10

Submission ID: 1313

THE ANTIMICROBIAL ACTIVITY OF LYNGBYA PORPHYROSIPHONIS

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ABSTRACT

In this study, the antimicrobial effects of extracts prepared with *Lyngbya porphyrosiphonis* produced in culture conditions were investigated. Extracts were prepared with 0.5 M Tris-HCL pH: 8.00, N-butanol and Ethanol. Antimicrobial activity tests were performed by disc diffusion method and the extracts were tested on microorganisms of *Staphylococcus aureus* ATCC 25923, *Bacillus subtilis* ATCC 6633, *Listeria monocytogenes* ATCC 7644, *Escherichia coli* O 157: H7, *Pseudomonas aeruginosa* ATCC 27853, *Salmonella typhimurium* CCM 5445 and *Candida albicans* ATCC 10239. The highest antimicrobial effect was recorded against *Escherichia coli*. Other test microorganisms were also affected at different levels.

KEYWORDS

Cyanobacteria, Lyngbya porphyrosiphonis, Antimicrobial activity, The Disc Diffusion Method

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GC-MS IDENTIFICATION OF ISOQUINOLINE ALKALOIDS IN GLAUCIUM LEIOCARPUM NATURALLY GROWING IN CENTRAL ANATOLIA

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ABSTRACT

Plants of the Papaveraceae family are distributed largely throughout north temperate and tropical regions of the world (1). The genus *Glaucium* Adans. is represented by seven species among the Papaveraceae genera found in Turkey and as known "boynuzlu gelincik" (horned poppy). *Glaucium leiocarpum* Boiss. is the most common species of the genus *Glaucium* in Anatolia (2). Isoquinolines are a widespread alkaloid class within the Magnoliales, Arostolochiales, Laurales, Piperales, Ranunculales and Papaverales with high number of biological activities (3). Glauicine, the most common alkaloid in *Glaucium* species, is used in some of the European countries in treatment, for its antitussive effect without creating depressing impact (4). GC-MS (gas chromatography mass spectrometry) has been proven a fast and reliable method for the investigation of the components in complex alkaloid mixtures. The present study deals with the GC-MS analysis of alkaloids in the aerial parts of *Glaucium leiocarpum* collected from Akşehir, Konya. The alkaloids were identified by comparing their mass spectral fragmentation with standard reference spectra from the NIST MS Search 2.0 (National Institute of Standards and Technology, Gaithersburg, MD, USA), or by GC/MS co-chromatography with previously isolated authentic standards. Moreover, data obtained from the literature were used for the identification of the alkaloids. Totally, nine isoquinoline type alkaloids were detected in the alkaloid extract prepared from *Glaucium leiocarpum*. Glauicine was found as a major constituent (% 78,42). Dehydroglauicine (% 10,83) and allocryptopine (% 4,37) were also detected as major components. Norchelidonine, N-methylaurotetanine and isocorydine are other important compounds found among the constituents. Acknowledgements This study was financially supported by TÜBİTAK (Project No: 315S064) and EBİLTEM (Project No: 2016/BİL/002). We thank Ege University, Faculty of Pharmacy, the Research Laboratory of Pharmaceutical Sciences (FABAL) for facilitating GC-MS analysis. References 1. Brummitt, R. K. 1992. Vascular plant families and genera, Royal Botanic Gardens, Kew. 2. Cullen, J. 1965. "Glaucium A." in Davis P.H. (ed). Flora of Turkey and the East Aegean Islands 1, 214, Edinburgh: University Press. 3. Bentley, K.W. 2003. Nat. Prod. Rep. 20: 342. 4. Cortijo, J., Villagrasa, V., Pons, R., Berto, L., Marti-Cabrera, M., Martinez-Losa, M., Domenech, T., Beleta, J., Morcillo, E. J. 1999. Brit. J. Pharmacol. 127, 1641-1651.

KEYWORDS

Glaucium, Isoquinoline alkaloids, GC-MS

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EVALUATION OF HONEYCOMB CAPPING MATERIAL FOR APOPTOTIC, NECROTIC, AND CYTOTOXIC EFFECTS ON VARIOUS CELL LINES

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ABSTRACT

The honeycomb capping material is natural protective biomaterial that are synthesized by bees and contains various active contents. Cytotoxic, necrotic and apoptotic effects of various concentrations of this material were evaluated on three different cell lines (L929, mouse fibroblast; DLD-1 colon adenocarcinoma cell line and H1299, lung carcinoma cell line). At the lowest concentration (0,0313mg/ml); the cell viability rates were 94.11±0.00%, 74.11 ±0.02%, and 68.3±0.01% for L929, DLD and H1299, respectively. Such rates dropped down to %30.58±0.01%, 20.76±0.02%, and 21.85±0.012% for L929, DLD and H1299, respectively at the highest concentration tested (1mg/ml). The honeycomb capping material caused cell death essentially by necrosis other than apoptosis. At the lowest concentration (0,0313mg/ml); the necrosis rates were 3.56±1.41, 10±2.21 and 14.43±1.14 for L929, DLD and H1299, respectively. Such rates increased up to 50.33±1.05%, 65.37±1.21% and 64.51±0.56 for L929, DLD and H1299, respectively at the highest concentration tested (1mg/ml). At the lowest concentration (0,0313mg/ml), the apoptotic rate was 0% for all three cell lines that increased at a limited rate as the concentration increased. At the highest rate used (1mg/ml), the apoptotic rates for L929, DLD and H1299 were 17.77±1.05%, 1.87±1% and 4.30±1.23%, respectively. As a result, the natural material honeycomb capping causes necrosis on DLD and H1299 cancel cell line, and it causes necrosis to a great deal and apoptosis to some degree on L929 fibroblast. The valuable honeycomb capping material, secreted by bees, should be further investigated for its effects and metabolism.

KEYWORDS

Honeycomb capping material, apoptosis, necrosis, cytotoxicity

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USE OF PROBIOTIC IN INFLAMMATORY BOWEL DISEASES

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ABSTRACT

USE OF PROBIOTIC IN INFLAMMATORY BOWEL DISEASES In sustaining a healthy life, nutrition has a great importance. For healthy nutrition, beside adequate and balanced diet, there is a need for a health digestion system. Just as any inflammation or disease in digestive tract affects digestion of nutrients, it also impedes the occurrence of many functions. Especially chronic diseases in digestion system affect the nutritional state of the individual in both short and long term. Inflammatory bowel diseases, among these chronic diseases, affecting the various place in digestive tracts, show flaming together with inflammation. Inflammatory bowel disease generally has two sorts as crohn disease that can hold from mouth to anus, and ulcerative colitis that holds colon. In both diseases, diet treatment has a great importance and this treatment should continue lifelong .It was seen that some specific nutrients and supplementary can provide benefit in inflammatory bowel diseases for treatment. In the recent years, the studies toward the effectiveness of probiotics have accelerated. Probiotics are useful microorganisms present in intestines. It shows positive effects on human health, modifying bowel microbiota. AIM: In this study, it was aimed to compile the studies examining the effect of use of probiotic in inflammatory bowel diseases. METHOD: In this compilation study, with examining the actual literature studies, the effectiveness of using probiotic in protecting from inflammatory bowel diseases and in treatment were evaluated. RESULTS: The studies examining the effectiveness of probiotics, known as useful basils in intestines, in treatment of inflammatory bowel diseases frequently showed positive results. In the studies, it was generally seen that probiotic supplementary was used instead of probiotic nutritional resources. In these studies, combining the various strains of probiotics or using only one strain, they were given to the individuals having inflammatory bowel diseases. In a number studies, it was observed that probiotics showed an effect improving bowel mucosa. In many studies, carried out on ulcerative colitis, a significant decrease was seen in remission and inflammations. In chron disease, in the studies toward the use of probiotic, it was frequently seen that the relapse and symptoms of disease significantly decreased. In a less number of studies, it could not be demonstrated that there was a significant effect of the use of probiotics on inflammatory bowel diseases. CONCLUSIOON: The studies carried out showed that probiotics frequently had the positive effects such as increasing emission, inflammation, and reducing symptoms on inflammatory bowel diseases. For the amount of probiotic strain that are necessary to be used, just as there is a clear suggestion, studies toward the use of natural resources of probiotics are also insufficient . For being able to offer clear suggestions on this subject, there is a need for further studies.

KEYWORDS

Inflammatory bowel diseases, nutrition, probiotic, crohn, ulcerative colitis.

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PHARMACOLOGICAL SEED OILS WITH NATURAL BIOACTIVE CONSTITUENTS: TOCOCHROMANOL PROFILING BY HIGH- PERFORMANCE LIQUID CHROMATOGRAPHY

FATMA NUR ARSLAN¹, İSMAİL TARHAN²

ABSTRACT

Recently, more attention has been focused on the utilization of pharmacological seeds and their byproducts as well as oils with bioactive constituents. As is known, Pharmacological seed oils are generally extracted by cold-pressing seeds with screw or hydraulic-press techniques that are able to retain bioactive compounds such as fatty acids, phenolics, sterols or tocochromanols. The tocochromanol homologues (α -, β -, γ - and δ -Ts and TTs) are the major natural bioactive constituents of human diet and are well-known for their strong antioxidant and anti-cancer activities. As well, numerous studies have demonstrated the potential health benefits which include hypolipidemic, anti-atherogenic, anti-hypertensive, allergic dermatitis suppressive, nephroprotective, neuroprotective and anti-inflammatory activities [1]. To the best of our knowledge, very little information has been reported on the tocochromanol profile of pharmacological seed oils. Therefore, the main goal of this study was to determine the tocochromanol profile of oils extracted by lab-scale screw-press machine in our laboratory, from black cumint (*Nigella sativa* Linn.), wheat germ (*Triticum vulgare*), poppy (*Papaver somniferum* L.), coriander (*Coriandrum sativum* L.), sesame (*Sesamum indicum* L.) and nettle (*Urtica dioica*) seeds. Tocochromanol analyses were performed in these seed oils by using the optimized high-performance liquid chromatography (HPLC) method parameters. The analyses were performed using a Develosil C30 (250×4.6 mm, 5 μ m; Phenomenex Inc., USA) stainless-steel column. For optimum HPLC separation condition, mixture of eluent A (methanol: water, 99:1, v/v) and eluent B (tert-methylbutylether: methanol: water, 80:18:2, v/v/v) with a modified gradient programme. The results showed that the major types of tocochromanols detected in all analyzed samples were α -T, α -TT, β -T, γ -T, and δ -T. The highest value was observed for total tocochromanol content in wheat germ oil sample (2590.06 mg/kg). The amount of individual isomers in wheat germ oil was as follows; 1894.44 \pm 0.36 mg/kg (α -T), 582.34 \pm 0.15 mg/kg (β -T), 4.63 \pm 0.01 mg/kg (δ -T), 24.74 \pm 0.05 mg/kg (α -TT), 81.17 \pm 0.04 mg/kg (β -TT) and 2.74 \pm 0.02 mg/kg (δ -T). Coriander seed oil also exhibited high amount of tocochromanol (1313.5 mg/kg) and the main homologues present in this oil were β -T (675.07 \pm 0.33 mg/kg), followed by δ -T (346.28 \pm 0.24 mg/kg) and γ -T (163.29 \pm 0.13 mg/kg). β -T occurred in highest concentrations in wheat germ, coriander seed, and nettle seed oil. Sesame and poppy seed oils were also established to be the excellent source of γ -T. Black cumint seed oil contained highest amount of tocotrienols, wherein tocotrienols were detected in levels of 98.43 \pm 0.04 mg/kg α -TT, 304.21 \pm 0.13 mg/kg β -TT, and 17.61 \pm 0.03 mg/kg γ -TT respectively. Thus, the total tocochromanol content ranged from 499.66 to 2590.06 mg/kg oil, significantly wider than the Codex and similar to several literature data. References: [1] Ramesh Kumar Saini, Young-Soo Keum

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KEYWORDS

Bioactive constituent, Tocochromanol, Pharmacological seed oil, HPLC

ANTIOXIDANT CAPACITIES OF TWO HALOPHYTE PLANTS

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ABSTRACT

Antioxidant capacities of methanol, and water extracts from *Nonea caspica* (Boraginaceae) and *Suaeda altissima* (Chenopodiaceae) were evaluated with UV-Spectrophotometer. Antioxidant capacity were evaluated using different assay including free radical scavenging (DPPH and NO), reducing power (ferric and cupric), phosphomolybdenum and β -carotene/linoleic acid bleaching. Total phenolic and flavonoid contents were also determined. Generally, *N. caspica* water and methanol extracts possess higher antioxidant activity compared to *S. altissima* water and methanol extracts. These findings showed that the *N. caspica* and *S. altissima* could serve as an important natural source of biologically active agents for using in food and pharmaceutical industry.

KEYWORDS

Halophyte plants, Biological activity, Antioxidants

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ANTIOXIDANT ACTIVITY, TOTAL PHENOLICS AND ANALYTICAL CHARACTERISTICS OF SELECTED PHARMACOLOGICAL SEED OILS

FATMA NUR ARSLAN¹

ABSTRACT

Pharmacological seed oils as a rich source of bioactive components have been used commonly as a potential nutraceutical. They have been involved in providing health benefits such as prevention of prostate, improvement of hypercholesterolemia, arthritis and bladder compliance, retardation of the hypertension, decreasing of bladder and urethral pressure, and alleviation of diabetes, lowering the levels of cancers, and possessing high-quality antioxidant potential. Due to their specific and positive health effects, there are several studies on these oil cultivars in different regions assessing the content of bioactive compounds. The aim of this study was to determine the basic analytical characteristics, total phenolic compounds and free radical scavenging activities as well as the antioxidant capacities of selected pharmacological seed oils. The oils were extracted by lab-scale screw-press machine in our laboratory, from black cumin (*Nigella sativa* Linn.), wheat germ (*Triticum vulgare*), poppy (*Papaver somniferum* L.), coriander (*Coriandrum sativum* L.), sesame (*Sesamum indicum* L.) and nettle (*Urtica dioica*) seeds. A lab-scale screw press machine (15 kg seed.h⁻¹ capacity, single head, 2hp, 1.5 kw power) in our laboratory was used for pressing of seed samples. 40 rpm screw rotation speed and 40°C temperatures were selected as process parameters. The free fatty acid (FFA) content, peroxide value (PV), iodine value (IV), saponification value (SV) and unsaponified matter (USM) content of seed oils were determined according to AOCS official methods, respectively. Conjugated dien and trien contents of seed oils were determined by measuring the specific extinction coefficients (K232 and K270) as well as their relation or R-values (K232/K270), according to the AOCS method. The oxidative stability index values were determined according to the Cd 12b-92 AOCS official method. Total phenolic compounds, radical scavenging activities and antioxidant capacities were detected by measuring the absorbance in Lambda-25 UV-Vis spectrophotometer at 765 nm, 517 nm and 695 nm, respectively. The measurements were expressed as milligrams of gallic acid equivalents (GAEs) per gram of samples. Physicochemical characteristics of the studied oils showed that the oils have high quality and potential to be used as nutrient rich pharmacological oil. Besides, obtained results indicate selected oils' excellent quality, with high contents of total phenolic compounds (42.950–74.230 mg GAE/kg oil), free radical-scavenging activity values (60.010–82.610 mg GAE/kg oil) and total antioxidant capacity values (269.160–520.380 mg GAE/kg oil). Thus, high content of these bioactive compounds and physicochemical characteristics make the analyzed seed oils, nutritionally and commercially valuable products. References: [1] Fruhwirth G.O., Wenzl T., El-Toukhy R., Wagner F.S., Hermetter A., Fluorescence screening of antioxidant capacity in pumpkin seed oils and other natural oils. *Eur. J. Lipid Sci. Technol.*, 2003, 105, 266–274.

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KEYWORDS

Antioxidant activity, phenolics, physicochemical characteristic, pharmacological seed oil, cold pressed oil

BORIC ACID EFFECTS ON PHOTOSYNTHETIC ACTIVITIES IN THE LEAVES OF SALVIA OFFICINALIS L.

ÖZLEM ARSLAN¹

ABSTRACT

Mediterranean basin where *Salvia officinalis* L. is mostly grown in, also contains toxic levels of boron. Toxic boron content has different effects on plant physiological and biochemical processes including disruption of growth, cell wall development, and cellular division as well as reduction in chlorophyll contents, photosynthetic rates, and lignin contents. *Salvia officinalis* L. is a medicinal plant containing several compounds with important pharmacological activity. Boron content of the soil is very important because it leads boron accumulation in the leaves. These accumulation causes abiotic stress in the plant and since dry leaves are drunk as herbal tea, the plant that accumulate boron would be toxic to human. The aim of this study was to evaluate the boron toxicity accumulation in the leaves, to compare toxicity levels and photosynthetic activity of leaves, to understand the deteriorative effects of boron on photosynthetic pigments and to find out the boron tolerance levels of *Salvia officinalis* L. In this study, photosynthetic performance and pigment contents and leaf boron content were measured after 10 days application of 2.5 mM, 5 mM and 10 mM of boron in half strength Hoagland solution at optimum conditions (at 25°C, 250 $\mu\text{mol m}^{-2}\text{s}^{-1}$ light intensity, 16 hour light/8 hour dark, %40-50 humidity) in the controlled growth chamber. High concentrations of boron resulted in chlorosis followed by necrosis from margin to center of leaves. Therefore, at higher concentrations the chlorophyll pigments levels and photosynthetic capacity of the leaves decreased. Boron content of the leaves were increased with elevated levels of toxicity. Boron accumulation in the leaves lead abiotic stress determined by chlorosis and lower photosynthetic activity. If *Salvia officinalis* L. grown in boron toxic soils, the productivity of the plant will decrease and higher accumulation of boron in the leaves will threaten the human health.

KEYWORDS

Salvia officinalis L., Boron toxicity, Photosynthetic activity

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Poster Session 10

Submission ID: 1325

NEW SOURCES OF FUNCTIONAL OF FOOD INGREDIENTS: ALGAE

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ABSTRACT

Recently, the development of functional foods has gained much interest in the food industry since the interest of consumers for healthy foods has been raised. Functional foods can be defined as foods that provide one or more functional ingredients possessing health benefits as wells nutrients. Carotenoids, polyphenols and other antioxidants, phytosterols and omega-fatty acids can be given examples for functional ingredients. Plant foods are good source of these functional ingredients. The natural sources are preferred to the synthetic one. Therefore, new natural sources of functional food ingredients have been investigated. Nowadays, the possible usage of algae as potential sources of functional ingredients has been studied. Algae have good nutritional values due to their macronutrient and micronutrient contents. Microalgae have been reported to have a greater protein quality than vegetable sources (wheat, rice, and legumes etc). Algae also include compounds with biological activity. Bioactive metabolites showing cytotoxic, antitumor, nematocidal, antifungal, anti-inflammatory and antioxidant activities have been isolated from brown algae. Algae are valuable sources of polysaccharides referred as dietary fibers. Dietary fibers provide potential health benefits by reducing the risk of some diseases such as colon cancer, constipation, hypercholesterolemia, obesity and diabetes. Sulphated fucans from brown algae and carrageenans from red algae have been reported to show antithrombotic, anti-inflammatory, antioxidant, anticancer and antidiabetic activities. Soluble polysaccharides from algae can be utilized as prebiotic compounds. Algae include omega fatty acids that exhibit several health benefits such as prevention from atherosclerosis, protection against arrhythmias and reduction in blood pressure. Several different types of sterols (clinasterol, fucosterol etc) have been isolated from algae. These sterols are known to help prevent cardiovascular diseases. Algae are also good source of pigments (carotenoids, chlorophyll etc.). Carotenoids that show antioxidant activities can be used as natural food colorants. Astaxanthin is a high-value carotenoid synthesized by microalgae. Although algae provide a wide range of biologically active compounds, the presence of toxic compounds should be checked before they are used.

KEYWORDS

Algae, Functional food, Health

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¹GÜMÜŞHANE ÜNİVERSİTESİ BESLENME VE DİYETETİK BÖLÜMÜ

PHARMACOLOGICAL SEED OILS WITH NATURAL BIOACTIVE CONSTITUENTS: FATTY ACID METHYL ESTER PROFILING BY HIGH-PERFORMANCE LIQUID CHROMATOGRAPHY

GÖNÜL AKİN¹, FATMA NUR ARSLAN¹

ABSTRACT

Fatty acids (FAs) are the main bioactive constituents of naturally occurring lipids in both animals and plants. The FAs contained in natural samples are generally composed of a mixture of saturated and unsaturated FAs in cis- or trans- forms, with chain lengths varying from 4 to 28 carbon atoms. The variety of chain length, degree of unsaturation, geometry, and position of double bonds, render their composition the most descriptive characteristic of these lipids and their origin. The biological activities of FAs also greatly depend on the number of carbon atoms, chain branching and number, geometry and array of double bonds. Hence, the analysis of FAs profiles is of great importance in the control of industrial products, in medical diagnostics, and in the testing of purity, origin, or shelf life studies of food products. The main goal of this study was to determine the cis- and trans- isomers of unsaturated fatty acid methyl esters (FAME) contained in selected cold-pressed oils extracted by lab-scale screw-press machine in our laboratory, from black cumin (*Nigella sativa* Linn.), wheat germ (*Triticum vulgare*), poppy (*Papaver somniferum* L.), coriander (*Coriandrum sativum* L.), sesame (*Sesamum indicum* L.) and nettle (*Urtica dioica*) seeds. FAs of cold pressed oils were converted to FAME derivatives before analysis, and their relative content was calculated as the % of the total FAs. The analyses were performed by using Develosil C30 (25 cm×0.46 cm, 5 µm; Phenomenex Inc., USA) column. The mobile phases were acetonitrile/water (A) and acetonitrile (B) used through the following gradient; 0–25 min: acetonitrile/water and 25–110 min: acetonitrile. The optimum injection volume of samples was 25 µL and FAMEs were detected spectrophotometrically at 200 nm using a photodiode array detector. Obtained results showed that FA profiles are within the official ranges for cold pressed oils specified in the Codex Alimentarius; therefore, the results obtained do not need any further comments. Nettle seed oil was clearly distinguished by their FA profile due to their far greater Σ SFA contents (40.9%) than in the other oils. It is noteworthy that all cold pressed oils contain small amounts of SFAs, whereas Σ PUFA range between 18.46% and 88.22%. The cold pressed oils studied in this work also contain small amounts of Σ trans FAs (0.03%-0.16%); and, the content of Σ MUFA is relatively high (7.38%-74.21%). Thus, in terms of adequacy, accuracy and significance, proposed method appeared to be comparable to GC applications. References: [1] Lima, E.S., Abdalla, D.S.P., 2002. High-performance liquid chromatography of fatty acids in biological samples. *Anal. Chim. Acta* 465, 81–91.

KEYWORDS

Fatty acid, bioactive constituent, cold-pressed oil, HPLC

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INVESTIGATION OF PHYSICOCHEMICAL AND TECHNOLOGICAL PROPERTIES OF JUJUBE (*ZIZYPHUS JUJUBA*) AND EVALUATION OF ALTERNATIVE USES

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ABSTRACT

Ziziphus jujuba which is also called jujube, red date, Chinese date, or Indian date is a hard-core fruit in the Rhamnaceae family. The homeland is China. It can grow in natural environments in our country just as it is distributed in many regions of the world. Although grown in wild environments, it is also cultivated in gardens. It is an ancient fruit tree that grows in temperate regions all over the world. Moreover, it is a thorny tree with yellow fragrant flowers, which are locally harvested from its fruit. Whereas its' crumb is hard and greenish before the jujube fruit is mature, it turns to red, black and purple color after maturation. Jujube fruit is usually dried in the sun and consumed as a traditional snack. The leaves of the jujube plant are used as bait. The oil obtained from the seeds of Hünnap, which is also take place in alternative medicine applications traditionally, is used for the treatment of nerve diseases in Chinese medicine. It has been consumed as chest softener, cough cutter, urine and phlegm remover, laxative and blood cleanser since ancient times. Moreover, It is also used as a cholesterol and lipid lowering fruit. Due to its' potassium content, it also helps to lower high blood pressure. The low sodium content of the fruit is a healthy choice for people who need a low salt diet. It is rich in jujube fruit, high vitamin C and water-soluble vitamins, minerals, sugars, inorganic and organic substances. Its antioxidant activity is high. In terms of their nutritional content, they have an important influence on human nutrition. Fruits also contain sugar, tannin and mucilage (exopolysaccharide) substances. In this study, basic physicochemical properties such as ash, protein and mineral contents; technological properties such as water/oil binding capacity and grain weight and various nutritional attributes such as antioxidant activity, phenolic content and mineral/protein bioavailability of jujuba fruit grown in Mersin region have been determined. In view of the present findings, except local consumption as a snack food, alternative uses have been evaluated in the food industry.

KEYWORDS

Zizyphus jujuba, antioxidant activity, bioactivity, bioavailability

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ANTIOXIDANT PROPERTIES OF CHORISPORA TENALLA AND CAMPHOROSMA MONSPELIACA SUBSP. MONSPELIACA HALOPHYTE PLANTS FROM TURKEY

YAVUZ SELİM ÇAKMAK¹

ABSTRACT

Chorispora DC. and Camphorosma L. genus commonly grown halophyte soils, and are members of the Brassicaceae and Chenopodiaceae families, respectively. The genus Chorispora and Camphorosma consist of about 3 and 2 species, all of which grows wild in the Turkish flora. The objective of this study was to determine antioxidant activities of *C. tenella* (PALL.) DC. and *Camphorosma monspeliaca* subsp. *monspeliaca* L. aerial part methanol and water extracts. Antioxidant capacity were investigated using different assays including free radical scavenging (DPPH and NO), reducing power (ferric and cupric), phosphomolybenum, and β -carotene/linoleic acid bleaching. Total phenolic and flavonoid contents were also determined. The phenolic and flavonoid contents of *C. tenella* (PALL.) DC. and *C. monspeliaca* subsp. *monspeliaca* L. at a concentration of 2 mg/ml ranged between 40.38-113.77 mg GAE/g extract and 24.07-59.26 mg RE/g extract. Generally, *C. monspeliaca* subsp. *monspeliaca* methanol extract has effective antioxidant properties compared with other samples. The obtained results suggest that the studied samples may be considered as valuable candidate for new functional foods and drug formulations development.

KEYWORDS

Halophyte plants, Antioxidant capacities, Brassicaceae, Chenopodiaceae

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THE EFFECTS OF RUTIN AND QUERCETIN ON APOPTOSIS IN 5-FU-INDUCED HEPATOTOXICITY IN THE RATS

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ABSTRACT

Chemotherapy is a widely used form of treatment in various types of cancer. However, the use of chemotherapeutic drugs results in some unwanted side-effects and toxicity in various organs and tissues. 5-FU is a drug used in the treatment of cancer and some studies have shown that 5-FU causes hepatotoxicity. The Quercetin and Rutin as polyphenolic flavonoids have been shown that to help protect tissues from diverse toxicities. The aim of this study is to investigate possible histopathological effects of Rutin and Quercetin (Q) on apoptosis in 5-FU-induced hepatotoxicity. In the present study, 48 adult Sprague Dawley male rats were randomly divided into eight groups of six rats each. The control group rats were given intragastric (ig) corn oil (1 ml) for 21 days. The 5-FU group rats were given ig corn oil for 21 days and 18th day injected intraperitoneally (ip) a single dose of 5-FU 50 mg/kg. Rutin50+5-FU and Rutin100+5-FU groups were given respectively ig corn oil 50 mg/kg and 100 mg/kg rutin for 21 days. These groups were injected single dose of 5-FU (50 mg/kg) in the 18th days of rutin application. Q50+5-FU and Q100+5-FU groups were given respectively ig corn oil 50 mg/kg and 100 mg/kg quercetin for 21 days. These groups were injected single dose of 5-FU (50 mg/kg) in the 18th days of quercetin application. The Rutin100 group was given rutin (100 mg/kg-ig) the Q100 group was given quercetin (100 mg/kg-ig) for 21 days. At the end of the experiment, all rats were sacrificed and their livers were removed. Then, tissue samples were performed according to routine histological procedure. The prepared 5-µm thickness sections were stained with Crossman's modified Mallory triple staining were evaluated for any structural changes under a light microscope. For hepatic immunohistochemistry, Bcl-2 and Caspase-3 staining were performed. Also, the Bcl-2 and Caspase-3 positive cell intensity were scored as follows: none = -; weak = +; moderate = ++; strong = +++; very strong = ++++. In the Crossman's modified Mallory triple staining sections, control group's liver had a normal microscopic structure. But, in the 5 FU treatment group's livers were observed significantly degenerated hepatocytes with nuclear condensation and were seen sinusoidal dilatation and an increase of connective tissue around the central vein and portal area. In Bcl-2 cell density estimation, there was lower density in 5 FU group than control group. Also, immunopositivity of Bcl-2 was significantly increased in Rutin 50-5FU, Quercetin 50-5FU, Rutin 100-5FU and Quercetin 100-5FU groups compared with 5 FU group. Intensity of Caspase-3 positivity was higher in the 5 FU group sections compared to the control group sections. Furthermore, immunopositivity of Caspase-3 was significantly decreased in Rutin 100-5FU groups compared with Rutin 50-5FU, Quercetin 50-5FU and Quercetin 100-5FU groups. According to our data, 5 FU can lead to apoptosis and cause evident damage in the microscopic structure of liver. In addition, these damages can be ameliorated by Quercetin treatment, especially Rutin treatment.

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KEYWORDS

Rutin, Quercetin, 5-FU, Hepatotoxicity, Apoptosis

Poster Session 10

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PLANT ESSENTIAL OILS USED AGAINST VARROA

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ABSTRACT

Beekeeping is always vulnerable to many sanitary factors. Varroa destructor, an obligated ectoparasite for honey bees in beekeeping, not only causes economic loss but also causes ecological problems related to the role of honey bees, as the most important pollinators on Earth. In this mite control; special apiary practices, physical removal and synthetic acaricides are used. However, none of these methods can provide a fully effective protection. Use of conventional acaricides lead to the development of resistance to these drugs in mite, the detrimental effect on non-targeted organisms and the residue problem in products. For this reason, the need of alternative control methods has become compulsory in recent years. It has been known that some plant oils used widely in perfumery and food industry for flavor and smell have been used as a repellent to certain insects. Due to this, intensive studies have been carried out on plants with anti-varroa potential and these studies are still going on. Recently, studies in this area have shown that vegetable essential oils such as thyme, cloves, mint, lemon grass are lethal to some insects and fungi. It has been shown that these plant essential oils have antifeedant, repellent, oviposition deterrent growth regulatory and anti-vector activities on the varroa. As a result, in countries rich in biodiversity due to endemic plant species, the essential oils used in control of this pest should be favored instead of or in combination with conventional drugs in integrated pest management programs because of the lack of harmful effects of essential oils on non-target organisms and environment.

KEYWORDS

Control, Essential oils, Varroa

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LICORICE: AN OVERVIEW OF HEALTH EFFECTS

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ABSTRACT

Wild plants and natural products have been used for centuries for health. World Health Organization emphasized the necessity of natural products and plant derived drugs in primary health care. Licorice (*Glycyrrhiza glabra*) is one of these plants, belongs to Fabaceae family, has been consumed in traditional medicine since Prehistoric Ages. *Glycyrrhiza* genus has more than 30 species. *G. glabra*, *G. inflata* and *G. Uralensis* are the most important licorice varieties. The root and the juicy extract is obtained by boiling the roots, are mainly consumption types of the plant. Bioavailable components and flavor molecules involved in conical roots and rhizomes of the plant which are the main reasons the common usage of this parts. Main bioactive component of licorice: glisirehizin is 50 times sweeter than sugar and widely use as a sweetener in different kinds of products (gums, mouth spray, candies, health products, antacids, chewing tobacco, medicines, some alcoholic beverages and herbal teas). Licorice is originated from Russia and China however it is also produced in Mediterranean countries, Southeast Europe and parts of Asia. In Turkey, there is a higher consumption of licorice sherbet in east regions especially in summer and Ramadan. There are several clinical studies reported the positive health effects of Licorice. According to these study results: licorice has antiulcer, antioxidan, antiinflammatory, antiatherosclerotic, antiprotozoa, antitumoral, antifungal effects and has also positive effects on dyspepsia. Besides these, hepatoprotective effects of licorice were also reported. As well as health benefits, licorice has been reported about some adverse effects and interactions with cardiovascular drugs. According to case reports, long term consumption of licorice is associated with hypertansion, hypopotasemia, muscle weakness due to its glycyrrhizin content which inhibits 11- β hydroxysteroid dehydrogenase enzyme and cause a increase in mineralocorticoids. Studies have shown that consuming more than 95 mg/d glycyrrhizic acid causes an increase in blood pressure. The Scientific Committee on Food (SCF) declared the upper intake of glycyrrhizin as 100 mg/d. Licorice and its derivatives are listed at GRAS and accepted as safe by Food Drug Administration. However, there is no data for licorice consumption for pregnant, children and adolescents (<18 years). Guidelines for glycyrrhizic acid recommend 9.5 mg/d for an acceptable daily intake. This corresponds to a maximum of 10-30 grams of rootstock and a maximum of half a teaspoon per day of rootstock tea. In short, licorice has some health benefits such as antiulcer, antioxidan, antiinflammatory, antiatherosclerotic, antiprotozoal, antitumoral, antifungal based upon its bioactive properties. It has a wide usage of in food industry as a sweetener. However, some adverse effects such as hypertansion and hipopotasemia and food-drug interactions were also reported in case presentations by the reason of higher amounts and long-term consumptions. For this reason, it is important not to exceed its upper intake level and evaluate drug interactions.

KEYWORDS

Aromatic plants, licorice, health

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Poster Session 10

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MEDICINAL USES OF SOME AROMATIC PLANTS

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ABSTRACT

The aromatic plants have been used in the Middle East since BC because of their flavour, preservative and medicinal properties. In both industrialized and non-industrialized countries, the demand of aromatic plants has been increased due to their antioxidant properties. More than 150 plants comprising of essential oils, oleoresins and natural extractives have been accepted as safe for human consumption. Origanum (*Origanum vulgare*), basil (*Ocimum basilicum* L.), bay (*Laurus nobilis* L.), parsley (*Petroselinum crispum* (Mill) Mansf.), peppermint (*Mentha piperita* L.) sage (*Salvia officinalis* L.), rosemary (*Rosmarinus officinalis* L.), tarragon (*Artemisia dracuncululus* L.) and thyme (*Thymus vulgaris* L.) are the examples of aromatic plants in the FDA list (FDA CFR Title 21) as generally recognized safe (GRAS). Aromatic plants contain protein, fibre, vitamins, and minerals. They also include phytochemicals and essential oils possessing antioxidant and antimicrobial properties. Phenolics are one of the major phytochemicals possessing antioxidant activities. The intake of phenolics is associated to a lower risk of diseases such as coronary heart disease and cancer. Essential oils are known to be therapeutic agents for rheumatism and dermatitis. The utilization of aromatic plants for medicinal purposes are widespread in the Middle East. The basil, bay, oregano and rosemary can be given as the examples of the most used aromatic plants for medicinal purposes. Basil is used for treatment of headaches, coughs, warts, worms, constipation, bronchitis, laryngitis, tonsillitis gastrointestinal and kidney disorder. The medicinal properties of bay leaves include the treatment of high blood sugar, migraine, headaches, bacterial and fungal infections and gastric ulcers. Its essential oil also is used for rheumatism and dermatitis. Origanum is used as diaphoretic, carminative, antispasmodic, antiseptic and tonic. Rosemary is digestive and diuretic agent. It is also used externally as antidermatologic, antipodalgic, for scurf, vaginal antiseptic, for furuncles, antiseptic, anti-infectious.

KEYWORDS

Aromatic Plants, Health, Medicinal.

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¹GÜMÜŞHANE ÜNİVERSİTESİ BESLENME VE DİYETETİK BÖLÜMÜ

UHPLC-MS/MS DETERMINATION OF AFLATOXINS B1, B2, G1 AND G2 IN PUMPKIN (CUCURBITA PEPO L.) SEED OILS FROM CENTRAL ANATOLIA REGION OF TURKEY

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ABSTRACT

Cucurbita pepo L. is an economically important member of Cucurbitaceae family and among the ten leading vegetable crops worldwide with an annual product. For many years, the Cucurbita pepo L. Seeds products have been commonly used in the food industry, are utilized in the pharmaceutical and alternative medicine applications. Several health benefits from its regular dietary intake have been also reported, including cancer prevention, anti-inflammation, anti-diabetic and lowering of cholesterolemia. The determination of the characteristics is a very sensitive issue; hence, studies on the cold pressed pumpkinseed oils from different regions highlighted its physicochemical characteristics in respect to the oil quality. To our best knowledge, no data is available on the quality of pumpkin seed (Cucurbita pepo L.) oils cultivated in central Anatolia regions in detail and no investigation has been focused on the contamination of aflatoxins by UHPLC-MS/MS. Therefore, this study was aimed to determine the content of aflatoxin contamination by using validated UHPLC-MS/MS technique, for cold pressed pumpkin (Cucurbita pepo L.) oils cultivated in four different central Anatolia regions of Turkey. Thermo Quan. AccMax UHPLC-MS/MS system in combination with a coupled to triple quadrupole mass spectrometer was used for analysis. A Hypersil Gold C18 reversed phase column (50×2.1 mm; 1.9 µm) was used as a chromatographic column. The mobile phase consisted of (A) ultra-pure water and (B) methanol at a flow rate of 0.4 mL.min⁻¹. The injection volume was 20 µL and the column temperature was maintained at 25°C. The extraction with AflaTestP® immuno-affinity SPE cartridge columns for aflatoxin analyses was performed according to the Yang et al. [1]. Aflatoxin standard concentrations of 1–25 µg.kg⁻¹ in methanol were used for calibration curves. The correlation coefficients were obtained higher than 0.9900 for each standard. Aflatoxin contaminations were not detected in any of studied pumpkin seed oil samples. The maximum acceptable level of aflatoxin in food materials has been regulated in many countries and the legal limits may vary from one country to another, depending on the degree of development and economic consideration. The food and drug administration has set a maximum acceptable level of 20 µg.kg⁻¹ for total aflatoxin in foods for human consumption. Thus, the obtained results indicated that the cold pressed pumpkinseed oils from central Anatolia region of Turkey in this study are safe. The findings of present study are expected to increase the knowledge on the characteristics of these valuable medicinal seed oils and provide as valuable contributions to better assess their potential as a source of functional oils in the industry. References: [1] Yang, L.X., Liu, Y.P., Miao, H., Dong, B., Yang, N., Chang, F., Yang, L., Sun, J., Determination of aflatoxins in edible oil from markets in Hebei Province of China by liquid chromatography-tandem mass spectrometry. Food Addit. Contam. Part B-Surveillance, 2011, 4, 244–247.

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KEYWORDS

UHPLC-MS/MS, Aflatoxin, Cucurbita pepo L., Cold-pressed oil

Poster Session 10

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THE EFFECT OF COMMERCIAL FOOD PAINS ON LIFE AND DEVELOPMENT OF DROSOPHILA MELANOGASTER

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ABSTRACT

Food stuffs obtained by natural artificial means are additives which are generally used to increase the visibility of foods and to eliminate negative color differences that may occur during processing. In some studies, the effect of food colors such as Erythrocyte, Ponceu 4R, Sunset Yellow, Tartrazin, Amarant, Karmin, Patent Blue in model organism has been determined. In this study, it was aimed to determine the effect of the commercial food dye (0.01-0.1 mg / L) prepared at different concentrations to the survival and development of the model organism *Drosophila melanogaster* (ebony). When the rate of third stage larvae, pup and adult of insects are compared with controls, It was observed that there was no difference in the growth period of the bug, which was fed with the highest concentrations, and that the proportion of adults was decreased by half. According to these results, it has been understood that the use of overdose of commercial food colors may adversely affect the mature properties.

KEYWORDS

Drosophila melanogaster, food coloring, food additive, life-development, mature

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Poster Session 10

Submission ID: 1339

PU-ERH TEA: COMPONENTS AND HEALTH EFFECTS

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ABSTRACT

Introduction: Tea consumption is very common in the worldwide and by two-thirds of population drink different types of teas. Teas are preferred due to their aromatic taste and several biological effects on health based upon their antioxidant, flavanoid, theabrownin and polysaccharid contents. There are 6 types of teas as green tea, yellow tea, dark tea (including brick tea and Pu-erh tea), white tea, oolong tea, and black tea. Pu-erh tea is belong to dark teas and it is a kind of fermented tea which is produced in a widepspread manner in Yunnan province of China. The indigenes consume it as medicine, tonic, beverage, and food for energy and wellbeing. In addition to China and Southern Asia, pu-erh tea also exist in Japan, USA, Britain. **Production:** In pu-erh tea's production process, tea plants' (*Camellia sinensis* var. *Assamica* (L.) O. Kuntze; Theaceae) buds and leaves are exposed heating, rolling and drying. Secondly its fermented with microorganisms which is a high temperature and high moisture process. *Aspergillus* spp. are the most widely-used of these organisms, altogether *Penicillium*, *Rhizomucor*, *Mucor*, *Cladosporium* and *Eurotium* are also found in pu-erh tea. Pu-erh tea is classified as raw and ripened pu-erh tea. In the production process, whether pu-erh tea leaves left for several years before fermentation at the room tempereture, it defines as raw pu-erh tea. It can be stored up to 50 years. In other case, it is held for several months and it is called ripened tea which has a shorter manufacturing time and lower the production cost. Production process influences chemical composition and quality in this manner aroma and taste and after all consumer acceptibility and choice. **Health effects:** Pu-erh tea is associated with several health benefits. Particularly teabrownins, the water soluble polymeric phenolic compounds derived from various polyphenols (catechins, theaflavins, thearubigins, polysaccharides, proteins, lipids, and caffeine via microbial action give the health protective properties to Pu-erh tea. Pu-erh tea contains higher amounts of polymeric polyphenols due to its longer fermentation process. In a study, it was revealed the antioxidant and hepatoprotective effects of Pu-erh tea on rats. Pu-erh tea has positive effects on steatohepatitis and insulin resistance by enhancing IL-6/STAT3 signaling in hepatocytes, downregulating expression of lipogenesis- and gluconeogenesis-associated genes, upregulating PPAR α . In another study, it reduced fat storage in worms by down-regulating the expression of the master fat regulator SBP-1 and subsequently decreased fat storage. It has also anti-constipation effects in mice. Neuro-protective effects by downregulating the transcription and translation of mGluR5. Pu-erh tea protected SH-SY5Y cells against apoptosis induced by L-glutamate and alleviated epilepsy behaviour by inhibiting the expression of mGluR5. Pu-erh tea has antihyperlipidemic effects and decreases body weight by suppressing diet-induced body fat accumulation in C57BL/6J mice by downregulating SREBP-1c. In a study, it was also found to decrease diabetes-induced accumulation of AGEs. There is no clear report or recommendation for the upper intake of pu-erh tea. However, in a study, 2500 mg/kg/day administraiton of it caused disturbances in embryo-to-foetus period. **Conclusion:** Pu-erh tea has become popular in recent years except its origin countries due to its attractive aroma and health

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benefits such as antihyperlipidemic, anti-constipation, hepato-protective, neuro-protective, which was proven by several studies however especially on animals. Even so, consumption of higher amounts may cause health hazards. It should be emphasize to consume Pu-erh tea in relevant amounts. For this reason, future studies are needed to specify a dosage for adverse affects if there is any.

KEYWORDS

Aromatic plants, Pu-erh tea, dark tea, health

Poster Session 10

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IS GREEN COFFEE EFFECTIVE IN WEIGHT LOSS?

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ABSTRACT

Green coffee is defined as raw and unroasted seeds of *Coffea Rubiaceae* fruits. Roasted coffee is produced when green coffee beans are processed in several stages. Significant changes occur in the color, texture and taste of the coffee beans due to degradation or conversion of some compounds found in green coffee beans by roasting. The green coffee beans contain carbohydrate, lipid, protein, chlorogenic acid (CGA), mineral, caffeine, trigonelline and free amino acids. After roasting, the content of carbohydrates, proteins, chlorogenic acids and free amino acids in the coffee bean decrease while the contents of lipids, minerals, caffeine and trigonellin do not change. In addition, the roasting of the coffee beans results in melanoids resulting from the Maillard reaction of the polysaccharides, proteins and chlorogenic acids present in the composition. With the formation of melanoids, the content of chlorogenic acid in the roasted coffee decrease. Significant differences between the composition of roasted coffee and green coffee arise due to this reason. Chlorogenic acids in the green coffee composition have been of great interest, in particular the weight loss functional effect. Studies have shown that chlorogenic acids are helpful in reducing visceral adiposity and body weight. The primary mechanism of action of chlorogenic acid on obesity is the activation of adenosine monophosphate activating protein kinase (AMPK), which regulates energy balance. AMPK activation increases fatty acid oxidation in liver and skeletal muscles. In addition, chlorogenic acid enhances hepatic expression of PPAR- α (Peroxisome proliferator-activated receptor-alpha), which increases β -oxidation of fatty acids, and carnitine palmitoyl transferase 1 (CPT-1) enzyme activity. Therefore, it is considered that chlorogenic acid will reduce lipogenesis by increasing the use of fatty acids. In the randomized double blind study on 109 obese Japanese subjects, 297 mg CGA/185 g green coffee was administered to the intervention group and 2 mg CGA/185 g green coffee was administered to the control group for 12 weeks. At the end of the study body weight, body mass index (BMI) and visceral adiposity decreased significantly in the intervention group according to the control group. In a rat study, it was observed that for 24 weeks, CGA and caffeine intake resulted in an increase in CPT-1 activity and a decrease in lipogenesis. Additionally, serotonin and its derivative melatonin which decrease the appetite and increase body weight loss were detected in green and roasted coffee beans. Studies examining the relationship between green coffee and obesity have generally used the green coffee extract called svetol. To observe only the effects of chlorogenic acids, eliminating the effect of caffeine, on obesity. Svetol is a decaffeinated green coffee extract standardized to contain about 45% CGA. In the case of obese individuals, 200 mg svetol was used 5 times a day for 12 weeks, resulting in significant reductions in body weight and body fat percentage compared to the control group. In another study, svetol supplements (400 mg/day) have been shown to reduce body weight and increase lean body mass in obese individuals. When the literature is examined, the consumption of green coffee effect on weight loss by various biochemical mechanisms due to chlorogenic acids compounds. However, caffeine amounts in green coffee is similar to roasted coffee, so it must be consumed

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carefully. Side effects such as headache, stomach upset, nervousness, insomnia, anxiety and arrhythmia can be seen as a result of high caffeine intake. With fewer studies done with decaffeinated green coffee, no side effect has been found yet.

KEYWORDS

Green coffee, chlorogenic acids, weight loss

Poster Session 10

Submission ID: 1341

DISTRIBUTION OF PHENOLIC COMPOUNDS AND ANTIOXIDANT ACTIVITY OF BUCKWHEAT (*FAGOPYRUM ESCULENTUM* MÖENCH) SEEDS

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ABSTRACT

Buckwheat (*Fagopyrum esculentum* Moench) belongs to the family Polygonaceae is one of the field crops, cover crop and pseudocereal. Due to significant nutritional or health-promoting properties, it has been used both in food formulation and traditional medicine. Buckwheat is rich in nutrients, such as protein, essential amino acids, lipids, unsaturated fatty acids, mineral, vitamins B1, B2 and B6. The grain of this plant contains also valuable biologically active compounds especially phenolic compounds. They are important in scavenge of reactive oxygen species as an antioxidant and prevent the development of disease. The aim of this work was to determine the phenolic compound distribution, total phenolic content and total flavonoid content in buckwheat seeds. The distribution of phenolic compounds, vanilic acid, p-coumaric acid, ferulic acid, protocatechuic acid, chlorogenic acid, catechin, rutin, quercetin and kaempferol, were determined by high performance liquid chromatography equipped with diode-array detection (HPLC-DAD). Antioxidant activity of the plant seeds were assed scavenging activity test against 2,2-diphenyl-1-picrylhydrazyl (DPPH) free radical by spectrophotometric method. Total phenolic and flavonoid contents were present at levels of 1.48 mg GAE /g DW and 0.81 mg QUA/g DW respectively in buckwheat. According to HPLC results, individual phenolic compound contents were showed that the main phenolic compounds are rutin (170.16 µg/g DW), vanilic acid (22.03 µg/g DW), and chlorogenic acid (44.51 µg/g DW). The other phenolic compounds were found in low quantities. Buckwheat grains extract exhibited high DPPH free radical scavenging activity with the average IC50 (1.5 mg seed/mL) was described as the sample concentration that caused a decline in the initial DPPH concentration by 50%.

KEYWORDS

Buckwheat, phenolic compounds, flavonoid, HPLC, DPPH,

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Poster Session 10

Submission ID: 1343

DOES THE MYCOTOXIN OF FUSARIUM FUNGI HAVE GENOTOXIC EFFECT IN IN VITRO?

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ABSTRACT

Does The Mycotoxin of Fusarium Fungi Have Genotoxic Effect in In Vitro? Sevcan Mamur*1, Fatma Ünal2, Deniz Yüzbaşıođlu2 (1) Life Sciences Application and Research Center, Gazi University, 06830, Ankara, Turkey (2) Department of Biology, Science Faculty, Gazi University, 06500, Ankara, Turkey Abstract Mycotoxins are naturally occurring toxic secondary metabolites of fungi that may be present in food and feed. These metabolites are widely produced by fungal genera: Fusarium, Penicillium and Aspergillus. The mycotoxins of Fusarium are mainly trichothecenes, fumonisins, zearalenone, fusaric acid, moniliformin, fusaproliferin, fusariosin, fusarin C, equisetin, enniatins, and beauvericin. Mycotoxins are common contaminants of many grains like wheat, corn, barley, maize, and rice that can be contaminated in the field during harvest or storage and, can cause economic loss. In addition, mycotoxins have nephrotoxic, hepatotoxic, carcinogenic, mutagenic, and immunosuppressive effects. These effects treat of human and animal health. For these reasons the evaluation of mycotoxin genotoxicity is important. Nowadays, because of the increasing exposure to mycotoxins directly or indirectly, studies have been started to determine the toxic effects of these substances. The aim of this study is to review genotoxicity studies of Fusarium fungi in various cells in vitro. The studies of the genotoxicity of Fusarium species including ochratoxin A, fumonisin B1, moniliformin, beauvericin have been determined to have positive results in different cells. Contrary to these findings, Enniatin B has not genotoxic activity. As a result, some mycotoxins have been found to be genotoxic in certain concentrations, however this effect should also be evaluated in in vivo tests.

KEYWORDS

Fusarium fungi, mycotoxin, genotoxic effect

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MATHEMATICAL MODELING OF TOTAL POLYPHENOL COMPOUND KINETICS DURING SOLID-LIQUID EXTRACTION OF LINDEN (TILIA CORDATA) PLANT

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ABSTRACT

Different plants and herbs were relied on as the only real medicine that people could rely on for years. Today, modern medicine has overtaken most of them and has managed to solve many health-related problems. While natural remedies certainly can't replace modern medical procedures, they can still help in a variety of ways. Mild health problems can often be relieved through their use and many other problems can be prevented when these remedies are used as preventatives. The flowers can be used to make herbal tea which is used to treat anxiety since the herb exerts a soothing effect on the body, helping calm the nerves and treat sleep disorders as well. There are several different subspecies of linden that can be used medicinally and all may have a slightly different taste. Linden tea is one of the most effective natural remedies and has been used for centuries. When it is administered regularly, it can help with a wide range of different health issues. Since plants of *Tilia* (Tiliaceae) genus show both antioxidant and antimicrobial activities, such functional properties are associated with polyphenolic compounds, including flavonoids. Therefore, time-temperature relation is important in the infusion of linden, which is rich in total phenolic compounds. In this study, the transfer times of polyphenols to liquid phase in solid-liquid extraction of linden plants that were brewed at different temperatures were investigated and kinetic modeling was carried out. linden plant (*Tilia cordata*) tea was prepared according to the conventional method. The dry linden leaves were milled and passed through a 3 mm sieve. The ground linden leaves placed on the steel brewing screen were immersed in deionized water at different 5 constant temperatures. A constant and low speed rotating magnetic stirrer was used for homogenized linden extraction. A sample of 5 ml extract was withdrawn at different time intervals and filtered. Extraction process was carried out until the extraction concentration at each temperature was not changed. The total phenolic compound of the sample was determined by spectrometric method and was expressed as gallic acid equivalents (GAE) g/L. Using differential method, the kinetics of solid-liquid extraction of total phenolic compounds were determined. The mean equilibrium concentration of the experimental total phenolic compound in the liquid phase at 60, 70, 80, 90 and 100 ° C was 41 g / L. The significant rate changes were observed depending on the temperature at the transfers from the solid phase to liquid phase. The best function models giving the mathematical equations of the concentrations-time changes of the of the total phenolic substance in the liquid phase at these temperatures are exponential rise to maximum; simple exponent, 3 parameters ($y= y_0 + a(1-bx)$). The coefficients of determination of these functions (R^2) were found between 0.9910-0.9829.

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KEYWORDS

Tilia Cordata, kinetic, total polyphenol, extraction

Poster Session 10

Submission ID: 1345

MORINGA OLEIFERA AND IMPORTANCE IN PHYTOTHERAPY

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ABSTRACT

The Moringa genus is known as a plant that can cope with all kinds of climate conditions and is therefore widely grown throughout the world. The Moringa oleifera, a species unique to India, is also grown in tropical and subtropical regions of the world. It is commonly known as a "drumstick tree" or "horseradish tree." This species is a fast-growing tree native to South Asia. When examined regarding both its content and its effects, M. oleifera has made a reputation as a species called "miracle tree." Minerals, vitamins and other phytochemicals are also very rich in this species, and it is very popular in Ayurvedic medicine. It can even provide all the needs of the human body. Other notable effects include antioxidant, anticancer, anti-inflammatory, antidiabetic, antimicrobial, hepatoprotective, antifungal, antiviral and milk boosting effects. Besides, it is mentioned economically, also used in water cleaning treatment. Especially in under-developed countries, it has a place as additional food. Moringa oleifera, which has such a significant effect, will be tried to be introduced to this preliminary study because it is evaluated as phytotherapy with the aid of this poster to be presented.

KEYWORDS

Moringa oleifera, phytotherapy, drumstick tree

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Poster Session 10

Submission ID: 1346

STEVIA REBAUDIANA: A POTENTIAL BOON FOR HUMAN HEALTH

KHAZINA AMIN¹, SENAY OZGEN¹, ZELIHA SELAMOGLU¹

ABSTRACT

A high potency low calorie bio-sweetener "Stevia" has been grown in many countries around the globe for its sweetening and health promoting properties. Besides of making the world a sweeter place, Stevia is well known for its efficient therapeutic and pharmacological agents which possess antimicrobial, antifungal, anticarcinogenic and antioxidant activity. Leaves of Stevia have been used from the ancient times to cure various chronic and non-chronic diseases such as diabetes, cancer, cardiovascular disease, obesity, renal disease, inflammatory bowel disease and dental cavities. The phytoconstituents of this plant, steviosides, rebaudiosides A-F, steviolbioside and dulcosides, were found to be nontoxic in many research studies. Stevioside is the main herbal sweetener that is 100-350 times sweeter than the sucrose. It has pleasant taste, good solubility in water and safely metabolized by the body without any toxic effect. High nutritional profile of Stevia leaves makes it superior to other sugar substitutes. There is an increased demand in Stevia production from past decade due to fast growing trend in diet foods or low calorie foods and beverages. Markets exist for Stevia but still there is lack in its efficient production strategies. The great interest in Stevia has fueled many studies on it to meet the rising food market demands. Research needs to be directed on Stevia and its metabolic pathways to explore full potential regarding benefits on human health. This review article summarizes the existing literature on Stevia cultivation, nutrition, therapeutic and pharmacological properties to provide a baseline for new research on Stevia and its metabolites.

KEYWORDS

steviolbioside, steviosides, rebaudiosides

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ANTIMICROBIAL ACTIVITY OF SATUREJA HORTENSIS ESSENTIAL OIL ON MICROORGANISMS ISOLATED FROM DIABETIC FOOT ULCERS.

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ABSTRACT

BACKGROUND *Satureja hortensis* is a well-known aromatic and medicinal plant. It has also been used as a folk remedy to treat various ailments such as indigestion, diarrhea and infectious diseases. The highest proportion of the chemical components of the essential oil are carvacrol and thymol. **OBJECTIVE** This study aimed to evaluate the antimicrobial activity of carvacrol extract of *Satureja hortensis* oil on microorganisms isolated from diabetic foot ulcers. **MATERIALS and METHODS** *Satureja hortensis* oil was isolated by hydrodistillation method. The oil composition was analyzed by Gas Chromatography - Mass Spectrometry (GC-MS), thus obtaining the crude essential oil extract used for antimicrobial tests. Microorganisms were obtained clinical isolates from Atatürk University Hospital. Microdilution and Disc Diffusion method were used to determine the antimicrobial activity of the extract against 9 diabetic foot agents including *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, *Proteus mirabilis*, *Staphylococcus epidermidis*, *Acinetobacter baumannii*, *Staphylococcus aureus*, *Enterobacter aerogenes*, *Candida albicans* and *Escherichia coli*. **RESULTS:** The minimal inhibition concentration (MIC) values ($\mu\text{g/ml}$) of the carvacrol extract of essential oil were determined for *P. aeruginosa* (33.75 $\mu\text{g/ml}$), *K. pneumoniae* (16.08 $\mu\text{g/ml}$), *P. mirabilis* (MIC <1.05 $\mu\text{g/ml}$), *S. epidermidis* (MIC <1.05 $\mu\text{g/ml}$), *A. baumannii* (MIC <1.05 $\mu\text{g/ml}$), *S. aureus* (MIC <1.05 $\mu\text{g/ml}$), *E. aerogenes* (8.4 $\mu\text{g/ml}$), *E. coli* (8.4 $\mu\text{g/ml}$) and *Candida albicans* (MIC < 1.05 $\mu\text{g/ml}$). In the disc diffusion method; the inhibition zones were measured as 8 mm for *P. aeruginosa*, 16 mm for *K. pneumoniae*, 15 mm for *P. mirabilis*, 30 mm for *S. epidermidis*, 30 mm for *A. baumannii*, 30 mm for *S. aureus*, 21 mm for *E. aerogenes*, 30 mm for *C. albicans* and 14 mm for *E. coli*. **CONCLUSION:** Carvacrol extract of *Satureja hortensis* showed antimicrobial effects on tested microorganisms. Plant extracts should be considered when used in part of replacement treatment.

KEYWORDS

Satureja hortensis, Antimicrobial Activity, Diabetic foot ulcer

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Poster Session 10

Submission ID: 1348

EFFECTS OF MEDICINAL AND AROMATIC PLANTS ON INSECTS

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ABSTRACT

Our country has a rich flora and a large number of medical and aromatic plants. The number of species is about 9,000. While almost 20.000 species used for medical purposes in the world, this figure is about 500 in our country. In addition to the medical and pharmaceutical industry, these plants are benefited from many other areas. One of these areas is agriculture. Today, depending on the increase in the use of pesticides, environmentally friendly alternative methods which do not disturb natural balances are used in agriculture. Medicinal and aromatic plants are also benefited for this purpose. The important properties of plants on killing microorganisms and human health have been investigated in laboratories since 1926. Studies have been conducted on the use of extracts and essential oils against various insects and alternative methods of controlling weeds. However, due to the fact that there is a large amount of plants and insects, these studies will continue. In this study, in plant health subject, the positive and negative effects of medicinal and aromatic plants on harmful and beneficial insects, usage areas and experiments about these plants and pests have been investigated.

KEYWORDS

plant health, pests, medicinal aromatic plant, environmentally friendly

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Poster Session 10

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A-AMYLASE AND A-GLUCOSIDASE INHIBITORY ACTIVITIES OF THE EXTRACTS AND CONSTITUENTS OF FERULAGO PACHYLOBA ROOTS

SONGÜL KARAKAYA¹, SEFA GÖZCÜ², ZÜHAL GÜVENALP¹, HILAL ÖZBEK¹, HAFİZE YUCA¹, CAVIT KAZAZ³, CEYDA SİBEL KILIÇ⁴

ABSTRACT

Context: Ferulago species have been used since ancient times for the treatment of intestinal worms, hemorrhoids and as tonic, digestive, aphrodisiac and sedative. Apart from its medicinal uses, they have been used as salad or spice due to their special odors. Objectives: This study reports α -amylase and α -glucosidase inhibitory activities of extracts and bioactive compounds isolated from the roots F. pachyloba. Material and methods: The structures of isolated compounds through in vitro bioassay-guided fractionation processes from the roots of F. pachyloba were elucidated by detailed analyses of 1D and 2D NMR and ESI-MS data. Results: Eight known ones, osthole (1), imperatorin (2), bergapten (3), prantschimgin (4), grandivitol (5), xanthotoxin (6), felamidin (7), umbelliferone (8), and a sterol mixture consisted of stigmasterol (9), β -sitosterol (10) was isolated from the roots of F. pachyloba. Felamidin and osthole showed significant α -glucosidase inhibitory activity with 0.42 and 0.95 mg/mL IC₅₀ values, respectively, when compared to the reference standard acarbose (IC₅₀ 4.95 mg/mL). On the other hand, none of the tested extracts were found to be active on α -amylase inhibition. Discussion and conclusion: The present study demonstrated that among the compounds isolated from CH₂Cl₂ fraction of F. pachyloba roots, coumarins were determined the main chemical constituents of this fraction. This study aims to give first report on isolation and characterization of the bioactive compounds from root extracts of F. pachyloba and to report α -amylase and α -glucosidase inhibitory activities of this species.

KEYWORDS

Ferulago pachyloba; *Apiaceae*; α -glucosidase; α -amylase; coumarin; felamidin; osthole

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Poster Session 10

Submission ID: 1351

CARDAMOM AS A FUNCTIONAL FOOD: ANTIMICROBIAL EFFECT

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ABSTRACT

Cardamom is a tall, perennial herbaceous plants belonging to *Elettaria* and *Amomum* species of the Zingiberaceae family. Commonly grown and used species are *Elettaria cardamomum* Maton (green cardamom) and *Amomum subulatum* Roxburgh (black cardamom). The plants of these two species are known for their characteristic flavor of 15-20 black-brown seeds buried in the fruit. The sweet, spicy and citrusy flavor of cardamom is determined by the essential oil content. Volatile oil content in seeds ranges from 2% to 5% depending on storage conditions. Essential oil contains 1,8-cineol (36.3%), α -terpinyl acetate (31.3%) and limonene (11.6%) compounds. The content of 1,8-cineol and α -terpinyl acetate is the most important factor in the formation of the aroma of cardamom. Due to the volatile oils in its composition, the shelf life of the cardamom is short and the taste is directly influenced by the amount of these essential oils. Cardamom gives the most aroma to the food as powder. However, loss of fat and aroma is also rapid in this form. For this reason, it is necessary to protect the cardamom powder more carefully than in the form of seeds and capsules. It is stated in vacuum package that it can be stored at 5 ° and 90-180 days without losing aroma. As well as flavoring of nutrients, cardamom is also used in therapeutic and preventive curative in traditional medicine. It is generally used as a therapeutic agent in dental and gingival infections, tuberculosis, digestive and renal diseases. Due to antimicrobial effects against foodborne bacterial pathogens, interest in spices and aromatic herbs is increasing day by day in both industrial and scientific researches. Bacteria can develop resistance to drugs used in the treatment of bacterial infections. Therefore, new alternatives to these drugs need to be developed. When the antimicrobial effects of cumin, cinnamon, black cardamom and clove plants were examined, it was found that the black cardamom extract had the highest antimicrobial activity against *Escherichia coli* SS1 at the lowest concentration (2.83 mg/ml) and because of its eucalyptol content, it possessed good antibacterial effect on *Salmonella* spp. and *Bacillus licheniformis*. When evaluated according to extraction solvents, the aqueous extract inhibited all bacterial strains and showed the most effective extract on *Staphylococcus aureus*. Green cardamom extract was found to inhibit bacterial strains of *Pseudomonas aeruginosa*, *Mycobacterium smegmatis*, *Klebsiella pneumoniae*, *Staphylococcus aureus*, *Escherichia coli*, *Salmonella typhimurium*, *Enterococcus faecalis*, *Micrococcus luteus*, *Candida albicans*, *Salmonella typhi*, *Shigella flexneri* and *Staphylococcus aureus*. The type of bacteria in which the green cardamom extract was most effective was observed as *S. aureus*, an important cause of foodborne intoxication. It was found that black cardamom was effective against *Bacillus subtilis*, *Staphylococcus aureus*, *Pseudomonas aeruginosa* and *Escheria Coli* bacteria, and this effect on *Escherichia coli* and *Bacillus subtilis* was more effective than erythromycin, an antibacterial drug. The green cardamom was also effective against *M. luteus*, *S. aureus* and *B. cereus* bacteria after it is cooked. The use of 0.3 mg/g of green cardamom extract with high antimicrobial efficacy has been shown to induce toxic effects in rats by triggering inflammation, oxidative stress and cardiac cell necrosis in the brain. It is recommended

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that the amount of green cardamom be not more than 0.03mg/g. The methanolic extract of black cardamom seed is not toxic up to 3 g/kg. As a result, cardamom is a promising plant, especially due to antimicrobial effects on food-borne pathogens. It has been reported that high dose intake may be toxic as a result of rat studies, but more dose studies are needed.

KEYWORDS

Cardamom, Food-borne pathogens, Functional foods, Antimicrobial effect

DETERMINATION OF THE CURRENT SITUATION OF LAVENDER PRODUCTION IN TURKEY BY SWOT ANALYSIS

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ABSTRACT

Lavender, one of the most tradable 15 essential oil plants in the world, has become the most popular plant of the cosmetics industry in recent years. Flowers are the part of lavender which has economic value. Essential oil is extracted from the flowers and flower stalks of the plant. According to TURKSTAT data; 747 tons of lavender was cultivated from 570 hectares of land in 2016, in Turkey. The cultivation of lavender and planting areas has been increased with its increased importance in cosmetic industry. However, this increase is still not enough to satisfy the demand. For this reason, Turkey imports essential oil extracted from lavender or lavantin, from the other countries such as Germany, France, England, Switzerland. According to TURKSTAT data; 6 tons of lavender or extracted essential oil, costed 192 thousand dollars, were imported in 2016, while only 194 kg of was exported and about 20 thousand dollars was earned. In this study, the strengths, weaknesses, opportunities and threats of lavender cultivation in Turkey have been determined. By this way, the current situation has been put forward by considering internal and external evaluation and targeted to bring forward proposals for reducing import. The lavender cultivation is quite suitable for the evaluation of unplanted, barren and irrigation limited lands, when the types of plants cultivated are considered in Turkey. For this reason, it has been pointed out the correct cultivation planning of lavender, a perennial plant, and precautions that should be taken before entering the lavender market. In addition that, the aim of the study is to acquire the unplanted land for agriculture and to make agricultural fields more efficient by encouraging the cultivation of lavender as an alternative crop.

KEYWORDS

Lavender production, SWOT analysis, Essential oil, Alternative product, Import / Export

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Poster Session 10

Submission ID: 1353

PROBLEMS OF MEDICAL AND AROMATIC PLANT USE IN TURKEY

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ABSTRACT

Medicinal plants” are identified and used directly or indirectly in the treatment of the humans and the animals, or are applied in order to avoid the diseases. The plants that produce and exude any aromatic substances are so called “aromatic plants”. They contain aromas, flavors, condiments and essential oils. The traditional and modern medicine utilize the medicinal and aromatic plants as remedies to prevent diseases, to maintain health and healing. They are useful as nutritional supplements, herbal teas, taste and flavor in feeding therewithal. In our country, the people are interested in using herbal remedies, day by day. The exposure to intense information through the television, internet and media has also raised the demand on medicinal and aromatic plants. It is significant and quite important to know the origin of the medicinal herbs (i.e. where and when they are collected) in terms of the effectiveness of the related plant in the treatment of diseases and for the human health. While we take precautions against harmful residues accumulated on an apple bought from the market, by washing thoroughly or peeling the crumbs before consuming it; this will not be as possible as in dried herbs that give off their flavor and active ingredients on the water. The plants collected from various areas where there is a high level of toxic gas emission such as neighboring highways, railway lines and factories, in gardens, fields and grasslands where chemical fertilizer are frequently used or sprayed, polluted waterside, etc. will also cause a risk for the human health. For medicinal and aromatic plants, the washing (made usually for root drogs), drying and storage process period is very important after the plant has been collected until being put to the shelves of the market. For example, the washing process must be done with cool water and the plants must not be wait wet before starting the drying process. Taking a long time contact with water can lead to a loss of the active substance, as well as increased risk of spoilage. The drying process is also of great importance for the protection of the active substance. In this case, direct contact with the sun's rays in a long-term should be avoided. The plant should not cause any loss of active substance while the plant loses water. On the other hand, we should also be sure that the plant has lost enough water and should not pave the way for the formation of bacterias and fungal growth. While storing and drying the medicinal plants, we should pay attention to the products which should not exceed the microbial activity limit because of the moisture they can have and simultaneously the loss of the essential oils in the extreme heat will be unfavourable as well. A dry and cool storage area should be selected. Another common problem in our country is the unrestrained sales of these herbs on internet and the weak control of herbalists. The seller of medicinal herbs, by other means the herbalist is "the person who prepares and sells spices, fragrance, healing and beneficial plants". When the pharmacies were not available in old times as they are today, the herbalists had not only sell fragrance, but also animal and vegetable plants used for pharmaceutical production. Various precautions can be taken to solve these problems. In this paper,

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general problems of medical and aromatic plant use in Turkey are discussed; and some recommendations have been proposed.

KEYWORDS

Medical Plant, Aromatic Plant, Ethical Problems, Turkey

Poster Session 10

Submission ID: 1354

BIOACTIVE, PHARMACOLOGICAL PROPERTIES AND THERAPEUTIC USE OF CAPPARIS PLANT

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ABSTRACT

Cappari is a plant widely grown in the hot regions of the world, belonging to the genus capparidaceae from the family of Capparidaceae, consisting of 39 genera and 650 species. Among these species, Capparis spinosa, Capparis ovata and Capparis decidua are the most commonly investigated species in terms of pharmacological, therapeutic and nutritional properties. The presence of alkaloids, phytosterols, flavanoids and phenolic acids, glucosinolates, antioxidants, quaternary ammonium compounds and vitamins with different pharmacological activity were found in the caper plant. The capparidaceae species have significant anti-inflammatory activity, which is reported to inhibit the formation of prostaglandin and other inflammatory mediators in the cyclooxygenase pathway. Studies using different extracts have shown that these extracts exhibit partial and selective antimicrobial activity. The capparidaceae plant has a very rich antioxidant structure, mainly quercetin, phenolic compounds, glucosinolates, alkaloids, flavanoids, and rutosides. It has been reported that some glucosinolates such as benzyl-, p-hydroxybenzyl-, and 2-hydroxybutyl-3-enyl glucosinolate present in the capparidaceae plant are chemically protective against cancers. Antidiabetic, immunomodulatory, diuretic, antiallergic, antidiarrheal, antiviral, hepatoprotective, antiatherosclerotic, antifungal, antihypertensive, anthelmintic, diuretic and hypolipidemic effects of different capparidaceae species have been shown. Some studies have shown that the plant species belonging to the family Capparidaceae also have effects on the nervous system. In the recent years, therapeutic effects have been reported for capparidaceae species with sedative, antidepressant, anticonvulsant, analgesic, antiepileptic effects and for myelin loss seen in multiple sclerosis.

KEYWORDS

Cappari, Pharmacotherapy, Bioactive components, Phytoterapi

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¹MEHMET AKİF ERSOY ÜNİVERSİTESİ

THE EFFECT OF BLACK MULBERRY (*MORUS NIGRA* L.) SYRUP ON ORAL BACTERIA ON BIOFILM FORMATION

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ABSTRACT

Black mulberry (*Morus nigra* L.) is a kind of flowering plant in Moraceae family, and is unique to southwest Asia. There are wild and cultivated species of mulberries in Anatolia, which have a significant change. The amount of mulberry production in Turkey is high. Black mulberry (*M. nigra* L.) is a very rich source of flavonoids, especially anthocyanins. It is stored in different forms, because it is a non-durable product. One of them is to make a mulberry syrup. Aphthous ulcers are very painful lesions, often surrounded by a pale yellow-red halo in the mouth on the buccal and lip mucosa, tongue, soft palate, pharynx, and gingiva. Mulberry syrup is commonly used for the treatment of lesions in the mouth. Microorganisms are protected by biofilm formation, from negative environmental conditions. They can survive and multiply in the biofilms. Biofilms are resistant to environmental conditions such as antibiotics and chemical substances. Various substances and antibiotics are used for preventing biofilm formation. Their use also leads to various problems; so in recent years the trend towards natural products has been increased. In this study, the effect of the mulberry syrup on biofilm formation of bacteria that was isolated from mouths, which containing aphthous ulcers was investigated. Previously isolated bacteria from patients' mouths with aphthous ulcers were obtained from the Department of Microbiology of the Biology Department of Anadolu University and used in studies. The minimum inhibitory effect of mulberry syrup on oral bacteria was determined by microtiter plate method. The effect of mulberry syrup on the formation of biofilm was investigated by 2 protocols. In the first protocol, mulberry syrup and bacteria were applied together. In the second protocol, the mulberry syrup is added after the formation of the biofilm. Biofilm formation was determined by microtiter plates and spectrophotometric method at 570nm with Krstal Violet dye. It has been found that black mulberry syrup inhibits biofilm formation when it was added before biofilm formed, but is not effective on preformed biofilm and even caused increase of the biofilm formation. As a result; the application of mulberry syrup inhibits biofilm formation. However, it is not effective after biofilm occurred. Further studies are needed especially with glucose-free preparations.

KEYWORDS

Mulberry syrup, MorusnigraL., biofilm, oral bacteria

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¹ANADOLU ÜNİVERSİTESİ

Poster Session 10

Submission ID: 1356

INVESTIGATION OF CYTOTOXIC AND GENOTOXIC EFFECT OF DR.HONEYWAX HEROVIC FOOD SUPPLEMENT IN VITRO

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ABSTRACT

Dr.HONEYWAX Herovic is a liquid form food supplement herbal product. This syrup product includes; propolis, kalonji, daisy, rosehip extracts, apple concentrate and honey. In the present study, we evaluated the potential cytotoxic and genotoxic activity of the Dr.HONEYWAX Herovic on human healthy lung epithelial cells Beas-2B. Potential cytotoxic effect was tested by XTT assay and potential genotoxic effect was tested by comet assay. Cells were treated with serial concentrations of Dr.HONEYWAX Herovic (0,142; 1,42; 14,2; 142; 1420 ppm) for 24h in XTT assay. Any cytotoxic effect was not identified even at dose 1420 ppm, which is ten thousand times upper from the dose of 0,142 ppm, which is the in vitro adaptation of recommended human daily therapeutic dose by XTT assay. Cells were treated with three doses of Dr.HONEYWAX Herovic (0,142; 142; 1420 ppm) for 24h in comet assay. Tail length, % Tail DNA and Olive Tail Moment parameters were evaluated in comet assay. Any genotoxic effect was not identified even at highest dose of 1420 ppm. Dr.HONEYWAX Herovic, which is a food supplement did not show any cytotoxic and genotoxic effect even at highest dose, which is ten thousand times from recommended human daily dose by XTT and comet assay on Beas-2B cells.

KEYWORDS

Herbal extract, herbal food supplement, propolis, honey, cytotoxicity, genotoxicity, human healthy fibroblast cell line

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Poster Session 10

Submission ID: 1357

ALOE VERA: A MIRACLE PLANT WITH ITS WIDE-RANGING APPLICATIONS

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ABSTRACT

Aloe vera, a plant of Liliaceae family, is not less than a blessing from centuries to date. It is native of hot and arid regions and widely grown as an ornamental plant. It has become a common household remedy for a variety of uses. This plant is also well known as medicinal herb. The leaves of plant contain mucilage tissue or aloe gel that is used for cosmetics and to cure mankind's ailments. Aloe vera has marvelous herbal remedy with defined clinical effectiveness. The active chemical constituents of Aloe vera include essential amino acids, anthraquinones, enzymes, minerals, vitamins, lignins, sugars, salicylic acid, folic acid, saponins, and sterols. There seems to be no single magic ingredient, all the nutritional ingredients work together in a synergistic way to create healing action and other health benefits. Aloe vera plays a role as complementary medicine to heal cutaneous wounds, burnings, and infections. Health promoting benefits of aloe vera are due to its anti-inflammatory, antibacterial, antifungal antiarthritis and hypoglycemic effects. Due to these marvelous attributes, this plant has the ability to reverse ailments and soothe human life in a myriad ways. With the gaining traction as an important ingredient in cosmetics, food and pharmaceuticals, many countries have started growing it commercially. Aloe vera farming is a very promising activity. There is a need to encourage Aloe vera farming as an alternative traditional crop to meet market demands. Efficient production technology along with well-established marketing channels for the distribution of leaves to processing units at a fair producer price is required for its economic sustainability.

KEYWORDS

anthraquinones, folic acid, saponins, sterols

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MELATONIN ADSORPTION WITH L-TRYPTOPHAN GRAFTED POLY(HEMA) MEMBRANES FROM MEDICAL SEEDS

TÜLDEN INANAN¹, NALAN TUZMEN²

ABSTRACT

Melatonin (N-acetyl-5-methoxytryptamine) is an indoleamine synthesized from tryptophan which an essential amino acid. It is involved in the regulation of circadian rhythm (sleep–wake cycle) and the alleviation of insomnia arised from jetlag and shift work. Melatonin minimalizes neurodegenerative diseases, such as Alzheimer's and Parkinson's diseases and also acts as an anticancer agent. Also, melatonin may be used as a protective agent against to ocular diseases and headache disorders. In addition, potential antioxidative properties and anti-inflammatory effects of melatonin have been reported. Melatonin is widely distributed in the animal kingdom. High levels of melatonin have also been detected in several medicinal herbs and in the seeds of edible plants. Numerous studies have been reported about the presence of melatonin in plants with a wide range of concentrations from picograms to micrograms per gram of plant tissue. Due to their common usage in medicine and cosmetic industry, extraction and determination of melatonin selectively and with high purity using rapid and low-cost method from natural sources, such as high plants, have great importance. Radioimmunoassay (RIA), enzyme-linked immunosorbent assay (ELISA), high performance liquid chromatography (HPLC), and gas chromatography-mass spectroscopy (GC-MS) have been used for quantitative melatonin determination. The different methods such as liquid-liquid extraction, solid phase extraction (SPE) sorbents, microextraction by packed sorbent (MEPS) and combination of these methods were used for melatonin extraction. In recent times, affinity sorbents prepared by modification with several groups and methods draw attention for extraction of different biomolecules from higher plants. In the current study, L-tryptophan grafted poly(HEMA) membranes were used for melatonin adsorption from the extracts of medical seeds. Poly(HEMA) membranes were prepared by UV photopolymerization method and graft procedure was applied in the presence of L-tryptophan and sodium hydride. L-tryptophan grafted poly(HEMA) membranes were characterized by several methods and then, used in melatonin adsorption. Seeds of fenugreek (*Trigonella foenum-graecum*), fennel (*Foeniculum vulgare*), coriander (*Coriandrum sativum*), green cardamom (*Elettaria cardamomum*), flax (*Linum usitatissimum*) and sunflower (*Helianthus annuus*) were used for the extraction of melatonin with 3 different extraction solution. These commercially available seeds were obtained from herbalist in a grinded form. Each seed was extracted with ethyl acetate (EtOAc), EtOAc:MeOH (70:30) and EtOH, separately and used in melatonin adsorption studies. Melatonin amounts in the initial and final solutions of adsorption were determined by HPLC method with fluorescence detection. The results have shown that melatonin adsorption was performed with high recoveries (higher than 95 %) from all the extraction solutions of medical seeds.

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KEYWORDS

Melatonin, adsorption, medical seeds, extraction, membrane.

Poster Session 10

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EVALUATION OF CYTOTOXIC AND GENOTOXIC EFFECT OF SCORZONERA VERATRIFOLIA

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ABSTRACT

Primer and secondary metabolites of the natural products produced by the plants are the most basic products for drug candidates that can be used directly or indirectly in medicine today. Therefore, the number of scientific researches carried out on these compounds seems to increase day by day. In recent years people prefer to use natural antioxidants in their daily lives in order to prevent diseases and strengthen their immune systems. The Scorzonera genus (Asteraceae) is present by 39 species in Turkey and 17 of them are endemic, such as a perennial herbaceous plant Scorzonera veratrifolia. This plant is distributed in Eastern Anatolia and grows on dry rocky hillsides. Recent studies showed that Scorzonera species contain dihydroisoquinarine, bibenzyl derivatives, flavonoids, lignans, stilbene derivatives, quinic and caffeic acid derivatives, sesquiterpene, sesquiterpene lactones and triterpene compounds. Studies have shown that Scorzonera species exhibit antioxidant, analgesic, anti-inflammatory and wound healing activity. Although Scorzonera veratrifolia is widely used as a natural product in traditional medicine, up to our knowledge no study in the literature has been demonstrated until now. Therefore, the aim of the present study was to evaluate the possible genotoxic effect of Scorzonera veratrifolia in wistar albino rats by comet assay and cytotoxic effect on human colon cancer cell line HT-29, human lung cancer cell line A549, human cervical cancer cell line HeLa and human prostate cancer cell line PC-3 by MTT method. Wound model with incisional wounds was made on wistar albino rats and the extracts were applied for 10 days. At the end of the treatment, whole blood was collected to determine the genotoxic potency by using Comet assay. The cytotoxic effect of extracts at a dose of 100 micrograms on the proliferation of cancer cells was determined by MTT method on different human cancer cell lines. According to our results, heptan and methanol extracts from the aerial parts and roots of Scorzonera veratrifolia did not show any genotoxic effect in vivo model system, however, it was determined that no inhibition was observed on the cancer cell proliferation, in contrast the cancer cells were proliferated. This proliferative effect was found to be more significant on cervical, colon and prostate cancer cell lines. Therefore, the findings of this study recommend that Scorzonera veratrifolia plant should not be consumed especially in cancer patients because of its positive effects on cell proliferation and further studies are needed to highlight this important traditional plant.

KEYWORDS

Scorzonera veratrifolia, genotoxicity, cytotoxicity, Comet assay, MTT method, cancer cell lines

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Poster Session 10

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ANTIBIOFILM EFFECT OF DIFFERENT ESSENTIAL OILS IN P.AERUGINOSA PAO1

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ABSTRACT

Biofilm is the life form of microbes attached to surfaces, which might be found in somewhere like medical, industrial and natural surfaces. Bacteria compose biofilm use the system which is named quorum sensing (QS) and it based on density-dependent cell to cell communication. In biofilm form, bacteria are more resistant to antimicrobial treatments. So new researches focus on blockage of this form and some chemical compounds and also plant extract have used for this aim. In this paper eight different commercial essential oils (Amyris balsamifera, Nerium oleander, Ormenis multicaulis, Citrus grandis peel, Citrus nobulis, Citrus nobilis, Styrax, Citrus sinensis) have been evaluated inhibition of biofilm formation against reference strain Pseudomonas aeruginosa PAO1. Inhibition effect of oils on biofilm was searched cristal viole (CV) assay. Biofilms were grown on LB medium in 96-well polystyrene plates in the presence and absence of 4 different concentrations of the oils. All tests repeated 3 times and evaluated for statistical. According to the result of this study significant reduction of biofilm composition were seen first concentration of Citrus nobilis, Citrus sinensis, Styrax. Inhibition rates are respectively 97%, 98%, 91%. The first concentration of Nerium oleander and Ormenis multicaulis showed antibacterial effect on P. aeruginosa PAO1. Citrus grandis peel and Amyris balsamifera showed low and also antibiofilm effect(25%, 17%). And other concentration of plant oils have different antibiofilm rate.

KEYWORDS

Biofilm, P. aeruginosa PAO1, essential oil

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Poster Session 10

Submission ID: 1363

IMPORTANCE OF BERBERIS CRATAEGINA DC (HAWTHORN BARBERRY) FOR FOOD

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ABSTRACT

Importance of *Berberis crataegina* DC for food Turkey is located in a region that has rich plant variety among the major regions of the World. A significant part of Turkey flora (1/3) is endemic to Turkey. Unfortunately, this richness of plant is not well exploited and the knowledge about wild plants is limited (especially in the application fields). We just have knowledge about chemical composition and usage culture of limited number of plants. The members of *Berberis* L. genus within *Berberidaceae* family are known as hawthorn barberry in Turkey. This genus includes four members (type) in Turkey. *Berberis crataegina* is common in Turkey and some countries around the world. *Berberis crataegina* is found in Inner Western Anatolia, upper sakarya, Konya province, Middle Kızılırmak region, Antalya region, Dicle and upside of Fırat Basin. Fruits of *Berberis crataegina* species are used for different purposes in Turkey. Fruits of *Berberis crataegina* have high antioxidant activity. Antioxidants are very important for health and have many important functions such as antimutagenic, anticarcinogenic and antiaging. Researches demonstrate that this natural wild plant possesses antitumor, antibacterial activity and positive effects on urinary tract disorders. Fruits of *Berberis crataegina* are generally collected in July-August, depending on climate conditions in Turkey. In early July, the fruit has sour taste and light purple but in ripening stage it turns to sweet taste and dark purple (August). Collected fruits are used for making home-made fruit juice, marmalade and jelly. The fruits of the hawthorn barberry are also could be consumed as tea. In addition, *Berberis crataegina* fruits are dried with sun and form daily diet of the local people as snack foods. Fruits of *Berberis crataegina* used in the production of ice cream are highly appreciated by the consumers because of the natural taste, aroma and color especially when added to ice cream thanks to its natural dark purple color. The greatest benefit of this wild plant is its potential use as natural color additive (dark purple color) in food products.

KEYWORDS

Berberis crataegina DC, hawthorn barberry, antioxidants, natural color additive

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ANTIOXIDANT ACTIVITY OF *ACHILLEA CAPPADOCICA*

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ABSTRACT

Antioxidants can inhibit or delay the oxidation process in living organism and food stuff. The intake of naturally occurring antioxidants such phenolics and vitamins can play important role to fighting free radicals. A great interest came out to finding new natural antioxidants from natural sources to replace synthetic ones due to restricted side effects. The greatest source of natural antioxidants is medicinal aromatic plants. Plants have been used for a large range of purposes including medicine, nutrition, flavorings, fragrance and industrial uses. The aim of this study was to investigate antioxidant properties of *Achillea cappadocica*. Plant materials were collected from Refahiye, Erzincan at June 2016. Floral parts were separated and dried. In order to determine of antioxidant activity of *A. cappadocica*, two extraction systems were used. Floral parts of plant material were boiled in water for 30 min to mimic preparation aromatic plant decoction in folk medicine. The plant residue was removed by filtration. Filtrate dried using a lab-scale lyophilizer to give light yellow powder (Extract I). A methanol extract was prepared and suspended in hot water. The insoluble parts (mostly contain chlorophylls) were removed using filter paper. A small amount of filtrate dried as above to give dark yellow powder (Extract II). In order to remove water soluble carbohydrates and concentrate biologically active components, water phase partitioned with ethyl acetate and butanol in separation funnel respectively. Organic layers were concentrated to dryness to give Extract III (etOAc phase) and IV (butOH phase). The remained water layer after partition was lyophilized (Extract V). Total phenolic and flavonoid content of five extracts were determined using spectrophotometric methods. Antioxidant capacity of *A. cappadocica* was evaluated using DPPH and ABTS radical scavenging activity and reducing power tests. Extract III was found both phenolic and flavonoid rich extract (119.9 and 71.46 mg/g extract respectively). Also this extract was found most active when compared others. Extract V was found poor both active compound content and activity. Extract III contains 60 fold more phenolic compounds than Extract V. It means the partition process was success to extraction of phenolics from water extract. DPPH and ABTS radical cation assays, expressed as IC₅₀ value ($\mu\text{g/mL}$), were used for evaluation of radical-scavenging properties of obtained five extracts from plant material. DPPH radical scavenging ability of extracts calculated 18.84 $\mu\text{g/mL}$ for Extract III and 133.40 $\mu\text{g/mL}$ for Extract V. The reducing power of most active extract was found 369.22 $\mu\text{mol trolox equivalent activity/g extract}$.

KEYWORDS

Achillea cappadocica, antioxidant activity

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Poster Session 10

Submission ID: 1366

TURKEY'S WILD ORCHIDS AND MARAS ICE CREAM

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ABSTRACT

There are 10 different breeds and 80 different species of wild orchids in Turkey. An important part of these plants belonging to the Orchidaceae family is also endemic. Due to threats such as industrialization, urbanization, extension of agricultural areas, overgrazing and tourism activities, wild orchid species that grow in Turkey are threatened with extinction. The main reason why wild orchids are collected from nature is their use in the production of salep. The salep obtained by drying and milling the tubers of these plants is mostly used in the production of Maras ice cream in our country. Maras ice cream is a traditional product produced in Kahramanmaraş and consumed lovingly which is sold to various parts of the country and even abroad. It is known that the unique structure and flavor of Maras ice cream originated from the goat milk used in its production and especially from the wild orchids grown in the mountains. At least 10-20 million wild orchids are removed from nature every year for Salep production (Sandal and Söğüt, 2010). In order to obtain 1 kg of salep, approximately 1000-4000 tubers, ranging from 0.25 to 1 gram, are needed (Tekinşen and Güner, 2010). Thus, although the collection of wild orchids from nature is prohibited and serious sanctions are imposed on unauthorized gatherers, millions of wild orchid individuals are annihilated from the nature each year for the salep production. Due to the fact that the mentioned problem is still not fully resolved, various studies have been carried out on the reproduction of these species. Within the scope of the "Salep Action Plan" carried out by the General Directorate of Forestry of the Republic of Turkey Ministry of Forestry and Water Affairs; studies on the propagation of wild orchids in the natural environment, establishment of gene-source seed gardens, expansion of the spreading areas by transferring wild orchid members raised in nurseries to their natural distribution areas and preservation of wild orchids in their natural environment are still continuing. As a result of researches on the propagation of wild orchid members in the culture medium, it was determined that *Serapias vomeracea* (Burm. fill.) Brig, *Orchis sancta* L. and *Ophrys bombylifera* Willd. were the most prominent species in terms of their tubing ability, and the first two of these species were mentioned in terms of adaptation to culture conditions and widespread availability. *Orchis morio* L., *Orchis italica* Poiret. and *Orchis anatolica* Boiss. species were reported to have other promising species (Anonymous, 2014). Although it is generally accepted that salep from each species of wild orchid is not suitable for ice cream production, it is still unclear which species are suitable. Salep is known as a product having a high content of glucomannan, depending on the wild orchid species obtained, and the salep used in the production of ice cream is generally selected to have the highest content of glucomannan. Therefore, the salep obtained from any wild orchid species collected from nature without permission can not be used in the production of ice cream. It is thought that many wild orchids can be prevented from being collected from nature by the determination of wild orchid species suitable for use in the production of ice cream and the emphasis on studies on the reproduction of these species in the culture medium.

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KEYWORDS

Wild orchid, salep, Maras ice cream

Poster Session 10

Submission ID: 1369

DETERMINATION OF ANTIOXIDANT PROPERTIES OF RUMEX CRISPUS AND SCROPHULARIA CANINA SUBSP. BICOLOR

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ABSTRACT

Determination of Antioxidant Properties of *Rumex crispus* and *Scrophularia canina* subsp. *bicolor* Demir S.1, Bozkurt B.1, Önür M.A.1, Kaya G.İ.1, Ünver-Somer N.1 Department of Pharmacognosy, Faculty of Pharmacy, Ege University, 35100, İzmir The genus *Rumex* L. (Polygonaceae) consists of about 200 species growing worldwide and 23 species and 5 hybrids naturally growing in Turkey (1,2) *Rumex* roots have important traditional uses in relation to their laxative properties. Decoctions prepared from the underground parts have been claimed to be therapeutically useful as cholagogue, tonic and laxative and for blood cleansing. Fresh leaves are used to treat eczema and also consumed as vegetable in Anatolia (3). In the flora of Turkey, *Scrophularia* is represented by 59 species, 23 of which are endemic. Some *Scrophularia* L. species, especially *S. nodosa* L. are used in folk medicine as a diuretic and for the treatment of wounds and hemorrhoids (4,5). Different species of the genus *Scrophularia* (Scrophulariaceae) have been used in traditional medicine to treat some diseases, including dermatosis and inflammatory affections (6). In the present study, *Rumex crispus* L. and *Scrophularia canina* L. subsp. *bicolor* (SM.) Greuter collected from Soma, Manisa, were investigated for their antioxidant activity using the DPPH method. Methanol and ethyl acetate extracts were prepared from the above-ground parts of these plants. Significant antioxidant activity was determined for methanol (IC₅₀: 4.16 µg/mL) and ethyl acetate (IC₅₀: 8.71 µg/mL) extracts of *Rumex crispus* L. Moreover, methanol (IC₅₀: 60.78 µg/mL) and ethyl acetate (IC₅₀: 149.33 µg/mL) extracts of *Scrophularia canina* subsp. *bicolor* (SM.) Greuter were shown to have important free radical scavenging antioxidant activity. Key words: Antioxidant activity, *Rumex crispus*, *Scrophularia canina* subsp. *bicolor* References 1. Cullen J. 1967. ‘‘ *Rumex* L.’’ in Davis P.H. (ED). Flora of Turkey and East Aegean Islands Edinburgh: University Press. 2: 281–293. 2. Baytop T. 1963. Medicinal and Poisonous Plants of Turkey. Akgün Press, University of Istanbul, 315. 3. Baytop T. 1999. Therapy with Medicinal Plants in Turkey (Past and Present). Nobel Tıp Kitabevleri, 282-283. 4. Lall SS., Mill RR. 1978. *Scrophularia* L. In Davis P.H. (ED). Flora of Turkey and the East Aegean Islands. Edinburgh University Press. 6: 603-647. 5. Çalış I., Sezgin Y., Dönmez AA., Rüedi P., Tasdemir D. 2007. Journal of Natural Products 70:1, 43-47. 6. Fernandez MA., Garcia MD., Saenz MT. 1996. Antibacterial activity of the phenolic acids fractions of *Scrophularia frutescens* and *Scrophularia sambucifolia*. Journal of Ethnopharmacology 53: 11-14.

KEYWORDS

Antioxidant activity, Rumex crispus, Scrophularia canina subsp. bicolor

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Poster Session 10

Submission ID: 1370

INVESTIGATION OF CYTOTOXIC AND GENOTOXIC EFFECT OF DR.HONEYWAX VEROX FOOD SUPPLEMENT

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ABSTRACT

Dr.HONEYWAX Verox is a food supplement product. These capsule product includes; grounded Thistle, Carop, Ginger, Turmeric, pollen and Cinchona. In the present study, we evaluated the potential cytotoxic and genotoxic activity of the Dr.HONEYWAX Verox on human healthy lung epithelial cells Beas-2B. Potential cytotoxic effect was tested by XTT assay and potential genotoxic effect was tested by comet assay. Cells were treated with serial concentrations of Dr.HONEYWAX Verox (0,285; 2,85; 28,5; 285; 2850 ppm) for 24h in XTT assay. Any cytotoxic effect was not identified even at dose 2850 ppm, which is ten thousand times upper from the dose of 0.285 ppm, which is the in vitro adaptation of recommended daily human dosage by XTT assay. Cells were treated with three doses of Dr.HONEYWAX Verox (0,285; 285; 2850 ppm) for 24h in comet assay. Tail length, % Tail DNA and Olive Tail Moment parameters were evaluated in comet assay. Any genotoxic effect was not identified even at highest dose 2850 ppm. Dr.HONEYWAX Verox, which is a food supplement did not show any cytotoxic and genotoxic effect even at highest dose, which is ten thousand times the dose of recommended human daily therapeutic dose by XTT and comet assay on Beas-2B cells.

KEYWORDS

herbal food supplement, Thistle, Carop, Ginger, cytotoxicity, genotoxicity, human healthy fibroblast cell line

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EFFECT OF OREGANO ESSENTIAL OIL ON THE QUALITY OF SUCUK

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ABSTRACT

This study aimed to evaluate effect of oregano essential oil at concentration of 0.5% on pH, TBARS, overall sensory quality, colour (Hunter L, a, b, YI) of sucuk during the fermentation period. A sharp decrease ($P < 0.05$) in pH values were observed from 5.1 to about 4.3 during the first 3 days of fermentation. Control and 0.5% oregano oil added sucuks showed similarity in pH change and it reached to 6.8 at the end of the fermentation. Addition of oregano oil decreased ($P < 0.05$) the TBARS value. TBARS values increased from 0.29 mg/kg and 0.52 mg/kg to 1.0 mg/kg and 1.56 mg/kg for oregano oil added and control sucuks, respectively. Hunter L, b, YI values were affected both ($P < 0.05$) by fermentation period and sample, however, a-values changed significantly ($P < 0.05$) by fermentation period and was not affected significantly by sample ($P > 0.05$). Addition of oregano oil did not significantly ($P > 0.05$) affect the overall sensory quality. Overall sensory quality evaluated from color, flavor and ease of cutting scores increased ($P < 0.05$) from 5.7 to about 7.5.

KEYWORDS

oregano oil, pH, sucuk, TBARS

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Poster Session 10

Submission ID: 1373

RAPID QUANTITATIVE DETERMINATION OF CUMIN ADULTERATION WITH CORIANDER AND PEANUT HULL POWDER USING THE DSC TECHNIQUE

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ABSTRACT

Cumin (*Cuminum cyminum* L.) is a flowering and annual plant of the family Apiaceae. Cumin powder is used to give flavor to foods and also has different medicinal properties. The most common adulterants are coriander and peanut hull since they are cheap ingredients. The similarities and differences in glass transition (T_g) and melting transition of cumin powder and adulteration materials were investigated. T_g values and melting transition of the powders were determined by differential scanning calorimetry (DSC). In the study, cumin, coriander powder, and peanut hull were collected from the local market and peanut hull was grinded prior to analysis. The coriander powder and peanut hull were blended individually with cumin powder at the ratios of 0/100 (adulterant:cumin), 30/70, 50/50, and 100/0. Mixing was on a weight basis. The DSC curves were obtained in the temperature range from -20 to 260°C under the dynamic atmosphere of N₂ (25 mL/min) heating rate of $\beta=10^\circ\text{C}/\text{min}$ using an Al capsule containing approximately 25 mg of each sample. The obtained result indicated that, T_g values of the cumin, coriander, and peanut hull powders were 26.54, 77.81 and 56.79°C, respectively. Additionally, melting heat value of the cumin powder were found to be 100.94 J/g and the values of the other samples were 77.81 and 89.76 J/g. The results of this study suggest that the DSC analysis may be available to determine adulteration of cumin with coriander and peanut hull powder.

KEYWORDS

Cuminum cyminum L., coriander, peanut hull, adulteration, DSC

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Poster Session 10

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IN VITRO ANTIMICROBIAL ACTIVITY OF ARTEMISIA ABSINTHIUM ESSENTIAL OIL

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ABSTRACT

BACKGROUND The genus *Artemisia* has been utilized worldwide due to its immense potential for protection against various diseases, especially wound infections. Camphor is one of the main components of *Artemisia absinthium* oil. **OBJECTİVE** This study aimed to evaluate the antimicrobial activity of Camphor extract of *Artemisia hortensis* oil on microorganisms isolated from wound infections by disc diffusion and microdilution method. **MATERIAL and METHOD** *Artemisia absinthium* oils were isolated by hydrodistillation method. The oil composition was analyzed by Gas Chromatography - Mass Spectrometry (GC-MS). Microorganisms were provided by Ataturk University Research Hospital. Microdilution and Disc Diffusion Method were used to determine the antimicrobial activity of the extract against nine wound infection agents including *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, *Proteus mirabilis*, *Staphylococcus epidermidis*, *Acinetobacter baumannii*, *Staphylococcus aureus*, *Enterobacter aerogenes*, *Candida albicans* and *Escherichia coli*. **RESULTS** The minimal inhibition concentration (MIC) values ($\mu\text{g/ml}$) were determined for *P. aeruginosa* (MIC = 500 $\mu\text{g/ml}$) for *Klebsiella pneumoniae* (MIC = 500 $\mu\text{g/ml}$), *P. mirabilis*, (MIC = 500 $\mu\text{g/ml}$), *S. epidermidis* (MIC < 1.95 $\mu\text{g/ml}$), *A. baumannii* (MIC = 500 $\mu\text{g/ml}$), *S. aureus* (MIC <125 $\mu\text{g/ml}$), *E. aerogenes* (MIC = 500 $\mu\text{g/ml}$), *E. coli* (MIC = 500 $\mu\text{g/ml}$), *C. albicans* (MIC = 500 $\mu\text{g/ml}$). Anti-microbial activity of the camphor extract of essential oil was tested by the disc diffusion method. The inhibition zones were measured as 18 mm for *P. aeruginosa*, 22 mm for *K. pneumoniae*, 30 mm for *P. mirabilis*, 30 mm for *S. epidermidis*, 28 mm for *A. baumannii*, 30 mm for *S. aureus*, 18 mm for *E. aerogenes*, 30 mm for *C. albicans* and 21 mm for *E. coli*. **CONCLUSION** Camphor extract of *A. absinthium* oil showed antimicrobial effects on tested microorganisms by disc diffusion method. The MIC values of only two microorganisms tested were different. The MIC value of *S. epidermidis* (MIC < 1.95 $\mu\text{g/ml}$) and *S. aureus* (MIC < 125 $\mu\text{g/ml}$), while the others were measured (MIC = 500 $\mu\text{g/ml}$) by microdilution method. Plant extracts should be considered when used in part of replacement treatment.

KEYWORDS

Artemisia absinthium, Antimicrobial Activity, Wound Infection

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Poster Session 11

Submission ID: 1375

FATTY ACID COMPOSITION, STEROL, TOCOPHEROL AND AMINOACID CONTENTS OF TRIGONELLA CARIENSIS BOISS.

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ABSTRACT

The genus *Trigonella* L. (Leguminosae) includes about 135 species distributed from the Mediterranean regions, Southeastern Europe, Western Asia, North and South Africa (1,2). *Trigonella foenum-graecum* L. is the most widely used species in *Trigonella* genus and it is an annual herbaceous plant commonly called fenugreek; its seeds are used as food crops in India, to supplement wheat and maize flour for bread making in Egypt, and as one of the staple foods in Yemen. It is credited with many medicinal properties and is one of the oldest medicinal plants used in many Asian and African countries. Its seeds have been used as a carminative, tonic, aphrodisiac in Ayurvedic, Chinese and Unani systems of medicine. It was known that the plant contain flavonoids, alkaloids, saponins, fixed oil, polysaccharides, minerals and proteins. The seeds used in many traditional systems as aromatic, carminative, galactogogue, antibacterial, antidiabetic, hypocholesterolemic, diuretic and analgesic agent (1-3). In Turkey, the genus *Trigonella* represented by 54 taxa (4,5). *T. cariensis* is one of these taxa, which grows West and Soth West Anatolia, Greece and East Mediterranean area. *T. foenum-graecum* has been extensively studied but there is little information about other species of the genus in the literature (6,7). *T. cariensis* Boiss. have not been studied phytochemically. The aim of the present study was to determine fatty acid compositions, sterol, tocopherol and aminoacid contents of *T. cariensis*. The seeds contain 2.01 ± 0.12 g/100 g fixed oil. Linoleic acid (43.74 ± 0.24 %) and α -linolenic acid (18.38 ± 0.45 %) along with palmitic acid (14.16 ± 0.38 %) were the main fatty acids. The total sterol content was 2247.09 ± 0.06 mg/100 g, which consisted mainly of β -sitosterol (62.65 ± 1.53 %). α -tocopherol (233.54 ± 0.47 mg/100 g) was the dominant tocopherol. L-Glutamic acid (5801 ± 0.32 mg/100 g) was the main aminoacid. The results of the present study revealed that this species is important source of essential fatty acids, tocopherols and aminoacids. The oil rich in polyunsaturated fatty acids which play an important role in human health. Further studies are needed to evaluation of the plant in food industry and in health. "This study was supported by the Research Fund of Mersin University in Turkey with Project Number: 2016-1-AP2-1412" References 1. Evans, W. C., Trease and Evans Pharmacognosy. 15th. Ed., UK: University of Nottingham, 2002, 26. 2. Bown, D., Encyclopedia of Herbs&Their Uses. First Ed., London: Darling Kindersley Limited, 2002, 393. 3. Srinivasan, K., Fenugreek (*Trigonella foenum-graecum*): A review of health beneficial physiological effects. Food Reviews International 2006, 22, 203-224. 4. Huber-Morath A. *Trigonella* L. In Davis PH (ed.) Flora of Turkey and the East Aegean Islands. Edinburgh University Pres., 1970; 3: 452–482. 5. Gokturk, R. S., A new subspecies *Trigonella coeruleascens* (Fabaceae), from Turkey, Ann. Bot. Fenn. 2009, 46, 62-64. 6. Uras-Gungor S. S.; Guzel, S.; Ilcim, A.; Kokdil, G., Total Phenolic and Flavonoid Content, Mineral Composition and Antioxidant Potential of *Trigonella monspeliaca*. Turk J Pharm Sci 2014, 11(3), 255-262. 7. Uras Gungor S. S.; Ilcim, A.; Kokdil, G., A Comparison of Diosgenin,

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Phenolics, Fatty Acid Profiles and Mineral Contents with Free Radical Scavenging Activity of *Trigonella L.* Species from Section *Cylindrica*. *Rec. Nat. Prod.* 2017, 11(1), 17-30.

KEYWORDS

Trigonella cariensis; fatty acid; sterol; tocopherol; aminoacid

Poster Session 11

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BEEKEEPING ACTIVITIES IN MEDICAL AND AROMATIC PLANT PRODUCTION

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ABSTRACT

It was first described by the German Koelreuter and Sprengel in the years 1750-1800 that the bees were pollinators of plants. With this special feature of bees, beekeeping activities are now used not only for obtaining bee products but also for pollinating plants which are important for humanity. According to the information in the literature, it is stated that 82 cultivated plants are used for a large part of human food, 63 of these plants are pollination. Stated that 80% of the plants cultivated in Europe need to be pollinated by bees and some other creatures. Bees make pollinate that it has been an important source of income for beekeepers in the United States. In our country, 75% of the beekeeping activities are carried out in the form of "bee colonies", which are called migratory (traveler), to be kept in different regions in order to be injured by differences in flowering period between regions. This activity naturally also provides for pollination of the plants in the areas where the colon is left. It is seen how important beekeeping activities are for the natural equilibrium when it is thought that a bee circulates on average 1000 flowers per day. The production of medicinal and aromatic plants in our country is done in the form of collecting naturally grown plants. Cultural aquaculture sites for medical and aromatic plant cultivation have been opened with new legislation and incentives. Beekeeping activities are indispensable for the pollination and quality of the plant in whatever way. Many of the medically and aromatic plants that grow spontaneously from nature are valuable nectar resources for beekeeping. According to the flowering periods of these nectar sources, migrating beekeeping activities are also carried out in our country. Thus, both the beekeepers reach good honey resources and the continuity of medical and aromatic plant resources in our country is ensured. This study is intended to increase the knowledge of beekeepers in our country about medical aromatic plants and contribute to the emphasis of bee and apiculture activities on the medical aromatics and other plants.

KEYWORDS

Medical and aromatic plant production, polination, beekeeping

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Poster Session 11

Submission ID: 1377

SCAVENGING ACTIVITY OF REACTIVE OXYGEN SPECIES AND DETERMINATION ANTIOXIDANT PROPERTIES OF 'SIDERITIS MONTANA'

EMRE KOÇ¹, SELVI CİNGÖZ¹, FERDA CANDAN¹

ABSTRACT

Medicinal plants contain chemical component which show powerful antioxidant activity and they can be used as a safe source in industrial foods, crops and products. Recently, there has been reproducing interest in biochemistry of plants because of they can protect many diseases and health problems such as aging, heart diseases and chronic diseases in human body. The Lamiaceae is a plant family within that some species of them have potential therapeutic activity. The genus *Sideritis* which is a member of the Lamiaceae family, commonly known as "mountain tea" in Turkey. These plants are widely used to prepare herbal drug and traditional teas. In Turkey, the genus *Sideritis* contains 46 species, 31 of which are endemic. Plant materials of *S. montana* species were obtained from Yarıhisar, Hafik, Sivas-Turkey in 2011. The aim of this study was to investigate in vitro antioxidant activities of methanolic extracts of *Sideritis montana*. Also, our investigations included total phenolic content, total flavonoid content, total antioxidant capacity, scavenging of hydroxyl radicals, scavenging of DPPH radicals and scavenging non-free radical species such as hydrogen peroxide. The extract of *S. montana* showed that equivalent of phenolic content (157.29 ± 3.71 mg GAE/g DW), flavonoid content (403.99 ± 0.92 mg QUE/g DW) and total antioxidant capacities as (154.47 ± 4.12 mM α -tocopherol acetate / gram dry weight). IC₅₀ is the amount of extract supplying 50% inhibition of DPPH, hydrogen peroxide and hydroxyl radicals. The IC₅₀ values are presented in Table 1. Table 1 Scavenging of ROS and DPPH for the methanolic extracts of *Sideritis montana*. Sample Hydrogen peroxide H₂O₂ IC₅₀ (mg L⁻¹) Hydroxyl radicals (\bullet OH) IC₅₀ (mg L⁻¹) DPPH radicals IC₅₀ (mg L⁻¹) *Sideritis montana* 25.05 \pm 1.46 124.75 \pm 3.04 58.48 \pm 1.30 Values are mean of triplicates \pm SD The result of this study indicate that methanolic extracts of *S. montana* can be useful as an easily accessible source of natural antioxidants. By reason of in order to use these valuable *Sideritis* species in pharmaceutical products and food, their cultivation and conservation are of great importance.

KEYWORDS

Sideritis montana, Antioxidant, DPPH, Reactive Oxygen Species.

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Nerium oleander, Antioxidant activity, MPO, GSH



Poster Session 11

Submission ID: 1381

TURKEY IN THE RAPID ALERT SYSTEM FOR FOOD AND FEED NOTIFICATIONS IN THE PERIOD OF 2006-2016: HERBS AND SPICES REVIEW

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ABSTRACT

Turkey in the Rapid Alert System for Food and Feed notifications in the period of 2006-2016: herbs and spices review Sami Gökhan ÖZKAL¹, Senem TÜFEKÇİ²* 1 Pamukkale University, Faculty of Engineering, Department of Food Engineering, Denizli, Turkey, 2 Pamukkale University, Vocational School of Acıpayam, Department of Food Processing, *Presenting Author: S. TÜFEKÇİ (stufekci@pau.edu.tr) Herbs and spices were used in traditional medicine, food preparation and preservation for thousands of years. Herbs and spices are vulnerable to biological, chemical and physical contamination and hazards during supply chain. The Rapid Alert System for Food and Feed (RASFF) database which is an effective tool to exchange information about measures taken responding to serious risks detected in relation to food and feed can be also a good source for investigating supply chain contaminations and hazards of herbs and spices. In parallel with this purpose RASFF database was investigated for herbs and spices categorized notifications originating from Turkey cover period from 2006 to 2016. RASFF notifications were divided into four groups as; alerts, information, border rejection, and news. A total of 59 notifications (alert – 21, information – 19, border rejection - 19) were reported for Turkey against a worldwide 1685 notifications. Oregano was the most border rejected herb. The number of notifications showed a descending trend chronologically. Germany, Italy and Netherlands were countries most notified about herbs and spices via Turkey. Listed 26 hazard categories were analyzed for herbs and spices and the major hazards categories were composition (45.76 %), pathogenic micro-organisms (35.59 %) and mycotoxins (11.86 %). The relation between hazard category and product was also examined, and mycotoxin hazards mainly seen in chilli pepper, paprika and red pepper. Salmonella spp. was only frequently reported pathogenic micro-organism in RASFF for Turkey with 20 notifications. In all categories the most notified products were oregano, chilli pepper, red pepper and cumin with 13.56 %, 11.86 %, 10.17 %, 10.17 % respectively. Keywords: The Rapid Alert System for Food and Feed (RASFF), herbs, spices, notifications, Turkey

KEYWORDS

The Rapid Alert System for Food and Feed (RASFF), herbs, spices, notifications, Turkey

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Poster Session 11

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PLANTS USED AS COFFEE IN EASTERN MEDITERRANEAN REGION

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ABSTRACT

Coffee is one of the most important agricultural plantation crop. All cultivated species originate from Africa and belong to the genus *Coffea*. The genus *Coffea* comprises approximately 100 species and only two species (*Coffea arabica* L. and *Coffea canephora* Pierre ex A.Froehner) are commercially cultivated. It is grown in about 10.2 million hectares land spanning over 80 countries in the tropical and subtropical regions of the world especially in Africa, Asia, and Latin America (Mishra and Slater, 2012). Coffee is the most important commodity in international agricultural trade, generating over 90 billion dollars each year and involving about 500 million people in its management, from cultivation to final product for consumption (Dias et al. 2007; Cavatte et al. 2012, Praxedes et al. 2006). Coffee is the second most consumed drink in the world after water and it is known that approximately five hundred billion cups of coffee are consumed annually (Butt et al. 2011). In this study, 15 different plant species belonging to 9 families used as coffee in the Eastern Mediterranean Region were discussed. This species are respectively: *Prunus dulcis* (mill.) D.A Webb, *Nigella sativa* L. *Cichorium inthybus* L. *Gundelia tournefortii* L. *Onopordum illyricum* L. *Pistacia terebinthus* L. *Pistacia atlantica* L. *Cicer arietinum* L., *Abelmos chusesculentus* (L.) Moench *Echinops ritro* L. *Juniperus communis* L. *Ceratonia siliqua* L. *Elettaria cardamomum* (L.)Maton, *Phoenix dactylifera* L. *Taraxacum officinale* G. In which parts of these species are discussed, information is given on how to make and prepare them. Obtained information is usually obtained by interviewing elderly people and local counselors (The turkish name is Aktar) face to face. Family, genus, species, Turkish names and coffee preparation are given for each taxon.

KEYWORDS

Coffee, East Mediterranean, Etnobotany, East Mediterranean, Turkey

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Poster Session 11

Submission ID: 1383

DETERMINATION OF SLIMMING HERBAL TEA CONSUMPTION OF COLLEGE STUDENTS

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ABSTRACT

INTRODUCTION Obesity is one of the increasing health issue of nowadays and due to this, attention to the herbal products increased. Persons who want to lose weight, have a false belief that these products could lose weight easily and swiftly. Especially the cost and availability of the herbal teas, let people to prefer them. Herbal teas could help to lose weight due to herbal teas caffeine content and effects on catechin thermogenesis. In addition to this positive influence, herbal teas have laxative, diuretic and sweating properties. **OBJECTIVE** This survey's aim is to determine the slimming herbal tea consumption of college students. **METHOD** The survey is made between February 2017 and March 2017 on randomly selected students at Selçuk University. 338 women and 35 male students are including for this study. Specially prepared survey is used for this study. In the survey, general characteristics, their herbal tea consumption for slimming in the last year and their choice reasons were asked. Besides the participants anthropometric measurements have measured. To evaluate the data, SPSS 22.0 program is used. Chi square test is applied for the relationship between the parameters and significance level is set as $p < 0.05$. **RESULTS** The average age of the participant students is 20.2 ± 1.5 . Body mass index of the students are found as low weight, normal weight and overweight, 11.8%, 70.0% and 18.2% respectively. 15% of the participants use herbal teas to lose weight. Women's use of slimming herbal tea rate is 15.7%. On the other hand, male's use of slimming herbal tea is 8.6%. 12.9% of the participants prefer green tea, 6.2% prefer form tea for losing weight. People with normal weight who drink green tea is 66.7% and the rest who drink green tea are over weighted people. There is a meaningful relationship ($p=0.000$) between body mass index and green tea consumption. 56.5% of the students who drink form tea is at normal weight and the rest is over weighted. There is a meaningful relationship ($p=0.002$) between body mass index and form tea consumption. **CONCLUSION** Obesity is a significant health issue and it is increasing in prevalence. Fast food, life style changes and sedentary life style causes obesity to increase among the college students. Importance for the body image at the teenagers, increases tendency towards slimming tea consumption. In this study, it is remarkable that, the rate of the students who use slimming herbal tea is too high whether the body mass index of most of the students are at normal levels. Over use of slimming herbal tea could show laxative and diuretic effects on health. Students should be informed about healthy nutrition and possible risks of the methods applied during weight loss diet.

KEYWORDS

obesity, herbal tea, green tea

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Poster Session 11

Submission ID: 1384

IN VITRO ANTIOXIDANT ACTIVITIES OF METHANOLIC EXTRACT OF ONOSMA SERICEUM

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ABSTRACT

Onosma species (Boraginaceae) largely grow in Turkey. Eighty five species involving forty four endemic species has been represented by now. The genus has several usage in the traditional medicines worldwide. The aim of this study is to investigate in vitro antioxidant activities of methanolic extract of Onosma Sericeum. We examined the in vitro radical scavenging and antioxidant capacity of Ebenus Laguroides by using different in vitro analytical methodologies such as 1,1-diphenyl-2-picryl-hydrazyl free radical (DPPH) scavenging, 2,20-azino-bis (3-ethylbenzthiazoline-6-sulfonic acid) (ABTS) radical and N,N'-dimetil-p- fenilendiamin (DMPD) radical scavenging activity, total antioxidant activity determination by ferric thiocyanate, total reducing ability determination using by Fe³⁺→Fe²⁺ transformation method, hydrogen peroxide scavenging and ferrous ions (Fe²⁺) chelating activities. Also, The synthetic antioxidant butylated hydroxytoluene (BHT) and natural antioxidant such as curcumin and ascorbic acid were used as positive controls. The Table 1. represents the antioxidant potential of methanolic extract of Ebenus Laguroides by ferric thiocyanate method, 2,2-azino-bis(3-ethylbenzthiazoline-6-sulfonic acid) (ABTS) radical scavenging activity, 1,1-diphenyl-2-picryl-hydrazyl (DPPH•) free radical scavenging activity, N,N-dimethyl-p-phenylenediamine (DMPD) radical scavenging activity. Table 1 Results of the antioxidant potential of methanolic extract Onosma Sericeum by the different in vitro antioxidant assays Sample DPPH• scavenging activity (µg mL⁻¹) ABTS•+ scavenging activity (%) DMPD•+ scavenging activity (%) Metal chelating Activity (%) Onosma Sericeum 54.74±6.25 61.65±0.08 54.84±2.16 19.90±1.30 Values are mean of triplicates ± SD The results of the study have shown that the methanol extract of Onosma Sericeum is potentially a good source of free radical scavenging compounds. Acknowledgements: This research was part of the project number F-347 supported by the Research Council of Cumhuriyet University in Sivas / Turkey.

KEYWORDS

Onosma Sericeum; antioxidant activity, radical scavenging, metal chelating, reducing power,

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Poster Session 11

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SOME CHEMICAL PROPERTIES OF RHEUM RIBES L. (UŞKUN) AND BENEFICAL EFFECTS ON HEALTH

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ABSTRACT

Rheum ribes L. is a kind of edible wild that belongs to the Polygonaceae family, and also it is one of the perennial plants. R. ribes is locally known as "uşkun, ışgın, ravent, revas" and it is grown especially in the east part of Turkey, Iran, Lebanon and Iraq. R. Ribes is the only rhubarb species grown between 1800 m. and 2800 m. altitude rocky countryside of Turkey. According to some studies Rheum ribes is the source of one of the most important crude drugs in west asiatic regions. These plants contain vitamins A, B, C in abundance. Rhubarb root (Rhizoma Rhei ribi) is used traditionally to treat diabetes, hemorrhoids, ulcers and diarrhea. The plant is also used as a digestive and appetizer in Bitlis, Turkey. In some countries such as Iran, Rheum ribes has been used as sedative and mood enhancer. These traditional edible wilds were generally used in medicine for the treatment of anemia, anorexia, weakness, anxiety, depression and diabetes. On the other hand; there are some studies about mineral content of R. ribes. According to these studies; R. ribes a rich content of ferrous and phosphor. In this study, some chemicals properties of "uşkun" and beneficial effects on health have been reviewed.

KEYWORDS

Uşkun, Rheum ribes, medicine treatment

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SPECTROPHOTOMETRIC DETERMINATION OF REBAUDIOSIDE A IN AQUEOUS SOLUTIONS

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ABSTRACT

Steviol glycosides are natural compounds found in the leaves of *Stevia Rebaudiana* Bertoni. Stevioside and Rebaudioside A are the major glycosides among the several steviol glycosides identified in the *Stevia*. They have received special interest in both scientific researches and industry due to their 150 to 570 fold sweetening power relative to sucrose. Steviol glycoside composition of *Stevia* leaves, solutions obtained during extraction and purification processes as well as the purity of the final products is determined by High Pressure Liquid Chromatography (HPLC). HPLC enables the separation and quantification of each steviol glycoside. Since the studies on the determination of solubility, adsorption-desorption, dissolution and crystallization kinetics usually employ aqueous solutions containing only Rebaudioside A as a solute, the use of a fast, cheap and easy-to-perform method will be appropriate for the determination of Rebaudioside A concentration. The goal of this study was therefore to evaluate spectrophotometry for the determination of Rebaudioside A concentration in aqueous solutions. In this study, two different sets of Rebaudioside A standard solutions (10 – 90 mg/L and 100 – 200 mg/L) were prepared and absorbances were measured at 210 nm for the construction of calibration curves. Five solutions with concentrations of 15, 25, 75, 130 and 170 mg/L were then used as control samples to evaluate percent recoveries and percent relative errors in the determination of Rebaudioside A. HPLC method was also selected as a standard method for comparison. Standard solutions and control samples were analyzed by HPLC equipped (Agilent 1260) with C18 column and diode array detector using water-acetonitrile mixture (70:30, v/v) as a mobile phase at 210 nm with an injection volume of 5 µL. Simple spectrophotometric measurements of absorbances of standard solutions gave linear calibration curves with correlation coefficients (R²) of 0.995 and 0.998 for 10-90 mg/L and 100-200 mg/L concentration ranges, respectively. HPLC method however yielded linear calibration coefficient of 0.999 for both sets of standard solutions. Percent relative errors calculated in the determination of Rebaudioside A concentration in control samples by spectrophotometric method were 46, 23, 8, 6 and 3 % while HPLC method gave percent relative errors as -26, -12, -10, -9 and -5 % for 15, 25, 75, 130 and 175 mg/L concentrations, respectively. The results of this study showed that the percent relative errors associated with spectrophotometric determination were high for lower concentrations. HPLC yielded lower percent relative errors for low concentrations when compared to spectrophotometric method. The percent relative errors associated with spectrophotometric determination of Rebaudioside A concentration over 75 mg/L were lower than those found in HPLC based method. As a result, simple spectrophotometric measurement can be used to determine Rebaudioside A in the aqueous solutions with concentrations over 75 mg/L.

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KEYWORDS

Stevia, Steviol glycosides, Rebaudioside A, Spectrophotometry, HPLC

Poster Session 11

Submission ID: 1389

OUR NATURAL ELIXIR: GANODERMA LUCIDUM (CURTIS) P. KARST.

HAKAN ALLI¹, BEKİR ÇÖL²

ABSTRACT

Introduction: Since ancient times, only emperors and their children in the Far East have been able to drink the juice of *Ganoderma lucidum* (Reishi). When someone finds this mushroom under a tree, he had to report it to the local court and hand it over to the authorities. It is known that the houses in the region where the mushroom is found are searched and the people possessing this mushroom were severely punished. The mushroom, which has been used in Far East traditional medicine for about 2000 years is also known as the "Queen of Fungi" and it was first cultured by the Japanese researcher Shigeaki Mori. After that, it has attracted the attention of many people from all parts of the world. **Material and Methods:** Specimens of macrofungi were collected from Muğla province during the routine field trips between 2015 and 2016. In the field, ecological and macroscopic features were recorded and photographed. After the field studies, the specimens were brought to the laboratory and identified morphologically using reference books. **Results:** *Ganoderma lucidum*, which has been used in some health problems since ancient times is very difficult to be spotted and identified in nature and it is significant for our country that this mushroom is found naturally in different locations of our country. **Discussion:** It is very risky to collect and use this mushroom that has the medicinal value by the people other than the mushroom experts. Moreover, it will not provide much benefit to use the by-products of this fungus, which are claimed by some people in the market to have some active ingredients. Therefore, it is best to consume the mushroom itself and not the side products. It is a very important step that Reishi mushroom has recently been started to being cultured in our country.

KEYWORDS

Ganoderma lucidum, Medicinal Mushroom, Turkey

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Poster Session 11

Submission ID: 1390

USAGE AREAS OF SOME SPICE PLANTS AND EVALUATION IN TERMS OF COUNTRY ECONOMY IN TURKEY

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ABSTRACT

Turkey has different climate characteristics. It is a country rich in biological diversity. Turkey is the motherland of many plant species in terms of its position in the world. Medical and aromatic plants are also naturally grown in Turkey. Especially spice plants have been used all over the world for centuries both in local kitchen and in the health field. Health problems have increased in recent years. These problems are solved by using fewer chemicals. The demand for these plants has increased factors such as increasing health problems and solving these problems by using fewer chemicals, herbal teas used to prevent obesity, development of cosmetic industry and preference of different aroma substances in recent years. Many spice plants grow in Turkey. The most produced plants are red pepper, anise, thyme, cilantro and coriander. The planting area and production of these plants have shown fluctuations and have increased in recent years. Turkey was realized in 2016 approximately 12 500 ha area 228 531 tonnes red pepper, 9,491 tonnes of anise from 14 000 ha area, 18 586 tonnes of cumin from 27 000 ha area, 14 724 tonnes of thyme from 12 000, 2527 tonnes of black sesame from 2350 ha area, 2464 tonnes of fennel from 1750 ha area, 42 tonnes of coriander from 50 ha area and 1883 tonnes of broom from 1400 ha area. Production is mostly in rural areas. There are more female labor force in this area. Employment of women in this area increases the level of income, it also positively affects the level of regional development. In addition, with the effect of the increasing population, the demand for these plants is contributing to the demand, it is also developing foreign trade and contributing significantly to the economy of the country. Spice plants have an important place in Turkey. The aim of this study to determine the contribution of some spice plants to the economy of the country.

KEYWORDS

Spice plants, Economy, Female labor force, Foreign Trade, Turkey

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OPTIMIZATION OF DRYING MEDICINAL AND AROMATIC PLANTS BY RESPONSE SURFACE METHODOLOGY

SAMI GÖKHAN ÖZKAL¹, SENEM TÜFEKÇİ²

ABSTRACT

Optimization of Drying Medicinal and Aromatic Plants by Response Surface Methodology Sami Gökhan ÖZKAL¹, Senem TÜFEKÇİ^{2*} 1 Pamukkale University, Faculty of Engineering, Department of Food Engineering, Denizli, Turkey, 2 Pamukkale University, Vocational School of Acıpayam, Department of Food Processing, *Presenting Author: S. TÜFEKÇİ (stufekci@pau.edu.tr) Medicinal and aromatic plants are consumed as fresh but they have short shelf life due to environmental conditions limiting the long term consumption. Drying is one of the oldest used methods for preservation of medicinal and aromatic plants. Although drying process enables long shelf life by removal of water from structure, it has several advantages such as chemical, physical and nutritional losses, undesirable flavor, and color changes. Using a pre-drying treatment or combining different drying methods are some way of producing dried products at good quality with minimum losses. In order to obtain better quality dried products there is a need to understand drying process by determining drying characteristics of plants at different drying conditions. Optimization of drying process is essential for medicinal and aromatic plants. For this purpose optimization by response surface methodology can be used. Response surface methodology (RSM) is a useful method for evaluating the relationship between the responses (drying characteristics, quality parameters) and independent variables (drying conditions). RSM uses data evaluated from experimental designs and represents surfaces which describe the independent variables effects on responses. Interrelationships among the drying conditions and combined effect of all process conditions on quality parameters can be provided statistically and graphically by this method. The aim of this study was to investigate the optimum drying conditions for medicinal and aromatic plants such as; acerola, blackcurrant, blueberry, garlic, bitter gourd, ginger, green peppers, jackfruit, mango, mushroom, olive leaves, onion, pandan leaves, parsley, pink guave, spirulina, turmeric. IN this review drying and pre-treatment methods, conditions (air temperature, air velocity,etc.), experimental designs and effects of them on selected responses as quality parameters for these products will be explained briefly.

KEYWORDS

Response Surface Methodology (RSM), optimization, drying, medicinal and aromatic plants

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Poster Session 11

Submission ID: 1395

IN VITRO ANTI-INFLAMMATORY ACTIVITY OF *ACHILLEA* *SIPIKORENSIS* HAUSSKN. & BORNM.

*SELVİ CİNGÖZ*¹, *FERDA CANDAN*¹

ABSTRACT

Inflammation is an immediate response to many injuries produced by pathogens, noxious stimuli such as chemicals, or physical injury. Inflammation can cause various physical dysfunctions. Inflammatory disorders are treated using conventional anti-inflammatory drugs such as steroidal anti-inflammatory drugs and nonsteroidal anti-inflammatory drugs (NSAIDs). However, their prolonged use may produce adverse effects. Thus, it is important to develop new anti-inflammatory agents with fewer adverse effects. Natural products can be a source of active metabolites that can serve as an alternate approach to anti-inflammatory drugs. The search for natural products with anti-inflammatory activity has increased markedly in recent years. *Achillea* species have been used for their anti-inflammatory, antidiabetic, analgesic, hemostatic, spasmolytic, digestive and cholagogue effects in Turkish folk medicine. Dry materials of *Achillea sipikorensis* from Hausskn. & Bornm. were obtained Grn, Sivas in June 2012. This study was aimed to evaluate the anti inflammatory activity of both methanolic and aqueous extract of the flowers of *Achillea sipikorensis* Hausskn. and Bornm by human red blood cell membrane stabilization method and protein denaturation, using different extract concentrations. Both results are compared with standard diclofenac. The result obtained from this study suggests that extracts of *Achillea sipikorensis* has a natural source for anti-inflammatory activity. However, further studies must be conducted in order to clarify which constituent(s) of the extracts is responsible for these activities. Acknowledgements: This research was part of the project number F-501 supported by the Research Council of Cumhuriyet University in Sivas / Turkey.

KEYWORDS

Achillea sipikorensis Hausskn. and Bornm., anti-inflammatory, HRBC membrane stabilization; albumin denaturation; diclofenac.

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Poster Session 11

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SOME MEDICINAL AND AROMATIC PLANTS FROM ORDU VICINITY

ÖZNUR ERGEN AKÇİN¹, TUĞBA ÖZBUCAK¹, GÜLCAN ŞENEL¹

ABSTRACT

Some Medicinal and Aromatic Plants from Ordu Vicinity Öznur ERGEN AKÇİN¹, Tuğba ÖZBUCAK², Gülcan ŞENEL³ 1 2Ordu University, Faculty of Science and Art, Department of Molecular Biology and Genetics, Ordu, Turkey. 3 Ondokuz Mayıs University, Faculty of Science and Art, Department of Biology, Samsun, Turkey oakcin@gmail.com Many local wild plants have been used as traditional medicinal plants in Anatolia. Wild medicinal plants are very widespread in Black Sea Region of Turkey and people has been used wild plants as medicinal purposes. In this study, some wild medicinal plants which used in the treatment of diseases in Ordu were investigated and introduced. Specimens were collected from different locaties in Ordu. Their morphological features, parts used as medicinal plants, methods of using, scientific name and Turkish name were determined. There are about 80 wild medicinal plants in Ordu vicinity. In this study, common 15 wild medicinal and aromatic plants were investigated. These plant are Helichrysum sp., Hypericum orientale L., Hypericum bithynicum Boiss., Helleborus orientalis Lam., Tussilago farfara L., Ornithogalum sigmoideum Freyn et. Sint., Cyclamen coum ssp. coum, Arum italicum Mill., Urtica dioica L., Malva neglecta Wallr., Laurocerasus officinalis Roemer, Tilia rubra DC., Cichorium intybus L., Rhododendron luteum Sweet. and Chelidonium majus L. Generally leaf, stem and flowers of plant are used as medicinal purposes. Flowers and leaves of Hypericum orientale, Tussulago farfara and Rhododendron luteum are used as therapeutic. Arum italicum has expectorant and cough suppressant properties. Aboveground parts of Helichrysum are used diuretic. Chelidonium majus is used as diuretic and expectorant. Also the plant's sap is used against warts and corns. Cylamen is effective in treating arthritis and joint pain. Also used in the treatment of boils and burns. Ornithogalum sigmoideum is good for pimples and boils. This plant has diuretic and emetic effect. Urtica dioica is effective against rheumatic pain and eczema. Keywords: Medicinal plant, aromatic plant, traditional medicine, Ordu, Turkey.

KEYWORDS

Medicinal plant, aromatic plant, traditional medicine, Ordu, Turkey.

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Poster Session 11

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ANTIDOTIC POTENCY OF BITTER GOURD (MOMORDICA CHARANTIA L)

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ABSTRACT

Both in developed and developing countries the people have been using herbal medicine since aging to cure several life-threatening diseases such as cancer, diabetes, obesity and heart disease. In recent years an herbaceous vegetable called Bitter gourd (*Momordica charantia* L) with tropical and subtropical distribution has been identified to be used effectively against these diseases. It is one of the most valuable marketable vegetable in south-eastern countries of the Asia and spread out all over the world due to its high nutritive and medicinal value. It is commonly called *Aci kabak* in Turkey, with various local names like *balsam pear*, *African cucumber* and *bitter melon* around the world. It is ever first domesticated in eastern India and carried to china near 14th century, while due to slave tradition in ancient world it spread out to some parts of the world for medicinal and food purpose. Bitter gourd is available in the natural of basket which offers excellent medicinal merits. The bitter gourd is specially used to control diabetes as well as several fungal diseases like *scabies*, *ring worm*, *psoriasis* and also blood disorder like *blood boils*. Leaves and roots of bitter gourd have different compounds which are using in traditional medicines for respiratory diseases. The leaves tips of bitter gourd are the good source of vitamin A. Fresh fruits of bitter gourd have compounds like *Charantin*, *Peptides*, *glycosides*, *triterpines* and *alkaloids* actively affects the blood and urine sugar level. Juices from the fresh leaves of bitter gourd also highly effective in diseases like *diarrhea* and *cholera*. Bitter gourd contains proteins like *MAP30* (exposed by American scientists in 1996) having great effect against diseases like *AIDS*, *tumor* and other viruses like *herpes simplex virus – 1 (HSV-1)* inhibiting its reproduction as well as reducing its ability to skin irritation. Bitter gourd has high contents of fiber in their fruit help in many stomach disorders by stimulating gastric juice. A-electrostatic acid and 15, 16-dihydroxy-a-eleostearic acid are the two compounds found in seeds and fruits of bitter gourd respectively, contribute great effect to health by preventing cancerous cell, help in production of red blood cells, leukemia disorder and also control blood pressure. Alpha and beta-momorchardin protein present in bitter gourd have constraining result on human immune deficiency virus (HIV) infection. It is inviting scientists across the world due to its high medicinal value in treatment of various diseases especially in diabetes mellitus and respiratory diseases.

KEYWORDS

diabetes mellitus, Charantin, Peptides and MAP30

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Poster Session 11

Submission ID: 1401

IN VITRO ANTI-DIABETIC ACTIVITY OF AQUEOUS EXTRACT OF THE MEDICINAL PLANT BERBERIS CRATAEGINA DC. FRUITS

FERDA CANDAN¹, FERHAN CANDAN¹, EROL DÖNMEZ¹

ABSTRACT

Recently, some medicinal plants have been reported to be useful in diabetes worldwide and have been used empirically as antidiabetic remedies. Despite the presence of known antidiabetic medicine in the pharmaceutical market, diabetes and the related complications continued to be a major medical problem. Antihyperglycemic effects of medicinal plants are attributed to their ability to restore the function of pancreatic tissues by causing an increase in insulin output or inhibit the intestinal absorption of glucose or to the facilitation of metabolites in insulin dependent processes. More than 400 plant species having hypoglycemic activity have been available in literature. However, searching for new antidiabetic drugs from natural plants is still attractive because they contain substances which demonstrate alternative and safe effects on diabetes mellitus. The present investigation evaluated aqueous extract of *Berberis crataegina* DC was subjected to inhibitory effect of enzymatic α -amylase and α -Glucosidase inhibition assay using specific standard in vitro procedure. Acarbose was utilized as the positive control. The extract produced higher reduction of α -glucosidase activity than α -amylase. The findings indicate *Berberis crataegina* DC possess hypoglycemic effect and hence it can be utilized as an adjunct in the management of diabetes mellitus.

KEYWORDS

α - amylase; α -glucosidase; In vitro antidiabetic; Berberis crataegina DC

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Poster Session 11

Submission ID: 1402

THE PROTECTIVE EFFECT OF GERANIOL AGAINST REMOTE TISSUE INJURY INDUCED BY SHORT TERM RENAL ISCHEMIA / REPERFUSION IN RATS

İŞİL TAN YILMAZ¹, MEDİHA CANBEK¹, HAKAN ŞENTÜRK¹, FATMA YILDIZ², SEREN DANIŞ¹, SENANUR CAN¹

ABSTRACT

In our study, the possible protective effects of geraniol, which is known to be an antioxidant, were investigated against liver injury induced by experimentally short-term renal ischemia/reperfusion (I/R) injury in rats. In the study, three to four month old, Wistar-albino type 28 rats were used (n=7). Four groups were designed randomly that Group I (Sham Group), Group II (I/R+normal saline), Group III (I/R+ 50 mg/kg geraniol), Group IV (I/R+ 100 mg/kg geraniol). Right nephrectomies were performed under xylazine (10 mg/kg) and ketamine (70 mg/kg) anesthesia in all group rats. Then, 2 ml physiological saline solution was injected to Group I and Group II; 50 mg/kg geraniol was injected to Group III and 100 mg/kg geraniol was injected to Group IV intraperitoneally one hour before ischemia. 45 minutes ischemia and 4 hours reperfusion were applied to all groups except Group I. At the end of the experiment, ALT, AST activities in the blood serum and the Catalase (CAT), Superoxide dismutases (SOD) and Glutathione peroxidase (Gpx), enzyme activities in liver tissue were measured. Histological sections were stained using Hematoxylin & Eosin and investigated by light microscope. According to the study results, when Group I and Group II's ALT and AST values were compared in serum and CAT, SOD, Gpx in tissue samples, belonging to Group II's serum ALT and AST value and SOD, Gpx activity increased and CAT activity decreased in liver tissue. While Group III and IV's SOD and Gpx activities decreased, CAT activity increased compared to Group II. Although histopathologically, in Group II's the liver tissue was shown that intense vacuolization, advanced necrosis, intense nuclear infiltration and congestion, this findings was not found in Group IV. Biochemical analyzes have supported by histological findings of our experimental study. The results of this study have demonstrated that geraniol (100 mg/kg i.p.) prevents distant organ injury because of renal I/R injury.

KEYWORDS

Ischemia/Reperfusion, Remote organ, Liver, Free Radical, Geraniol

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Poster Session 11

Submission ID: 1403

**IN VITRO ANTI INFLAMMATORY ACTIVITY OF METHANOLIC
EXTRACT OF ACHILLEA TERETIFOLIA WILLD. BY HRBC
MEMBRANE STABILISATION**

FERDA CANDAN¹, SELVI CİNGÖZ¹

ABSTRACT

Plants from the genus *Achillea* are used as folk medicine for treating various diseases including inflammatory and immune-related diseases. Numerous reports have suggested plant extracts and their constituents as possible anti-inflammatory agents. Here, in vitro evidence of *Achillea teretifolia* Willd. anti inflammatory activity and antioxidant properties is presented for the first time. In this study we found out that the methanol extract of the leaves of *Achillea teretifolia* Willd. possess a significant anti-inflammatory action comparing with diclofenac sodium as standard. Human red blood cell (HRBC) membrane stabilization was taken as the screening procedure for obtaining the results. In this particular method inhibition of membrane lysis was taken as the measure of anti-inflammatory property. The haemoglobin content in the supernatant solutions was estimated using spectrophotometer at 560 nm. The percentage haemolysis was calculated by assuming the haemolysis produced in presence of distilled water as 100%. The maximum membrane stabilization of *Achillea teretifolia* extracts was found to be 92.47 % at a dose of 1000 µg/ml. Therefore, our present in vitro studies on *Achillea teretifolia* extracts demonstrate the depression of inflammation.

KEYWORDS

Achillea teretifolia Willd., anti-inflammatory, HRBC membrane stabilization; diclofenac.

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DETERMINATION OF THE THOUGHTS OF HEALTH SERVICE VOCATIONAL SCHOOL STUDENTS ABOUT PLANT USE AND HERBAL TREATMENT

GÜLSÜM YETİŞ¹, TURGAY KOLAÇ¹, PERİHAN GÜRBÜZ¹, ZEHRA DENİZ YAKINCI¹

ABSTRACT

Summary Objective: This cross-sectional study was conducted to determine the opinions of Health Services Vocational School students about the use of plants and the use of herbal remedies. **Materials and Methods:** The study was conducted with 342 students having education at İnönü University Health Services Vocational School. A questionnaire which was prepared by the researchers using the literature knowledge, consisting of questions about the socio-demographic characteristics of students and their thoughts about herbal treatment was used in the collection of the data. Analyzes of the obtained data were done by using SPSS 17.0 program, frequency and percentages were determined and q-square test was performed. For the realization of the research, written approval from the institution and the ethics committee, verbal approval from the students was obtained where the research was conducted. **Findings:** 69.3% of the students who participated the research were female, 73.5% had medium economic status and the average age was 20.33 ± 3.49 . 7.6% of the students had a chronic illness requiring medication. While 77.1% had a body mass index in the normal range, 7.0% was below and 16.0% was above the normal range. Among the students; 70.2% of them had used alternative treatment, 70.0% believed in alternative treatment, 52.4% had people using alternative treatment around them, 45.1% had no idea about alternative treatment to be correct or not, 14.8% did not find the alternative treatment correct, and 29.2% of those who did not find it correct expressed the reason of this condition by the unconscious use of the patients. The second reason of this condition was expressed by lack of training about herbal treatment (28,6%). 52.2% of the students stated that they found both drugs and plants safe, 21.3% said they found plants more reliable than drugs, and 44.1% of the students stated that they used herbal treatment. The order of herbal treatment use is; products that strengthen the body and the immune system (31.3%), skin care products (31.3%), hair care products (22.3%), pain relief products (21.0%), products for burn treatment (9, 4), perfume essences (7.6%) and slimming products (6.7%). It was found that 70.6% of the students using herbal products used the products in need, 40.9% bought them from the herbalists, 61.6% recommended the products they used to other people, 32.5% used herbal treatment to benefit from their complaint, 30.8% of the students had not investigated whether the product they used had another effect/usage purpose or not. 72.5% of the students stated that the product they used gave good results for their usage purpose, 13% stated the product to be harmful for themselves and 72.4% expressed that they did not consult doctor for the use of herbal treatment. The reason for not consulting a doctor has been defined as; they did not need it (81.5%), they thought the doctor would react negatively (5,2%), they were afraid to be criticized (3,0%). There was statistically significant difference between herbal treatment use and to find herbal treatment use correct, having benefit after the treatment and being

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informed about herbal treatment ($p < 0,05$). The difference between the use of herbal treatment and the sex of the students was statistically insignificant ($p > 0,05$) Conclusion: Among the students it was detected that; 70,0% of the students believed in alternative treatment, only 14,8% found alternative treatment incorrect, 52,2% thought both the drugs and plants were safe, 44,1% used herbal treatment. The herbal products most commonly used by students are products that strengthen the body and immune system and skin care products. The rates of herbal treatment use has been found to be more in the groups who found the herbal treatment correct, saw the benefit of the treatment that had already been used and had been informed about the herbal treatment, and this condition was statistically significant.

KEYWORDS

herbal treatment, plant, student

Poster Session 11

Submission ID: 1405

INVESTIGATION OF BIONEMATICIDAL VALUE OF SOME ESSENTIAL OILS AGAINST MELOIDOGYNE INCOGNITA IN VITRO

FATMA GÜL GÖZE ÖZDEMİR¹, BEKİR TOSUN², ARIF ŞANLI¹

ABSTRACT

Nematicidal activity of essential oils extracted from 14 plant species representing Apiaceae family were evaluated in vitro experiments against root knot nematode, *Meloidogyne incognita*. Fruit essential oils of *Ferulago pauciradiata* (Boiss&Heldr), *Foeniculum vulgare* (Miller.), *Ferulago cassia* (Boiss.), *Daucus carota* (Linne.), *Coriandrum sativum* L., *Conium maculatum* L., *Artemisia annua* L., *Angelica sylvestris* L., *Anethum graveolens* L., *Scandix iberica* Bieb., *Kundmannia anatolica* (Boiss), *Heracleum platytaenium* Boiss., *Pimpinella anisum* L., *Smyrniolum connatum* Boiss&Kotschy were extracted via hydrodistillation and investigated by gas chromatography-mass spectrometry (GC-MS). High nematicidal activity was achieved with essential oils from *Ferulago pauciradiata* (Boiss&Heldr), *Angelica sylvestris* L. and *Heracleum platytaenium* Boiss. Good nematicidal activity was also obtained with the essential oil from *Anethum graveolens* L. On the other hand, *C. maculatum*, *S. connatum*, *S. iberica* and *D. carota* essential oils yielded weak nematicidal activity. All of the tested essential oils possessed nematicidal activity against *M. incognita* and nematode mortality rate ranging between 39-84.3% on the 3rd day and 59.7-91.7% on the 7th day by essential oil applications. The use of the crude oils provided satisfactory results at the laboratory level against *M. incognita*, and needs further evaluation in greenhouse and field trials.

KEYWORDS

Meloidogyne incognita, essential oils, bionematicide, Apiaceae family

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Poster Session 11

Submission ID: 1407

MEDICINAL PLANT MELILOTUS INDICUS (L.) ALL. (FABACEAE) AND THEIR MICROMORPHOLOGICAL PROPERTIES

ÖZNUR ERGEN AKÇİN¹, ŞÜKRAN ÖZTÜRK¹, TUĞBA ÖZBUCAK¹

ABSTRACT

Medicinal Plant *Melilotus indicus* (L.) All. (Fabaceae) and Their Micromorphological Properties Öznur ERGEN AKÇİN¹, Şükran ÖZTÜRK², Tuğba ÖZBUCAK¹ 1 Ordu University, Faculty of Science and Art, Department of Molecular Biology and Genetics, Ordu, Turkey. ²University of Ordu, Ulubey Vocational School, Ordu, Turkey oakcin@gmail.com *Melilotus* L. (Fabaceae) is represented with 11 species in Turkey. *M. indicus* (L.) All. named as "taş yoncası, otuzlu yonca" in Anatolia. This species is used as medicinal, forage and nectarius plant. The plant contains coumarin, which is an anticoagulant. *M. indicus* species are discutient, emollient, astringent, strongly laxative and narcotic. The seed is made into a gruel and used in the treatment of bowel complaints and infantile diarrhoea. The scanning electron microscope (SEM) is an ideal instrument for examining the surfaces. In this study, we have aimed to investigate leaf, fruit and seed surfaces of *M. indicus* by SEM. Plant materials were collected from different localities of Ordu vicinity in flowering period. Taxonomical descriptions of the specimens were made according to Davis. Dried leaf, seed and fruit samples were mounted on stubs using double-sided adhesive tape for SEM. Samples were coated with 12.5-15 nm of gold. Coated samples were examined and photographed with a JMS-6060LV Scanning Electron Microscope. Taxonomical properties are very important to identification of plant. It is very important to collect the right plants for the use of medical plants. Close species or subspecies are very similar to each other. The collection and use of the wrong plant is very dangerous. This means that plants must be well-recognized and diagnosed correctly. Taxonomical properties are very important to identification of plant. Micromorphological properties of plant are important taxonomical properties. In conclusion, micromorphological features of leaves, fruit and seed surface were determined and to help recognize the *M. indicus*.

KEYWORDS

Melilotus, *M. indicus*, Medicinal plant, Micromorphological, SEM.

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Poster Session 11

Submission ID: 1409

INVESTIGATION OF ANTI-CANCER ACTIVITY OF TEUCRIUM POLIUM L. SUBSP. POLIUM IN DIFFERENT CANCER CELLS

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ABSTRACT

Cancer is one of the most important public health problems in our country and in the world. Although some progress in cancer treatment, new treatments are needed. The vast majority of anti-cancer agents in clinical use are of plant origin. The research of plant resources that may have potential as an anti-cancer agent in our country which is rich in plant diversity is very valuable both in terms of health and country economy. Therefore, complementary therapies of herbal origin have gained importance in recent years. The aim of the study is to provide an herbal treatment method that can support cancer treatment. For this purpose, the cytotoxic effects of ethanol extract of *Teucrium polium* plant were investigated in vitro in human breast (MCF-7) and lung (A549 and H1299) cancer cell lines. Cytotoxic activities on the cells were determined by SRB viability test. The death mode (apoptotic or necrotic) in the cells was evaluated morphological by fluorescence dying. It was determined that *Teucrium polium* reduced cell viability as dose-dependent manner (12.5-200 µg / ml, 72h) in MCF-7, A549 and H1299 cells. It was determined that IC50 value were calculated as 92 µg/ml (MCF-7), 75.34 µg/ml (A549 cells) and 135.66 µg/ml (H1299 cells), respectively. According to these values, the anti-cancer potential of *Teucrium polium* ethanol extract is higher in A549 cells than the other. Further analysis is needed for explain the cell death mechanism.

KEYWORDS

Teucrium polium L. subsp. polium, cancer, apoptosis, cytotoxic effect

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Poster Session 11

Submission ID: 1410

SPECIES OF FLEABANE (CONYZA SPP.) IN TURKEY

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ABSTRACT

Species of Fleabane (*Conyza* spp.) in Turkey Asteraceae family is the biggest family of the world 1600 genus and 23000 species. Fleabane species (*Conyza* spp.) are one of the most important types of Asteraceae family. There are 60 different species of the Fleabane that they generally distributed on temperate and subtropic areas of all the continents excluding Antarctica. *C. canadensis* (L.) known species of Fleabane in Turkey considering that the *C. albida* Willd. ex. Sprengel, *C. bonariensis* (L.) Cronquist ve *C. canadensis* (L.) Cronquist species exist. Besides the existing types are quite similar in our country, lamellar structure and inflorescence are the main differentiation criteria used for diagnosis. Those herbs are used in modern and public medicine because of their rich chemical metabolites. These plants are used as coagulant, diuretic, expectorant, hypoglycemic, tonic (as refreshing), antirheumatic, antifungal and antibacterial besides these effects also for dysentery and hemorrhoid treatment.

KEYWORDS

Conyza spp. *Fleabanes*, *Turkey*

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Poster Session 11

Submission ID: 1412

ANTI-MICROBIAL ACTIVITY OF SALIX BABYLONICA

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ABSTRACT

INTRODUCTION Since the beginning of civilization, humans have used natural products for healing of different diseases. *Salix babylonica* (Babylon willow or weeping willow) is a species of willow native to dry areas of northern China, but cultivated for millennia elsewhere in Asia, being traded along the Silk Road to southwest Asia and Europe. *Salix* plant was used in the treatment of many conditions, including arthritis, menstrual, dental and back pain reduce fevers. and it is used as an anti-inflammatory drug. This study was conducted to investigate the antimicrobial activity of *Salix babylonica* ethanol and acetone extracts on *Escherichia coli*, *Proteus mirabilis*, *Enterococcus faecalis*, *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Pseudomonas aeruginosa* and *Candida albicans*. **MATERIAL and METHOD** Minimum inhibitory concentration (MIC) of plant extracts were determined by the microdilution and disk diffusion method as described by Clinical and Laboratory Standards Institute. **RESULTS** Disc diffusion results were ineffective. The MIC values of both extract (ethanol and acetone) were same except *C. albicans*, *E. faecalis*, *S. aureus*. *E. coli*, *P. mirabilis*, *S. epidermidis*, *P. aeruginosa* (>12.500 µg/ml, 12.500 µg/ml, 97.6 µg/ml, >12.500 µg/ml for), respectively. The ethanol extract of *Salix babylonica* MIC values were determined for *C.albicans* 781 µg/ml, *E.faecalis* 781 µg/ml. While was ineffective for *S.aureus*. The acetone extract of *Salix babylonica* MIC values were determined for *C.albicans* 390 µg/ml, *E.faecalis* 1.562 µg/ml, *S.aureus* 97.6 µg/ml **CONCLUSIONS** Result of this study suggests that *salix babylonica* extracts can be effective in tested several microorganisms. Further studies in the effect of different dosages and duration are suggested. Future studies should elucidate the components responsible for antimicrobial activity of these extracts against target cultures.

KEYWORDS

Salix babylonica, Antimicrobial activity

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Poster Session 11

Submission ID: 1414

ASSESSMENT OF THE ANTIOXIDANT AND REACTIVE OXYGEN SPECIES SCAVENGING ACTIVITY OF METHANOLIC EXTRACTS OF ACHILLEA SIIKORENSIS HAUSSKN. AND BORNM. AND ACHILLEA TERETIFOLIA WILLD.

SELVİ CİNGÖZ¹, FERDA CANDAN²

ABSTRACT

Oxidative stress is initiated by reactive oxygen species (ROS), which are responsible for majority of the diseases. However, antioxidants with ROS scavenging ability may have great relevance in the prevention of oxidative stress. The present study was undertaken, using a methanolic extracts of *Achillea sipikorensis* Hausskn. and Bornm. ve *Achillea teretifolia* Willd, to examine different in vitro tests in diversified fields including total antioxidant activity, scavenging activities for various ROS (radicals like hydroxyl, superoxide and hydrogen peroxide), phenolic and flavonoid contents. Hydrogen peroxide (H₂O₂) scavenging activity of the methanolic extracts were carried out following the procedure of Ruch et al. Hydroxyl radicals scavenging activity was measured with Fenton reaction. Superoxide anion scavenging activity was evaluated by the method of xanthine/xantine oxidase (XOD) system. Inhibition of reactive oxygen species were calculated for changing the concentration of plant extracts. IC₅₀ which is the amount of extract supplying 50% inhibition were calculated using the graph. The ability of the extracts of the *Achillea* in exhibiting their total antioxidant properties follow the order *Achillae sipikorensis* > *Achillae teretifolia*. The same order is followed in their phenolic content, whereas in case of flavonoid content it becomes *Achillae teretifolia* > *Achillae sipikorensis*. Miscellaneous results were observed in the scavenging of reactive oxygen species by the plant extracts, *Achillae teretifolia* > *Achillae sipikorensis* for hydroxyl and superoxide radicals, and *Achillae sipikorensis* > *Achillae teretifolia* for hydrogen peroxide. In a whole, the studied *Achillae* extracts showed quite good efficacy in their antioxidant and radical scavenging abilities, compared to the standards. In conclusion, it may be concluded that methanol extracts of *Achillae sipikorensis* and *Achillae teretifolia* as an antioxidant and ROS scavenger; which may be due to the presence of phenolic and flavonoid compounds. Acknowledgements: This research was part of the project number F-501 supported by the Research Council of Cumhuriyet University in Sivas / Turkey.

KEYWORDS

Assessment of the Antioxidant and Reactive Oxygen Species Scavenging Activity of Methanolic Extracts of Achillea sipikorensis Hausskn. and Bornm. and Achillea teretifolia Willd.

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Poster Session 11

Submission ID: 1415

WHY FERULIC ACID ATTRACTS THE ATTENTION OF MANY RESEARCHERS?

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ABSTRACT

Phenolic compounds possess one or more aromatic rings with one or more attached -OH groups, which may occur in free, combined, or bound forms that are considered to be part of the defense mechanisms in plants. Ferulic Acid (FA) (4-hydroxy-3-methoxycinnamic acid-hydroxycinnamic acid), an *Angelica sinensis* derived phenolic phytochemical, is a component of equisetum, angelica, and some Chinese herbal medicines. It is also present in various fruits and vegetables, such as citrus fruits, bananas, whole grains, spinach, broccoli, eggplants, and cabbage. It has been reported that FA has numerous physiological functions, including antiinflammatory, antimicrobial, antifibrosis, and antidiabetic functions. It has a strong antioxidant property which includes very high hydroxyl radical scavenging activity, superoxide radicals, nitric oxide, and peroxynitrite scavenging activity. FA has also been found to possess a lot of potential improved effects related to different diseases. FA can prevent cognitive deficits in mice, attenuate the symptom of Alzheimer's disease induced by chronic neuroinflammation and oxidative stress in rats, and protect rats brain after nerve injury induced by cerebral ischemia. Chemopreventive efficacy of ferulic acid in some kind of carcinogenesis has also been demonstrated. In addition, some publications indicated that FA produced the antidepressant-like effects. This study was designed to review the health benefits of phenolic compound FA in in vitro and in vivo studies.

KEYWORDS

Ferulic acid, antioxidant, radical scavenging activity, chemopreventive effect, antidepressant-like effect

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Poster Session 11

Submission ID: 1416

INVESTIGATION OF ANTI-CANCER ACTIVITY OF ADANSONIA DIGITATA (BAOBAB) IN DIFFERENT CANCER CELLS

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ABSTRACT

The Baobab tree (*Adansonia digitata*) is an indigenous vegetation of several countries in tropical Africa, including Botswana, Mozambique, South Africa and Namibia. Many parts of the plant, especially leaves, fruit pulp, seeds and bark fibers, have been used traditionally for medicinal and nutritional purposes. In addition, antibacterial, antiviral and anti-trypanosome activities have been reported. An important area of research in cancer treatment is to investigate the anticancer properties of herbal extracts. For this purpose, cytotoxic effects of ethanolic extract of *Adansonia digitata* (Baobab) plant were investigated in human breast (MCF-7) and lung (A549 and H1299) cancer cell lines in vitro. Cytotoxic activities on the cells were determined by SRB viability test. The death mode (apoptotic or necrotic) in the cells was evaluated morphologically by fluorescence staining. *Adansonia digitata* (Baobab) ethanolic extract was found to reduced viability in the MCF-7, A549 and H1299 cells as dose-dependent manner. Calculated IC₅₀ values were determined to be as 110.83 µg/ml in MCF-7 cells, 36.36 µg/ml in A549 cells and 116.41 µg/ml in H1299 cells, respectively. We think that the *Adansonia digitata* plant has anticancer potential in human lung cancer cells and that its mechanism needs to be elucidated.

KEYWORDS

Adansonia digitata (Baobab), cancer, apoptosis, cytotoxic effect

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Poster Session 11

Submission ID: 1418

A DIFFERENT UTILIZATION AREA OF OLIVE OIL: WOUND CARE

MERVE YURTTAŞ¹, KENAN GÜMÜŞ¹

ABSTRACT

A DIFFERENT UTILIZATION AREA OF OLIVE OIL: WOUND CARE Merve YURTTAŞ^{1*}, Kenan GÜMÜŞ² 1University of Amasya, School of Health, Department of Nutrition and Dietetics, Amasya/TURKEY 2University of Amasya, School of Health, Department of Surgical Diseases Nursing, Amasya/TURKEY merve.yurttas@amasya.edu.tr **ABSTRACT** Introduction: The fact that natural olive oil which is essential component of Mediterranean diet possess compounds with natural antioxidant properties such as monounsaturated fatty acids, vitamins, carotenoids, phytosterols, flavanoids, and phenolic compounds both increase its nutritional value and allows its use in medicine. Method: Literature review was presented extracting from the full texts and summarized articles reached via databases such as "Pub Med, Scopus, Scince Direct, Ulakbim, Google Scholar" by using key words such as olive oil, nutrition, and wound care. Results: Olive oil is a highly nutritious aromatic oil obtained from ripe olive fruits mechanically without applying any chemical treatment. Olive oil which is stated to have positive effects on health in the literature is also used for treatment purpose all over the world. It is reported that olive oil has been used in ancient times and today's folk medicine for wound care by utilizing from its antibacterial and anti-inflammatory effects. It is expressed to accelerate healing by stimulating the growth factors when it is applied to wound. The fact that olive oil has antibacterial activity enables olive oil to be an effective agent against bacterial species, like Klebsiella-Pseudomonas, causing wound infections and having antibiotic resistance. Conclusion: There are studies examining the effect of olive oil on wound healing and presenting evidence-based results about this issue. It comes to the forefront in the fields of conventional medicine and folk medicine due to its clinically important properties such as acceleration of wound healing and providing the clean environment required for the wound to heal. Key Words: olive oil, nutrition, wound care

KEYWORDS

olive oil, nutrition, wound care

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Poster Session 11

Submission ID: 1419

USE OF SPROUT AS ENZYME THERAPY IN PHENYLKETONURIA

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ABSTRACT

Phenylketonuria (PKU) is a hereditary disorder of protein metabolism caused by the deficiency or absence of the phenylalanine hydroxylase enzyme (PAH) and/or the cofactor of this enzyme, tetrahydrobiopterin (BH₄). An essential amino acid phenylalanine is converted irreversibly into tyrosine by the PAH enzyme secreted from the liver in healthy individuals. In patients with PKU, phenylalanine cannot be converted to tyrosine due to the deficiency or absence of PAH and as a result it accumulates in body fluids and causes damage especially in nerve and brain tissues. Currently, phenylalanine-restricted diet is the basis of the treatment for PKU patients. In addition, new treatment approaches have been carried out such as oral phenylalanine ammonium lyase (PAL) enzyme therapy to improve the quality of life of patients with PKU. PAL converts phenylalanine to trans-cinnamic acid and ammonia by autocatalytic effect without cofactors. There are studies related to determine the activity of naturally encapsulated PAL enzyme in plant tissues from various sources such as fruits, legumes and cereals for patients with PKU. PAL contents and activity of cereals and legumes such as wheat, corn, green lentil and soybean could be very increased by germination. It was found that the highest PAL activity was the sprouts of red-spring wheat had on the seventh day of germination. The stability of PAL activity in wheat sprout during in vitro digestion was also investigated to determine the potential of enzyme to be used as a dietary supplement for patients with PKU. It is known that the PAL activity could be preserved to some degree in fresh sprout throughout digestion. Conclusion, fresh wheat and legume sprouts could be used in diet patients with PKU as oral enzyme therapy.

KEYWORDS

Phenylketonuria, sprout, phenylalanine ammonium lyase

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REVIEW OF IMPORTANT INTERACTIONS BETWEEN STATINS AND HERBAL PRODUCTS OR NUTRIENTS

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ABSTRACT

Herbal products have been used for thousand years by human being because of the effects they have with the purpose of treatment, protection from diseases or improving life quality. Today, usage of herbal products is still common in the world showing the differences by the aspect of community and district. A variety of interactions can be seen from the fact that the active components of the herbal products are the substrates, inducers, and the inhibitors of the same pathways as the drugs in the body. Also, carrier proteins such as P-glycoprotein (P-gp) and organic anion-transporting polypeptide (OATP) are assuming an active role on the pharmacokinetics of some xenobiotics; so that, potential of interaction increases with the drugs transporting through the same transport proteins. Drug interaction is the change of a drug's effect due to in the presence of another xenobiotic or being under its effect. Treatment interruption, hospitalization, temporary/permanent disabilities, congenital anomaly, life-threatening conditions, and death can be seen as a result of these changes. In our study, we are aiming to evaluate the current data on the interactions of HMG-CoA reductase inhibitors (statins), one of the group of hypolipidemic drugs, with herbal products and nutrients. Hypolipidemic agents are classified as statins, fibric acid derivatives, niacin, bile acid sequestrants, and ezetimibe. They are used to decrease the risk of coronary heart diseases and the other atherosclerotic cardiovascular diseases with the lifestyle changes by the means of retarding atherosclerosis development but also hindering the progress. Usage of statins widely and having important clinical drug interactions necessitate the safe drug use. It is known that statins cause myopathy, elevation on liver enzymes, rhabdomyolysis etc. and incident of these effects increases after concomitant use with drugs, herbal products or nutrients. Myopathy which is classified as a serious adverse effect can be seen 1 of 1.000 frequency and characterized by the elevation of serum creatine kinase at least ten-fold. An interaction that can cause elevation on the statin plasma levels can increase adverse effects that belong to muscle system such as myalgia, myopathy, more rarely seen rhabdomyolysis and hematuria. Grapefruit juice increases the quantity of atorvastatin passing to portal vein via inhibition P-gp and CYP3A4 of which atorvastatin is a substrate. It is reported that green tea inhibits enzyme CYP3A4, P-gp and OATP carrier proteins. When green tea is used with simvastatin (one of the substrates of these pathways), it is stated that an increase of simvastatin blood concentration. St. John's Wort (*Hypericum perforatum*)'s decreasing effect on atorvastatin plasma concentration via inducing CYP3A4 causes increase on plasma lipid levels. It is possible to get benefit from some drug-herbal products interactions as additive. In an experimental study that was conducted with rats, a significant cholesterol lowering effect with the combined use of ginger (*Zingiber officinale*) and atorvastatin was observed. While the levels of alanine aminotransferase and aspartate aminotransferase increase in the group taking atorvastatin alone, these enzyme levels are observed less in the combined treatment group. In the consideration of

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this information by keeping in mind that drug interactions can cause serious results, patient-physician-pharmacist communication and in this context importance of informing shows up again for the patient to take the necessary cautions. Especially, almost 50% of patients tend not to indicate the herbal products or dietary supplements they use gives birth the obligation of assess to this subject more carefully. In this study, interactions of statins with herbal products and nutrients were searched on the aspect of clinical studies and case reports; and duration of use, doses/amounts, possible interaction mechanisms and adverse effects of drugs, herbal products and nutrients were presented as a summary.

KEYWORDS

statins, herbal products, interaction, CYP450, P-gp, OATP

Poster Session 11

Submission ID: 1421

THE EFFECT OF ESSENTIAL OILS ON GERMINATION RATE OF SOME SUMMERY AND WINTERY WEED SPECIES SEEDS

DERYA ÖĞÜT YAVUZ¹, BURCU BEGÜM KENANOĞLU², DERYA KÖKTAŞ¹

ABSTRACT

To start germination activity, seeds need water, temperature, oxygen and light depending on morphological, physiological properties and species. Light, temperature and nitrate ions that are in the land are alternative factors that can significantly affect seed germination. They are dominant factors in the environment. To speed up or promote germination with organic or inorganic treatments do positive effects to the seed or seedling. Recently, eco-friendly, clean, cheap, and most important herbal origin (seaweed extract, medical plant extract, vinegar priming, volatile oils and propolis) treatments use alternative to chemical-intensive applications. Especially in terms of medicinal and aromatic plants in our country one of the richest countries in the world. In this study, to determinate different volatile oil's (*Mentha longifolia* L., *Pimpinella anisum* L., *Carthamus tinctorius* L., *Citrus limon* L., *Eucalyptus globulus* Labil., *Lavandula stoechas* L. and *Prunus dulcis* Mill.) effects on some wintery *Sinapis arvensis* L., *Galium tricornutum* Dandy, *Melilotus officinalis* L. and some summery *Amaranthus retroflexus* L., *Portulaca oleraceae* L., *Chenopodium album* L. weed species's seeds germination rate. Wintery species seeds germinated at 15-20 0C and summery seeds germinated at 25-30 0C in 1 month with petri dishes. At the end of treatments normal-abnormal germination rate (%), mean germination time (day) determined. Generally, control (untreatment with volatile oil) group's weed seeds germination rates were between %20-100. The most effective treatments groups are bitter almond, anise and safflower volatile oils effect on *Melilotus officinalis* L. ve *Amaranthus retroflexus* L. seed's germination rates.

KEYWORDS

Weed seeds, germination rate, volatile oils, priming treatment

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Poster Session 11

Submission ID: 1422

INVESTIGATION OF TOTAL PHENOLIC AND FLAVONOID COMPOUNDS OF GİRESUN REGION'S PLANT ORNITHOGALUM UMBELLATUM WHICH COOKED AND FRESH

ELİF APAYDIN¹

ABSTRACT

It is the study of the total phenolic compounds and total flavonoid compounds of the fresh and diet of the *Ornithogalum umbellatum* plant which grows abundantly in Giresun region. Besides, it is analytical to reveal how much fresh and cooked plant samples are, if there is any difference in the analysis results. In this study, some of the *Ornithogalum umbellatum* collected from the nature of Giresun was cooked by boiling water. The cooked and fresh plant samples were shredded by hand and extracted with Soxhlet in methanol. Subsequently, total phenolics were determined by Folin Ciocalteu method and total flavonoids were determined by aluminum nitrate method. Qualitative and quantitative analysis of gallic acid and quercetin as standard in these two methods was determined by High Performance Liquid Chromatography (HPLC) method. Plant extracts were determined to contain a high rate of flavonoids and phenolic substance. In addition total phenolic and total flavonoid compounds in fresh and cooked plant extracts were observed differences. It was concluded that, temperature is the reason to be difference in sample result. The results are consistent with studies in the literature.

KEYWORDS

Ornithogalum umbellatum, phenolic compound, flavonoid compounds, HPLC

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Poster Session 11

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ANTIMICROBIAL AND ANTIBIOFILM ACTIVITY OF DIFFERENT EXTRACTS OF CONYZA CANADENSIS L. AND RHODODENDRON PONTICUM L.

TUĐÇE ÖNBAŞ¹, SEDAT SEVİN², ÇAĐLAR MENGÜÇ³, ENDER YARSAN²

ABSTRACT

The emergence of multi-drug resistance in human and animal pathogenic bacteria as well as undesirable side effects of certain antibiotics has gained attention in the search of new and natural antimicrobial drugs for controlling the infections. Based on the fact that, development of plant based antimicrobial drugs has great importance in pharmaceutical industries. In the present study, the antimicrobial and antibiofilm activities of different extracts of *Conyza canadensis*(leaves)collected from Ankara (Türkiye) and *Rhododendron ponticum* L. (flowers) collected from Ordu (Türkiye) during the flowering period, were evaluated against clinical isolated microorganisms as well as food borne pathogens such as *Bacillus cereus*, *Bacillus licheniformis*, *Bacillus subtilis*, *Candida albicans*, *Enterococcus faecalis*, *Escherichia coli*, *Listeria monocytogenes*, *Pseudomonas aeruginosa*, *Salmonella enteritis*, *Staphylococcus aureus*. Dried powdered plant materials were extracted with different solvents (methanol, ethanol, chloroform, acetone and water) and further concentrated to dryness using a evaporator for comparative analysis. The antimicrobial tests were fist performed using agar-well diffusion assay. The minimum inhibitory concentration (MIC) and the specific biofilm formation index (SBF) was then evaluated. Extracts of different solvents showed antibacterial activity against one or more test bacteria. However, activity against Gram positive bacteria was found more effective than Gram negative bacteria. Significant differences ($p < 0.01$) in the activity between the solvent and water extracts were evaluated. The extracts of organic solvents obtained from *Rhododendron ponticum* found to be more effective in the case of bacteria than against fungus. These differences in potency may be due to the different sensitivity of the test strains. *Rhododendron ponticum* caused the major reduction on SBF in dose-dependent manner. The results obtained in this study appeared to confirm the antibacterial and antibiofilm potential of the plants investigated which can be an alternative to control strategies or can be used as a model to the search for new drugs. However, further pharmacological evaluation of refined extracts are needed before they can be used as therapeutic antimicrobials.

KEYWORDS

Antimicrobial activity, antibiofilm activity, Conyza canadensis, Rhododendron ponticum

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Poster Session 11

Submission ID: 1424

DETERMINATION OF MEDICAL ALTERNATIVE TREATMENT APPROACHES AND USAGE STATUS OF INDIVIDUALS

**PINAR SÖKÜLMEZ KAYA¹, CANAN ASAL ULUS¹, BAHTINUR TAŞCI¹, TUBA ÖDÜBEK, TÜLAY BOZKURT,
TOLGAHAN AYHAN**

ABSTRACT

Aim: This study was made for the purpose of evaluating information, attitudes and behaviors of the patients admitted to Samsun's 19 Mayıs University Hospital for the sake of alternative medical treatment. **Method:** In this descriptive study, 150 individuals (108 women, 72%; 42 men, 28%) who voluntarily agreed to participate were included in the patients who applied to the Internal Medicine Clinics at Samsun Ondokuzmayıs University Hospital. The data were evaluated by the percentage and chi-square test in the SPSS 20.0 statistical program and $P < 0.005$ was considered significant. **Results:** It was determined that 62.7% of the individuals used alternate medical treatment at least once. 30.7% of the individuals after their illness progressed; 24% after using the medicines recommended by the doctor, and 22.6% after the use of medicines; 22% reported that they also applied various herbal remedies without any complaints. According to their declarations, 55.4% reported benefiting from vegetable products, 34.5% had no effect and 10.1% had negative effects. While 23.3% of the individuals regarded the herbal products as harmless because they are natural, 1.7% stated that they think that the herbal products are harmful. The most known alternative non-medical treatment method was determined as 26.4% of herbal cures and the most used herbal product was ginger with 19.8%. This was followed by garlic with 18.1%, slimming tea with 14.9%, nettle with 10.9%, ginseng with 9.7%, echinacea with 6.6%, ginkgo with 5.7% and ginkgo with 4.9%. It was found that there was no statistically significant difference in the frequency of females compared to males (66.6% in females and 52.4% in males). Again, there was no significant difference between age and educational status and alternative treatment orientation ($p > 0.05$). The use of herbal products is 5% in cancer patients, 12% in diabetic patients, 14% in obese patients, 11% in gastric patients, 9% in inflammatory bowels, 16% in skin patients, 2% in urological patients, 11% in female patients, 8% in bile patients and in other diseases (colds, influenza) 13%. There was a statistically significant difference ($p = 0.04$) between the use of herbal products and the presence of any complaints in the digestive system or liver; It was determined that as the use of plant product increased, the liver disease increased proportionally. **Conclusion:** It was a significant number of individuals used alternative treatment methods. In recent years, non-medical alternative treatments became increasingly commonly used. In this study, it has been seen that alternative treatment methods of a significant part of individuals are becoming increasingly accepted and widely used. For this reason, health workers should be prepared to discuss these methods with patients in order to minimize the risks and reduce the misconceptions and doubts of the patients. An environment in which individuals can obtain accurate information about alternative treatment methods should be established.

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KEYWORDS

Alternative medicine treatment, Herbal product

NEUROPROTECTIVE EFFECTS OF THE FRUITS OF LYCIUM BARBARUM ON ALZHEIMER DISEASE

DEMET ÖNEN¹, NILÜFER ACAR TEK¹, GAMZE AKBULUT¹

ABSTRACT

Alzheimer's Disease(AD) is a neurodegenerative disease which involves the degeneration or death of the nerve cells(1). As the average lifespan increases, AD has already become the fourth leading cause of death in high-income countries(2). One of the main pathological hallmarks of this disease is the accumulation of the amyloid protein aggregates in the brain that leads to oxidative stress and inflammation, and cholinergic depletion and excessive glutamatergic neurotransmission are others(1). And AD highly related to environmental stress, experience of head trauma, daily diet and exercise, quality of sleep, and air pollution(2). Bioactive food components are physiologically active constituents in foods or dietary supplements derived from both animal and plant sources, including those needed to meet basic human nutrition needs, that have been demonstrated to have a role in health and to be safe for human consumption(3). Lycium barbarum polysaccharide (LBP) has long been considered to possess anti-apoptotic activities and antioxidant, anti-inflammatory and fertility-enhancing properties in traditional medical practices in China(4). As a food, dried wolfberries are traditionally cooked before consumption, used as herbal tea, as well as in Chinese soups, or in combination with meat and vegetarian meals. Goji fruits are also used for the production of juice, wine and tincture(3). The chemical composition of goji berry includes monosaccharides(arabinose, rhamnose, xylose, mannose, galactose, glucose), galacturonic acid and eighteen amino acids, carotenoids (zeaxanthin, beta-carotene, neoxanthin, cryptoxanthin), flavonoid(quercetin-3-O-rutinoside, kaempferol-3-O-rutinoside, chlorogenic acid, caffeic acids), taurin, betaine, vitamins(thiamin, riboflavin, ascorbic acid) potassium, sodium, phosphorus, magnesium, iron and calcium(3). LBP, the most biologically active fraction of wolfberry, possesses significant antioxidative and anti-inflammatory effects on multiple tissues(5). Dicafeoylspermidine derivatives are beneficial bioactivity constituents responsible for the anti-AD and antioxidant effects of wolfberry. Antioxidant activities of these constituents could also contribute to antiaging, neuroprotective, and anti-AD effects of wolfberry(6). Some researchers have demonstrated that a fraction of polysaccharide from Lycium barbarum provided remarkable neuroprotective effects against beta-amyloid peptide-induced cytotoxicity in primary cultures of rat cortical neurons(7). Significantly more research is needed but recent studies suggest that lycium barbarum treatment can be useful for treating memory impairment induced by several neurodegenerative diseases such as alzheimer disease.

KEYWORDS

lycium barbarum, Alzheimer Disease, neuroprotective

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Poster Session 11

Submission ID: 1426

USE OF DIFFERENT CUMIN DOSES TO IMPROVE THE CHEMICAL AND SENSORIAL CHARACTERISTICS OF COATED AND FRIED CHICKEN MEAT

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ABSTRACT

In this research, it was aimed to determine the effect of different cumin doses (0, 1, 2, 3 and 4 g/100 g raw material) in the coating batter formula on quality characteristics of coated fried chicken meat. The titration acidity, pH, thiobarbituric acid reactive substances (TBARS), total antioxidant activity (TEAC and ORAC), cooking loss, dimension changes, color parameters (L*, a*, b*) and sensorial characteristics were determined in the samples. Titration acidity were affected significantly (P < 0.05) by the cumin dose and it decreased with the increase of cumin dose from 0% to 4%. The increasing addition of cumin was also efficient for reducing TBARS content and the lowest TBARS content was determined as 2.13 µmol MA/kg in the samples with 4% cumin. Moreover, the TEAC values of samples significantly increased from 11.07 to 45.02 µmol equivalent Trolox/ g dry matter, while the ORAC value of samples showed only descriptive increase with increasing doses of cumin from 0% to 4%. Furthermore, the samples with 4% cumin were significantly less yellow and darker (P < 0.05) (lower L* and a*) than the control group (with 0% cumin) which is thought to be sourced from increasing cumin dose. In conclusion, the use of 2% cumin in batter formula of coated fried chicken provides high quality with acceptable sensorial properties because of the highest sensorial points and is suitable to obtain healthy meat products.

KEYWORDS

Coated meat, chicken, cumin, antioxidant

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Poster Session 11

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MEDICINAL AND AROMATIC PLANTS USED IN MENOPAUSAL COMPLAINTS

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ABSTRACT

Climacterium is a Greek word and means step of a ladder. This period is a transitional period, taking place between productivity period and old age, characterized with the symptoms revealing as a result of differentiating hormonal balance depending on morphological and functional changes in ovaries. The most important phenomenon in this transition period when various physiological, psychological and social changes come up is Menopause. Menopause is characterized with decrease in estrogen secretion, permanent end of menstruation and disappearance of fertility following loss of ovary functions depending on ageing of ovaries and atresia of follicles. Sudden decrease in production of estrogen in ovaries in menopause causes vasomotor hot flushes, cardiovascular and gastro-intestinal changes, cognitive and emotional instability, sleep disorders, changes on skin, urogenital atrophy and osteoporosis. Life quality, welfare and health perceptions of women may negatively be influenced due to hormonal originated psychological and physiological changes come up in this period. Hormone replacement therapy is used to prevent vasomotor symptoms arising in period of menopause and to prevent short and long term problems of menopause. However, the findings about the fact that hormone replacement therapy causes increase in the risk of breast cancer, cerebrovascular accident and cardiovascular disease have reduced use of hormone replacement therapy and directed women to use alternative treatment methods. The conclusions of the study show that ratio of alternative treatment usage directed on symptoms of menopause varies between 22% and 83%. Anise, basil, licorice, dill, parsley, red salvia, dandelion, daisy, Humulus Lupulus, Dong Quai and Hypericum Perforatum L. and suchlike medicinal and aromatic plants are among the natural estrogen resources having significant place in reducing menopausal complaint. It is detected that Humulus Lupulus reduces hot flushes and other menopause signs (sweating, insomnia, heart throb, nervousness) frequency. Moreover, it is specified that it provides decrease in vaginal dryness when used with E vitamin combination for urogenital atrophy. It is stated that Dong Quai which is a plant specific to China, has a supportive effect in menopausal complaints thanks to its efficiency in easing hot flushes and its moderate estrogenic and vasodilator effect. It is set forth that Hypericum Perforatum L. is effective in treatment of mild to moderate depression. At the same time, it is ascertained that it considerably provides decrease in the severity and incidence of psychological, psychosomatic and vasomotor symptoms for the women with pre and postmenopausal symptoms. In conclusion; being an important period of life, menopause affects every women in different severities and directs some to seek treatment. Several women prefer non-pharmacological treatment methods for menopause complaints because of concerns on side-effects of hormone replacement therapy. It is observed that medicinal and aromatic plants, efficiency of which is detected with evidence-based studies, are beneficial for healing menopausal complaints and increasing life quality. Improper and unconscious use of medicinal and aromatic plants may cause toxic effects. Clinicians need to pursue contemporary

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studies with the purpose of ensuring safe use of these plants, need to be aware of the risks and provide training and consultancy services to the group to which treatment is planned.

KEYWORDS

menopause, complaint, plant, aromatic

THE HEALTH EFFECT OF THE CAROB

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ABSTRACT

The Carob tree grows in many parts of the Mediterranean region. The fruit of carob production is nearly 14.000 ton/year and consumed in variously as raw fruit, pekmez or flour in Turkey(1). The chemical composition of the carob fruit changes vary by two major parts: the pulp(90%) and the seeds(10%) and depends on cultivar, origin and harvesting time. Carob pulp is rich in carbohydrate content (35-45% sucrose, 2-4% glucose, 6-7% fructose, 18% cellulose-hemicellulose), low protein(2-7%), lipid(0,5-1%) and lots of polyphenols, especially highly condensed tannins(proanthocyanidins), composed of flavan-3-ol groups and their galloyl esters, gallic acid, (+)-catechin, (-)-epicatechingallate, (-)-epigallocatechingallate and quercetin glycosides(3). Raw carob pulp's mineral composition is rich in calcium, phosphorus, potassium, magnesium, sodium, manganese, iron, copper and zinc(4). Carob's nutritional and bioactive composition(dietary fiber, polyphenols, cyclitols) with trace elements that act as cofactors of antioxidant enzymes to protect the body from oxygen free radicals that are produced during oxidative stress have been linked with the health-promoting effects such as anti-hyperlipidemia anti-diabetes, anti-diarrheal and anti-cancer(5). Some studies have found that the concentrated polyphenols extract from carob have beneficial effect on serum lipids in humans who have hypercholesterolemia. Zunft et al. noted that 15g/day of carob consumption during 6 week reduction of 10.5 \pm 2.2% in LDL cholesterol(6) and 7.1% in mean total cholesterol and 10.6% in LDL cholesterol(7). Ruiz-Roso et al. found that 4g twice a day carob fiber intake reduced the total cholesterol(17.8 \pm 6.1%) and LDL cholesterol(22.5 \pm 8.9%) level after 4 weeks(8). Zavoral et al. determined that 30g/day consumption during 2 weeks reduction in cholesterol 17% and LDL-C 19% in familial hypercholesterolemic children(9). One study found that total cholesterol (CT), HDL-cholesterol levels significantly increased with the consumption of 20g/day a non-extractable-tannin-rich carob-fiber for 4 weeks in hypercholesterolemic patients(10). Carob bean has been used to treat diarrhoeal diseases in Anatolia since ancient times and standard oral rehydration solution provides effective rehydration but does not reduce the severity of diarrhoea so Akşit et al. tested the clinical antidiarrhoeal effects of carob bean juice(CBJ) and conclude that CBJ may have a role in the treatment of children's diarrhoea after it has been technologically processed(11). It has also been shown that the tannins in carob normalized defecation, body temperature, and weight and cessation of vomiting were reached more quickly by the infants who received 1.5g/kg/day a tannin-rich carob pod powder (40% tannins or 21.2% polyphenols and 26.4% dietary fiber)(12). The presence of low glycemic load, high fiber mainly high levels of insoluble fiber and D-pinitol in carob products could be responsible for the anti-diabetic effects as it regulates blood sugar level in patients with type II diabetes mellitus by increasing insulin sensitivity(5,13). Banuls et al. study supports that consumption of carob pod inositol-enriched beverage in prediabetic subjects produces a response that is dependent on BMI, with a clear improvement of insulin resistance and postprandial and nocturnal glycemia in non-obese subjects and a marked anti-inflammatory response in obese(14). Rtibi et al.

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found that carob pod aqueous extract inhibits intestinal glucose absorption, improves glucose tolerance and protects against alloxan-induced diabetes in rat(15). Carob is rich in phytochemical compounds(e.g. quercetin, gallic acid, theophylline etc.) that have antitumor, anti-proliferative and proapoptotic activity(5). Carob pod and leaf extracts contained antiproliferative agents could be of practical importance in the development of functional foods and/or chemopreventive drugs(16). Studies have shown that carob may have health benefits including protecting cancer, reducing cholesterol, regulating blood sugar level and treating diarrhea symptoms although more studies needed. The public should be informed and consumption of the raw carob fruit or manufactured products (e.g. carob pods can be used as a cocoa substitute or coffee cause of not containing caffeine and theobromine) should be supported.

KEYWORDS

carob, health, antioxidant, anti-hyperlipidemia

ANTIOXIDANT CAPACITY, CHEMICAL COMPOSITION AND MELISSOPALYNOLOGICAL CHARACTERIZATION OF CHESTNUT AND RHODODENDRON HONEYS IN TURKEY

NAZLI MAYDA¹, ASLI ÖZKÖK¹, KADRIYE SORKUN¹

ABSTRACT

Introduction: Chestnut (*Castanea sativa* Mill.) and Rhododendron (*Rhododendron* sp. L.) honey are produced generally in Black Sea Region in Turkey and both of them are the special honeys for their organic component content and known their high antioxidant capacity. Chestnut plant is one of the important nectar and pollen resources for honey bees. Chestnut honey with dark color and bitter taste, can stay in a liquid state for a long time because of its slow crystallization rate. Rhododendron honey, produced by honeybees from the nectars of Rhododendron genus (*R. ponticum* and *R. luteum*) flowers, which are belongs to Ericaceae family. This honey's taste is bitter because of its slightly sharp taste and most of them contains toxins which are called grayanotoxins and they can be toxic when their consumption. So people use generally "Mad Honey" name for this honey due to subsequent consumption effects. On the other hand this honey is widely used in indigenous medicine. In the first step of this study we researched the melissopalynological differentiation of the chestnut and rhododendron honeys and then in the second step we determined the chemical and antioxidant capacity of the rhododendron, chestnut and mixed chestnut&rhododendron honeys characterization. **Materials and Methods:** Total 15 honey samples were collected from 5 different districts [Bartın (n=8); Kastamonu (n=1); Şile (n=1); Amasra (n=2); Düzce (n=3)] from Black Sea Region of Turkey. Melissopalynological analysis was done by microscope (Olympus CX41). Total phenolic and total flavanoid capacity were made via UV-Spectrophotometer (Genesys 10S UV-VIS Spectrophotometer). Chemical composition (Fructose&Glucose and HMF content) was determined by HPLC (Agilent 1200 Series) and GC-MS (Agilent 5973). **Results and Discussion:** After melissopalynological analysis were obtained 10 monofloral chestnut, 2 monofloral rhododendron and 3 mixed chestnut&rhododendron honeys. As a result of antioxidant capacity analysis, Total Phenolic contents was determined between 84.0271 ± 0.0764 and $312.6152 \pm 0,1921$ mgGAE/kg \pm SD; Total Flavanoid contents were determined between 9.6746 ± 0.0244 and 42.6331 ± 0.1732 mgQE/kg \pm SD. According to sugar analysis with HPLC, F/G rates were found between 0.9 and 1.71. GC-MS chemical substance analyses of honeys revealed aldehydes, aromatic acids, aromatic alcohols, flavanones, esters, aromatic amines and other chemical substances.

KEYWORDS

Chestnut honey, rhododendron honey, melissopalynological analysis, chemical analysis, antioxidant capacity

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CYTOTOXIC EFFECT OF DIFFERENT EXTRACTS OF SALVIA CANDIDISSIMA VAHL. SSP. CANDIDISSIMA ON LUNG CANCER CELLS

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ABSTRACT

Lung cancer is one of the cancer types that are common in the world today and have a high mortality rate. More than one million people die each year due to lung cancer. The survival time is 60-70% (5 years) in the early stage and falls below 5% in the advanced stages. The search for new anti-cancer compounds is continuing, as there is still no satisfactory success in the treatment of lung cancer. Several plant-derived drugs are currently used in cancer therapy. In this study, the anticancer activity of the methanol and ethanol extracts of *Salvia candidissima* was investigated in human lung cancer cells (A549 and H1299). The effects of plant extracts on cell viability were determined by SRB viability test. The apoptotic effect in the cells was observed morphologically by fluorescence staining. The IC50 values of *Salvia candidissima* were calculated as 42.9 µg/ml in methanolic extract while in ethanol extract as 32.04 µg/ml in A549 cells. In the H1299 cells, the IC50 value of methanol extract was found as 182.2 µg/ml and ethanol extract as 195.8 µg/ml. As a results, it will be promising to investigate the potential of *Salvia candidissima* extracts to be used as anticancer agents in A549 human lung cancer cells

KEYWORDS

Salvia candidissima vahl. ssp. candidissima, Sitotoksisite, Akciđer Kanseri

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Poster Session 11

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DETERMINATION OF TOTAL ANTIOXIDANT ACTIVITY AND FLAVONOID CONTENT OF AUBRIETA EKİMİİ

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ABSTRACT

Aubrieta, a genus of the Brassicaceae family, is spreading from southern Europe to the Middle East to Asia. Introduced to the scientific world in 2015, Aubrieta ekimii is an endemic, ostentatious rock plant in the northwestern Anatolian region with a limited area spread. A. ekimii blooms between April and May and between the end of May and the month of July it gives fruit. The aim of the study is to determine the antioxidant activity and flavonoid content of methanol extract prepared from A. ekimii plant. Antioxidant activity was determined by the TAC Assay kit based on the reduction of copper. As a result, the total antioxidant activity of methanol extracts of A. ekimii plant was determined as 786.54 CRE (equivalent to μM copper reduction) and the total flavonoid amount was 20.11 ± 2.93 mg catechin equivalent / g sample (KE / g sample). With this recent study, antioxidant activity and flavonoid content of A. ekimii plant were determined for the first time.

KEYWORDS

Aubrieta ekimii, antioxidant, flavonoid, phenolic

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INVESTIGATION OF THE TOTAL PHENOLIC AND TOTAL FLAVONOID CONTENT OF DIFFERENT FRACTIONS OBTAINED FROM LIQUIDAMBAR ORIENTALIS MILL. STORAX, FRUIT AND LEAF

SÜMEYRA ÇETİNKAYA¹, EDA BÜKER², İLKNUR ÇINAR¹, H. GÜL DURSUN¹, İPEK SÜNTAR³

ABSTRACT

Liquidambar species (*L. orientalis* var. *orientalis*, *L. orientalis* var. *integriloba* ve *L. orientalis* var. *suber*) belong to the family of Hamamelidaceae. Liquidambar orientalis tree is commonly known as ‘Sıđla ağacı’ or ‘Gunluk ağacı’ in Turkey. *L. orientalis* is a herbaceous plant known to have medicinal and cosmetic properties and is widely used in phytotherapy in the Mediterranean region (Hafizođlu 1982). The storax produced by injuring *L. orientalis* has antiseptic properties (Fernandez 2005). Also it is used as a topical parasiticide, expectorant and for the treatment of some skin diseases in Turkish folk medicine (Hafizođlu 1982). Medical plants which are yielding valuable natural products are often used in the treatment of various disease (Skrovankova vd. 2012). Many constituents of medicinal plants are include large amounts of antioxidants such as phenolic compounds, flavonoids, terpenes, tocopherols, and other endogenous metabolites (Zheng ve Wang 2001). In our study, we are investigated total phenolic and flavonoid contents of different fractions obtained from *L. orientalis* storax, fruid and leaf. Total phenolic content with Folin-Ciocalteu colorimetric method and total flavonoid content with aluminium chloride method carried out. As a result, storax chloroform, fruid n-hexane and storax methanol fraction have most high level of total phenolic content, respectively. Fruid n-hexane, storax chloroform and leaf n-hexane fraction have most high level of total flavonoid content, respectively. References 5. Hafizoglu H. Analytical studies on the balsam of Liquidambar orientalis Mill. by gas chromatography and mass spectrometry. *Holzforschung*. 1982;36:311–3. 6. Fernandez, X. (2005). Chemical composition of the essential oils from Turkish and Honduras Styra. *Flavour Fragrance J.* 20: 70–73 7. Skrovankova, S.; Misurcova, L.; Machu, L. Antioxidant activity and protecting health effects of common medicinal plants. *Adv. Food Nutr. Res.* 2012, 67, 75–139. 8. Zheng, W.; Wang, S.Y. Antioxidant activity and phenolic compounds in selected herbs. *J. Agric. Food Chem.* 2001, 49, 5165–5170.

KEYWORDS

L. orientalis, storax, fruit, total phenolic, total flavonoide

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IN VITRO ANTIBACTERIAL ACTIVITY OF ESSENTIAL OILS AGAINST FOODBORNE PATHOGENIC BACTERIA

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ABSTRACT

Essential oils are well known volatile oily liquids. They have recently got scientific interest owing to their antibacterial, antifungal, antiviral insecticidal and antioxidant properties. Gram- positive organisms are believed to be more resistant to essential oils than gram-negative bacteria. The purpose of the present study was to evaluate antibacterial effectiveness of the four essential oil samples which are Black seed oil (*Nigella sativa* oil), peppermint oil (*Mentha piperita* oil), rosemary oil (*Rosmarinus officinalis* leaf oil), thyme oil (*Thymus vulgaris*). The essential oils were obtained by hydrodistillation using a Clevenger type apparatus. The agar disc diffusion method was employed for the determination of antibacterial activity of the essential oils and a broth microdilution broth susceptibility assay was used, for the determination of the minimum inhibitory concentration (MIC). The essential oils were individually tested against five pathogenic microorganisms: two strains of gram-negative bacteria; *Escherichia coli* ATCC 25922, *Salmonella Enteritidis* ATCC 13076 and three strains of gram-positive bacteria; *Listeria monocytogenes* DSM12464, *Staphylococcus aureus* ATCC6538, *Enterococcus faecalis* ATCC51299, containing 10⁸ colony-forming units (CFU) ml⁻¹ of bacteria cells. Almost four oils showed remarkable antibacterial activity against test microorganism. Among the essential oils, *Thymus vulgaris* oil and *Mentha piperita* oil have significant antibacterial activity 38 and 34 mm zone against *Staphylococcus aureus* and *Salmonella Enteritidis* and the lowest MIC value 2.25 mg/ml. These results suggest the potential of studied these essential oil inhibit microbial growth and they have potential preserving foods.

KEYWORDS

Essential oils, antibacterial properties

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Poster Session 11

Submission ID: 1438

THE USE OF OAK ACORNS AS A FUNCTIONAL FOOD IN FOOD INDUSTRY

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ABSTRACT

The oak is a kind of hardwood forest tree with 30-35 m heights. There are around 30 oak species in 18 of them are native to our country. The fruit of all of the oak is called "acorn". Acorns contains some compounds such as phenolics and tocopherols, as well as tannins as main components, which can be used in the production of functional foods which vary with the growing period. The acorn is a nutritious food for humans and animals with approximately 55% starch, 2.75-8.44% protein and 0.7-7.4% fat content. It has been reported that more than 53-65% the fatty acid profile of acorns were contained oleic and linoleic acid mixture. Phenolic compounds and tocopherols are the most important natural antioxidants of acorns. The main tocopherol of acorn was γ -tocopherol, forming almost 90% of the total tocopherol content. In addition, 32 different phenolic compounds were isolated from the acorns, and all of them were reported as ellagic and gallic acid derivatives. It has been determined that the antiradical scavenging activity values of the isolated phenolic materials were very high. In some Mediterranean countries, oak acorns are used to give flavor to dessert, ice cream and some liqueurs. In addition, in Algeria, Morocco and the United States, acorn oil is added to the oil mix to extend the shelf life of cooking oils. In Spain and Italy, roasted acorns are also used to give an astringent flavor to breads, cakes and coffee. There are some researches that acorns can be used as a substitute for synthetic antioxidants, especially in meat, due to high antioxidant capacity of acorns. As a matter of fact, pigs to be used for Iberian ham production which is specific to Spain have to be fed with oak acorns. It is known that the antioxidant compounds found in the acorn structure used for the pig fodder are transferred to the meat structure, thus preventing the product from being oxidized during the prolonged maturation period.

KEYWORDS

Oak, Acorn, Functional food, Lipid oxidation

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Poster Session 11

Submission ID: 1439

CHARACTERISTICS AND EFFECTIVE USAGE AREAS OF ROSEMARY

GÜLŞAH ÖZEL¹, ELIF FEYZA TOPDAS¹, MEMNUNE ŞENGÜL¹, HACER ÜNVER¹

ABSTRACT

Rosmarinus officinalis (rosemary) is a small needle-tipped, leafy plant belonging to the Labiatae family. Flowers of rosemary which are white, light blue and blue blooms in spring and summer. Rosemary does not plow its leaves in winter and has a strong aroma resembling camphor or eucalyptus odor. It is one of the spices commonly used in European and North American countries due to its pleasant aroma resulting from its essential oil. Rosemary used as antioxidant or natural preservative in foods and it is also used in soap, room odor, deodorant, perfume and lotion. Its essential oils or extracts can be used in meat products, oil-containing foods and oils against oxidation and rancidity. Antioxidant properties of rosemary are due to carnosol, carnosic acid and rosmarinic acid. It is reported that the antioxidant activity of carnosic acid is three times higher than carnosol and seven times higher than butylated hydroxy toluene (BHT) and butylated hydroxy anisole (BHA). It is recommended that rosemary can be dried and used as an antioxidant source. But besides this usage areas of rosemary are limited because of intensive taste and odor which are felt even in very diluted extracts. This problem has been solved by some methods developed in recent years. Especially commercial rosemary preparations are produced in USA and Japan with colorless, tasteless and odorless but strong antioxidant effect.

KEYWORDS

Rosmarinus officinalis, Rosemary, antioxidant activity

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Poster Session 11

Submission ID: 1440

KOMBUCHA, THE FERMENTED TEA: ANTIBACTERIAL EFFECTS

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ABSTRACT

Kombucha, is a traditional refreshing beverage that made actually from tea extract supplemented with sugar and fermented a powerful symbiosis of acetic bacteria and yeasts. The yeast cells and Acetic acid bacteria use sucrose and glucose and they produce ethanol and acetic acid. Both ethanol and acetic acid have antimicrobial activity against pathogenic bacteria. This metabolism also produces vitamins C, B1 B2, B3, B6, B12 and folic acid. The present study was undertaken to determine the efficacy of Kombucha, a fermented beverage of sugared black tea, [Kombucha was prepared in a tea broth (10% w/v) supplemented with sucrose (20% w/v)] against five pathogenic microorganisms: two strains of gram-negative bacteria; Escherichia coli ATCC 25922, Salmonella Enteritidis ATCC 13076 and three strains of gram-positive bacteria; Listeria monocytogenes DSM12464, Staphylococcus aureus ATCC6538, Enterococcus faecalis ATCC51299. The agar disc diffusion method was employed for the determination of antibacterial activity of the Kombucha and a broth microdilution broth susceptibility assay was used, for the determination of the minimum inhibitory concentration (MIC). Almost Kombucha showed remarkable antibacterial activity against test microorganism although Kombucha, showed strong activity against Listeria monocytogenes DSM12464 which is the highest sensitivity with the largest inhibition zone (20 mm) and the lowest MIC value (6.25 mg/ml) These overall study results recommend that Kombucha can be used as a potent antibacterial agent.

KEYWORDS

Kombucha, antibacterial properties

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TOTAL PHENOLIC CONTENT OF SUBMERGEDLY CULTIVATED MUCOR MYCELIA

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ABSTRACT

Mucor miehei is commonly used as a producer of aspartic protease and lipase enzymes in food industry. The aim of the present study was to determine the antioxidant potential of the water extract of submergedly cultivated *Mucor mycelia*. The *Mucor miehei* extract was evaluated for total phenolic content by Folin's Ciocalteu method and ascorbic acid (vitamin C) concentration by a redox titration using iodine. Total phenolic content of the *Mucor miehei* extract was found 546.32 mg/100 g gallic acid equivalents (GAE). The concentration of ascorbic acid which has antioxidant properties was 1.6 g/100 g. These results indicate that *Mucor miehei* extract can be considered as promising candidate for use in medicine and cosmetic industries.

KEYWORDS

Mucor miehei, mycelial extract, total phenolic content, ascorbic acid, antioxidant property

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Poster Session 11

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SOME PROPERTIES AND USAGE AREAS OF BASIL (OCIMUM BASILICUM)

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ABSTRACT

Basil is known as Basilic by Frenchs and Basilicum by Germans. Also in international trade Basil, widely used with this name, is used in the ancient Greek with the name 'Basilicos' which means 'king'. Genus *Ocimum* contains single or perennial species which are belonging to the family of Lamiaceae. Basil spreads in tropical and temperate regions. In Turkey, it is mainly grown in Western and Southern Anatolia. Spice or volatile oil of basil has various uses areas in food industry such as non alcoholic beverages, bakery products, candies, ice creams, wines and meat products. Also its volatile oil which ranges from 0.3% to 1% used in perfumery. The amount of volatile oil and its composition varies with the species, climate, soil and harvest time. Aromatic compounds found in basil are linalool, citral, methyl chavicol (estragol), eugenol and methyl cinnamate. Species grown in Africa generally contains camphor. It has been determined that the basil's most common phenolic substance is navedensin (5,7-dihydroxy-6,8,4'-trimethoxy flavone). This is followed by ladanin, pilosin, genkwanin, salvigenin, cirsiliol and apigenin. This plant which is rich in phenolic substances also has a strong antioxidant activity. So it can be used for impart functional properties to some foods. It has been shown in various scientific studies that basil exhibits antimicrobial activity against *Escherichia coli*, *Pseudomonas aeruginosa*, *Bacillus subtilis*, *Staphylococcus aureus*, *Salmonella sp.*, *Serratia marcescens*, *Klebsiella pneumoniae* and *Proteus vulgaris*.

KEYWORDS

Basil, Ocimum basilicum, antioxidant activity, phenolic

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BIODEGRADABLE AND EDIBLE FILM-FORMING PROPERTIES OF SALEP AS A NEW SOURCE

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ABSTRACT

The plastic materials made from petroleum are widely used in many industry field because of their availability, resistance to oxygen, barrier to moisture and reasonable price. However, packaging materials made from petroleum are not biodegradable and edible. The edible biopolymers obtained from renewable plant resources are the best option to replace synthetic plastics. Edible films can be defined as a thin layer placed on or between food components or surface. Edible and biodegradable films can be used to reduce the migration of O₂, CO₂ and moisture. Therefore, they improves appearance and extend the shelf-life of food products. The utilization of edible and renewable sources from various plants for edible films has been a remarkable issue due to its economic and environmental impact of them. The ingredients used with this aim can be divided into three categories: synthetics, lipits and hydrocolloids such as proteins and polysaccharides. Hydrocolloids obtained from different resources are also the main sources of edible films. Salep is the roots or tubers of Orchidaceae species which is largely collected in Eastern Mediterranean countries included Turkey. The tubers of naturally grown orchids are dried and then ground to produce salep powder. Salep is commonly used as a traditional beverage and a stabilizer for ice cream. Because the glucomannan is the most important polysaccharide constituent in salep, it is thought to be that salep is very appropriate raw material for edible and biodegradable films. The film-forming properties of salep is very newly concept for food industry. Furthermore, there is very limited information about this issue. The main objective of this review study were to evaluate the edible film-forming properties of salep as a new source.

KEYWORDS

Salep, Orchidaceae, glucomannan, edible film, hydrocolloid

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¹KASTAMONU ÜNİVERSİTESİ MÜHENDİSLİK VE MİMARLIK FAKÜLTESİ GIDA MÜHENDİSLİĞİ BÖLÜMÜ

Poster Session 11

Submission ID: 1446

CYTOTOXIC EFFECTS OF RHODODENDRON PONTICUM L. EXTRACT ON RAT GLIOMA CELL LINE (F98)

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ABSTRACT

Aim: The genus *Rhododendron* used in traditional medicine for the treatment of inflammation, pain, cold, asthma, skin and gastro-intestinal disease, is distributed widely around the world. *Rhododendron ponticum* L., contains grayanotoxins with diterpene qualities. Increased incidence of cancer, treatment is costly and create serious side effects applied to people, it becomes necessary to investigate a scientific alternative treatment and supportive way. The aim of the study was to investigate in vitro cytotoxic effects of *Rhododendron ponticum* L. extract whose known amount of grayanotoxin I and III on common glioma tumors in rat glioma cell line (F98). **Methods:** During the flowering period of common rhododendrons gathered from the Altinordu District of Ordu and dried under suitable conditions, extracted with distilled water and lyophilized. The content analysis of the common rhododendrons was carried out by the Chromatographic Method at Marmara Research Center Food Institute of the Scientific and Technical Research Council of Turkey. In our study, cytotoxic activity of different concentrations of the extract of *Rhododendron ponticum* L.; through mitochondrial (MTT) and lysosomal (Neutral Red) was evaluated in common glioma tumors using rat glioma cell line (F98). **Results:** It was determined that the *Rhododendron ponticum* L. extract with grayanotoxin I amount of 55.75 µg / kg and grayanotoxin III amount of 7.4 µg / kg; had a dose-dependent cytotoxic effect. IC50 were found as MTT 122,8 and by Neutral red 79,61µg/ml, respectively. **Conclusion:** Cytotoxicity in glioma indicate that *Rhododendron ponticum* L. is expected to be a potential anticarsinogenic activity. Our research on *Rhododendron ponticum* L. continues on other cancer cell lines with cytotoxicity tests

KEYWORDS

Cancer cell line, Cytotoxic effect, Grayanotoxin, Rhododendron ponticum L.

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Poster Session 11

Submission ID: 1447

MARINATION TECHNOLOGY IN SEAFOOD, SOME AROMATIC PLANTS USED AND IMPACT MECHANISMS

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ABSTRACT

Marination is the application of fresh, frozen, salted fish or fish parts by treating them with acetic acid or other organic acids and salt without heat effect. In addition to the development of new products with the improvements in food processing methods, it is also aimed to extend the durability of the products obtained and to protect the qualities. Through the marination, food products that are abundant in certain periods are provided for human consumption even during periods when they are less frequent. These products can be served to consumers with flavors such as sauce, cream, mayonnaise, oil, as well as various spices and herbs. In the marination technology, it is widely used such as bay laurel, dill, estergon, mustard seeds, whole cloves, black pepper, red pepper, allspice, cumin, ginger, rosemary, thyme, basil, tarhun and capari. The acid taste of marinades is softened with herbs and spices and thus a balanced taste is being tried to be formed. The herbs used in the marinating process are used to the products not only to add taste, flavor and aroma but also to minimize the negative odors that may occur. Spices and herbs used have protective effect or minimized lipid oxidation. Spices also mask color and smell rather than inhibition of deterioration. In some studies it has been found that these herbs stabilize the quality of the product and prevent the development of harmful bacteria. It is also necessary to pay attention to the qualities of the spices added to the solution, because at this stage some bacterial and proteolytic enzymes in the solution are still effective. Depending on the storage temperature, it can cause bad odor development, color loss, softening. In this review emphasizes the importance of various herbs that enhance taste and endurance in marination technology.

KEYWORDS

Marination, seafood, aromatic plants, herbs, spice

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Poster Session 11

Submission ID: 1448

EFFECTS OF ETHEPHON TREATMENT AS SOIL DRENCH ON PLANT HEIGHT AND QUANTITATIVE PROPERTIES OF NATIVE NARCISSUS GROWN IN POTS

SEVİM DEMİR¹, FISUN GÜRSEL ÇELİKEL¹

ABSTRACT

In this study, the effects of ethephon treatment as soil drench on plant height, quantitative and other properties of native narcissus (*Narcissus tazetta* L.) grown in pots were investigated. When plants were 7-10 cm tall, ethephon at 0, 250 and 500 ppm were applied as soil drenches. The effects of ethephon treatment on plant length, leaf length, the time of flowering, number of flower and the flower life were determined. In addition, quantitative measurements (leaf area ratio, specific leaf area, leaf thickness, leaf weight ratio and stem weight ratio) were analyzed in native narcissus. When narcissus were grown in pots in the greenhouse reached to the sale stage plants were taken to the laboratory at 20 °C to evaluate the postproduction life and quality of pot plants. The shortest plant height was obtained from the 500 ppm ethephon treatment, plant height was 7.67 cm with %51 shorter than untreated control. Ethephon application also shortened the leaf length up to %20. The shortest leaf length (14.55 cm) was obtained from 500 ppm ethephon treatment. The ethephon treatment decreased leaf area ratio and specific leaf area, but increased the leaf thickness and leaf weight ratio compared to the control plants. The effects of treatments on plant height continued in laboratory (home-office) conditions after production. The shortest plant height (12.62 cm) was obtained from 500 ppm ethephon treatment whereas the height of untreated control plants were 24.25 cm during the post production life of pot plants.

KEYWORDS

Narcissus, plant height, soil drench, ethephon, quantitative measurements

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Poster Session 11

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INVESTIGATION OF THE TOTAL PHENOLIC AND FLAVONOID CONTENT OF SOME FRACTIONS OBTAINED FROM ROOT AND STEM OF RHEUM RIBES (LIGHTED)

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ABSTRACT

In order to struggle metabolic diseases and cancer cases, it is becoming necessary to use complementary medicines, phytotherapeutics and appropriate food supplements besides dietary and lifestyle intervention. The incorporation of phytochemical complex mixtures of different chemical structures, such as phenolic acids, polyphenols, flavanoids and terpenoids, often has the advantage of targeting a number of molecular pathways involved in the pathobiology of complex diseases, with a significant reduction in toxic side effects. Rheum Ribes belongs to the family Polygonaceae, which is called as "lively, fluffy or fuzzy" among the people, especially in the subtropical and temperate regions of the world, especially in the east of Turkey, Iran, Iraq, Lebanon to Afghanistan and Pakistan, Is a plant species that spreads between slopes. R. Ribes (juvenile shoots and leaf stalks) are commonly used against diarrhea, stomach aches and nausea, as well as measles, flowers, hemorrhoids and bile removers. It is thought that strong active compounds possessed by this plant are based on all these properties. The total flavonoid content of root methanol, root ethylacetate, root hexane and stem methanol, stem ethylacetate, stem hexane fractions of Rheum ribes were studied by aluminum chloride colorimetric method. According to the results obtained, the highest values were found in the hexane fraction of stem, methanol, ethylacetate, trunk hexane fractions, and root ethylacetate fractions in root methanol, root ethylacetate and root hexane fractions. Total phenolic content was determined by Folin-Ciocolteu method. According to these test results, the highest value was found in the fraction of methanol, stem ethylacetate, trunk hexane fractions, fraction of ethylacetate, fraction of methanol, radical ethylacetate, and fraction of radical hexane fractions

KEYWORDS

Rheum ribes, total phenolic, total flavonoide

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Poster Session 11

Submission ID: 1450

NEMATICIDAL ACTIVITY OF ESSENTIAL OILS DERIVED FROM APIACEAE FAMILY AGAINST ROOT LESION NEMATODE, PRATYLENCHUS THORNEI

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ABSTRACT

Pratylenchus spp. is a plant pathogenetic nematode which is migratory endoparasites that feed and reproduce in the root and move around, responsible for root lesion disease on many host plants in temperate regions around the world. Fruit essential oils of *Heracleum platytaenium* Baiss, *Hippomarathum microcorpum* (Bieb.) Fedtsch., *Ferulago cassia* Boiss and *Chareophyllum byzantinum* Boiss belonging to Apiaceae family of Turkey flora in Isparta, were screened for their in vitro nematocidal activity against the Root Lesion Nematode, *Pratylenchus thornei*. The essential oils were isolated by hydrodistillation and investigated by gas chromatography mass spectrometry (GC-MS). A total of 37, 42, 38, 47 components of the *H. platytaenium*, *H. microcorpum*, *F. cassia* and *C. byzantinum* essential oils were identified, respectively. High nematocidal activity was achieved with essential oils from *F. cassia* and *C. byzantinum* which caused 93.46% and 90.93% mortality. *H. microcorpum* was found to be more effective than *H. platytaenium*. The dominant components of the effective oils were chrysanthenyl acetate (17.4%), mesitaldehyde (5.8%), limonene (15.3%) and α -pinene (13.6%) in *F. cassia*, Methylebenzoate (44.9%), 1-Limonene (38.4%) in *C. byzantinum*, beta-Myrcene (21.9%), cis-Ocimene (17.8%), beta-Phellandrene (12.0%), bicyclogermacrene (8.2%) in *H. microcorpum* and 2-ethylhexyl acetate (41.4%) and E4-dodecenylacetate (17.0%), octilin (7.7%) in *H. platytaenium*. Nematocidal activity of the essential oils investigated in the research against *P. thornei* is reported for the first time. The essential oils and their main components described here in merit further study as potential nematocides against the Root Lesion Nematode.

KEYWORDS

Pratylenchus thornei, essential oil, nematocidal activity, Apiaceae

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Poster Session 11

Submission ID: 1451

USAGE OF COLORANT PLANTS IN KONYA'S FELTMAKER ART

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ABSTRACT

Due to its climate and geographical position, the fact that the livestock breeding has been carried out in Konya plain for centuries has enabled the development of carpets and plain weaving. The fact that Konya is a very rich region in terms of colorant plants and insects is also an important influence on the formation of these arts. The first raw materials of natural colorant are some stone, soil and mining varieties and some molluscs and insect varieties with staining properties. However, awareness of color diversity in plants has led to the use of whole or a part of the plant in dyeing. Hundreds of different varieties of colors and shades of different colors have been used in carpet art, Felt art, Ceramic art and many other cultures. The colors of the plant, which are obtained by using different regions and applying different methods, have been preserved as a secret and the generations are transferred with great confidentiality. In this study, the use of plant dyes and coloring methods in Konya Felt art were investigated.

KEYWORDS

Felt, Wool, Konya, Colorant Plants

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Poster Session 11

Submission ID: 1452

EVALUATION IN TERMS OF HABITAT FEATURES OF SOME TRUFFLE SPECIES : CASE OF ÇAKILLI, VIZE

HÜSEYİN KABA¹, HÜSEYİN HİLESİZ²

ABSTRACT

Truffle exploration activities is done in collaboration of Marmara Forestry Research Institute and İstanbul Regional Directorate in terms of «General Directorate of Forest Truffle Action Plan 2014-2018" and "Projectless Works". It is protected founding in the truffle as without dogs and with trained dogs at Çakıllı town, Vize Subdistrict Directorate, Vize Forest District Directorate in terms of Action Plan. Natural Truffles is usually found at altitudes about 250 m, at age of development of 'bc', inside mixed stands of Cedar (*Cedrus libani* A.Richard), Oak (*Quercus petraea* (Matt) Liebl and *Quercus robur* L.), Black pine (*Pinus nigra* J.F. Arnold) and Hornbeam (*Carpinus betulus* L.), at Çakıllı town. According to soil analysis result in plot at points natural truffle, it is found pH 6,00-7.85 ; EC ($\mu\text{S}/\text{cm}$) 295-769 ; CaCO_3 % 0,22-33,44 ; N % 0,14-1,96 ; C % 7,73-19,03. *Tuber aestivum* Vittad. was detected in July of 2015 and in Çakıllı town. Species of *Tuber burumale* Vittad. and *Tuber borchii* Vittad. were found at the beginning of February and March of 2017 in the forest of Çakıllı town.

KEYWORDS

Truffle, Habitat, Çakıllı town, Vize

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Poster Session 11

Submission ID: 1453

COMPOSITION AND ANTIMICROBIAL ACTIVITY OF THE ESSENTIAL OIL OF ONOSMA MALATYANA BINZET FROM TURKEY

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ABSTRACT

Onosma malatyana Binzet is an endemic species growing in Turkey. This work aimed to investigate the chemical composition of essential oils obtained from *Onosma malatyana* Binzet roots and their antimicrobial activities against *Staphylococcus aureus* (ATCC 25923), *Streptococcus pneumoniae* (ATCC 10353), *Bacillus subtilis* (ATCC 6633), *Enterococcus faecalis* (ATCC 29212), *Escherichia coli* (ATCC 25922), *Pseudomonas aeruginosa* (ATCC 25853), *Candida albicans* (ATCC 10231) and *Candida glabrata* (ATCC 4322). The essential oils from roots were obtained by two different methods, which are hydrodistillation and Soxhlet extraction. Soxhlet extraction was carried out in three solvents with different polarities such as petroleum ether, methanol and ethyl acetate. The essential oils and volatile components of roots were identified by Gas chromatography-mass spectrometry system. We used the Kovats indices, mass spectra and standard compounds to determine the essential oils. The major constituents were: for hydrodistillation, abietatriene (16.97%), manool (15.44%), (Z,Z)-10,12-hexadecadienyl acetate (12.42%), geranyl acetone (9.06%); for Soxhlet extraction in petroleum ether, 2-isopropyl-1H-permidine (21.26%), eicosanal (11.84%), sertindole (8.32%); for Soxhlet extraction in methanol, isopimpinellin (15.91%), methyl dihydromalvalate (12.00%), butanoic acid (8.87%), palmitin,2-mono- (8.00%), 2-propylfuran (7.63%); and for Soxhlet extraction in ethyl acetate, xanthatin (15.28%); manool (12.60%). Furthermore, the antimicrobial activity of the extracts was evaluated using modification microdilution methods. According to the antimicrobial results, all extracts were more susceptible to *Candida albicans*. Acknowledgement: This study was supported by the Research Fund of Mersin University in Turkey with Project Number: 2015-AP3-1199.

KEYWORDS

Onosma, Essential oil, Soxhlet extraction, hydrodistillation extraction, Antimicrobial activity.

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Poster Session 11

Submission ID: 1454

INVESTIGATION OF THE EFFECIENCY OF NATURAL ANTIOXIDANTS IN DOGS FOOD

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ABSTRACT

This study was conducted to determine the efficacy of natural antioxidant substances in dog food. Food was prepared in extruded form, balanced with vitamins and minerals containing poultry meal, rice, barley, corn, vegetable and animal fat. On the dry matter basis, 25% crude protein, 8% ether extract, 3% crude fiber and 6% ash were found in food. Seven antioxidants were added food with oil. 10mg/kg BHA was used as control. Vitamin C(E300), vitamin E(E306) and citric acid(E330) 20mg/kg, rosemary essential oil 1.5g/kg, Meat Plus (YUMESA; black cumin, allspice, fennel, thyme, ginger, cumin, salt) and mixture of special spices (Bilyem; sumac, garlic, cumin, red pepper, etc.) 0.5g/kg. Each group food was divided into 12 pieces and placed in airtight bags. Half of the foods were kept in refrigerator and other half was kept in closet, which was'nt exposed to light at room temperature. At 1st, 2nd, 3rd, 4th, 5th, and 6th months of incubation period, a part of each antioxidant group that were kept at room temperature and in refrigerator, was ground. TBA and peroxide value analyzes were performed as 2 replicates. It was concluded that TBA and peroxide value analyzes in determining oxidation level in food were parallel and foods kept in refrigerator less oxidized. It was observed that oxidation levels were similar in foods kept in refrigerator during 1st and 2nd months, and the oxidation level gradually increased in groups added with rosemary essential oil, vitamin C and Vitamin E after 3 months. It was determined that the oxidation levels of rosemary essential oil, Vitamin C and Vitamin E added groups which were kept in room temperature were very high compared to others from 1th until 6th month. From third month on, oxidation levels in BHA and citric acid groups increased. It was determined that addition of 2 herbal mixtures was able to maintain oxidation level at low level for 6 months at room temperature(P<0.01). As a result, it was concluded that YUMESA and Bilyem herbal mixtures can be successfully used as antioxidants in dog food

KEYWORDS

Dog food, antioxidant, herbal mixture, oxidation

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Poster Session 11

Submission ID: 1456

APPLICATIONS OF PRIVATE FORESTRY IN TURKEY AND USAGE POSSIBILITIES OF NON-WOOD FOREST PRODUCTS IN THIS CONTEXT

HAMİDE GÜBBÜK¹, SADETTİN GÜLER², RECEP BALKIÇ¹

ABSTRACT

Forests covers 27% of the surface area of Turkey and almost all of them are owned by state. Only < 0.1% of all forest areas (about 18 000 ha) were owned by privately. This is mainly due to different geographical and ecological characteristics of forests and approximately 7.6 million villagers whose life dependency to forest products. This dependency complicates direct privatisation of forest areas and transition to private forestry. On the other hand, there are some applications that can be considered in Forestry Privatization. These applications are forests owned by private or legal persons, Private Afforestation Areas, Forests Recreation areas, Forest areas suitable for utilization of natural Non-wood Forest Products (NWFP) and urban forests can be accepted among these applications. Natural forest areas that are rich in NWFP and privatization of forests established via private and industrial afforestation may support the transition to private forestry. Within this concepts, in addition to the rapid growing species such as poplar, alder, and eucalyptus, walnut, chestnut, pistachio, almond, spruce, terebinth, carob and olive are also used as NWFP. These circumstances have continued to increase in recent years. In this review study, the current status of Turkey's forests, changes in the understanding of private forestry from past to present and recent applications on private afforestation have been investigated and comments and suggestions on the process to private afforestation have been made.

KEYWORDS

Private Forestry, Private Afforestation, Non-wood Forest Products, The areas of utilization from NWFP, Recreation areas, Urban Forests

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Poster Session 11

Submission ID: 1457

ANTIOXIDANT AND PHENOLIC CHARACTERISTICS OF AIR DRIED GINGERS (ZINGIBER OFFICINALE): EFFECT OF ULTRASOUND PRE-TREATMENT.

AYSUN YURDUNUSEVEN YILDIZ¹, SAMI GÖKHAN ÖZKAL¹, ÖZLEM ZAMBAK¹

ABSTRACT

Antioxidant and Phenolic Characteristics of air Dried Gingers (*Zingiber officinale*): Effect of Ultrasound Pre-treatment. Aysun YURDUNUSEVEN YILDIZ, Sami Gökhan ÖZKAL, Özlem ZAMBAK* Pamukkale University, Engineering Faculty, Food Engineering Department, Denizli, Turkey *Presenting Author: Ö. ZAMBAK (ozambak@pau.edu.tr) Abstract The objective of this study was to discover the effect of Ultrasound (US) pre-treatment application before drying on antioxidant and phenolic characteristics of ginger (*Zingiber officinale*). For this purpose, ultrasonic probe with 20 kHz frequency was used. Before US application, ginger samples were cut into size of 1 cm x 1 cm x 0,5 cm. Ultrasound pre-treatment was carried out in distilled water with 100 % amplitude during 5, 10 and 20 minutes. The ratio of sample to water was 1:4 (w/v). After ultrasonic pre-treatment ginger samples were placed in drying oven trays. Drying experiments were carried out in hot air drying oven. Drying was performed at 0.3 m/s air velocity and at 60°C drying temperature. For determination of antioxidant activity and phenolic compounds, ginger samples were collected at every 10 min during the drying period and the collected samples were stored at -18°C until being used in the analyses. For the extraction of phenolics, 1 g of ginger samples was mixed with 10 mL of aqueous methanol. The ratio of water to methanol was 50:50 (v/v). The mixture was sonicated for 10 min in an ultrasonic bath, followed by mechanical shaking for 15 min at room temperature. After the centrifugation of the mixture at 9000 rpm at 4 °C for 15 min, supernatants were collected into amber vials. Total phenolic content and antioxidant capacity of these extracts were performed. Total phenolic contents of ginger extracts were determined with the Folin- Ciocalteu reagent using gallic acid as a standard. Results were expressed as milligrams of gallic acid equivalent (GAE) per gram of dried ginger weight. 2,2-Diphenyl-1-picrylhydrazyl (DPPH) assay was used to determine the antioxidant activity of ginger extracts. Results were expressed in mmol Trolox equivalent (TE)/g dried ginger weight. Antioxidant capacity of the ultrasound pre-treated samples was found higher than the untreated samples in the first 40 minutes of the drying. After that time antioxidant capacity of ultrasound pre-treated samples was found lower than the untreated samples. Generally antioxidant capacity of the all samples was decreased during drying, but antioxidant capacity of the ultrasound pre-treated samples was decreased fast in compared to untreated sample. It is thought that the ultrasound pretreatment breaks down the cells and allows the antioxidant substances to be released from the cells. So antioxidant capacity of ultrasound pre-treated samples was high in first minutes of drying, but antioxidant substances released are considered to be tending to oxidation and may have been oxidized during the drying, therefore the antioxidant capacity of the ultrasound pre-treated samples decreased fast. On the other hand phenolic compounds of US pre-treated ginger samples were found less than the untreated samples. The

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deformation of the cell structure by the application of ultrasound resulted in the phenolic components released and degraded more rapidly by the effect of heat.

KEYWORDS

Ultrasound, Drying, Ginger, Antioxidant Capacity, Phenolic Compounds

Poster Session 11

Submission ID: 1459

MODELLING OF ANTIMICROBIAL CHANGE IN SOME HERBAL TEA BAG DURING THE BREWING

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ABSTRACT

In this study, Sage, linden and chamomile herbal tea bags purchased from national markets were used. The herbal tea bags are first placed in cups and freshly boiled hot water is added. Brewing time for herbal tea bags was determined as 10 minutes and samples were taken for kinetic studies at specific times (1.min, 3.min, 5.min, 7.min and 10.min). Well diffusion method was used to determine antimicrobial activity. *Micrococcus luteus* was used as the indicator bacteria. As a result of the analyzes, it was determined that the change of antimicrobial activity was first kinetic model.

KEYWORDS

Herbal Tea Bag, Antimicrobial, Kinetic, Modelling.

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Poster Session 11

Submission ID: 1460

EFFECTS OF SOME ESSENTIAL OILS ON GERMINATION AND SEEDLING GROWTH IN DRY BEAN (*PHASEOLUS VULGARIS* L.)

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ABSTRACT

This study was carried out field experiments in SDU Agricultural Research and Application Center and germination experimentals in laboratories of Field Crops Department in 2016/2017. The aim of study is to determine the effects of some essential oils on the germination and some seedling growth characteristics in dry bean varieties. It was carried out field experiments according to completely randomized blocks design split plot; laboratory experiments according to completely randomized plots split plot design with 3 repetitions. It was used Şeker, Sarıkız and Burgan of bean varieties as seed material; commercial essential oil preparations derived from fennel, garlic and thyme plants as essential oils in the study. When the aphids were started to show on plants in the field experiments, the solutions prepared with origanum (*Origanum onites*) (3 ppm), fennel (*Foeniculum vulgare*) (10 ppm) and garlic (*Allium sativum*) (10 ppm) were sprayed to the green plants. Also, insecticide containing Deltamethrin (at 50 ml / da dose) was used as a chemical control. In the laboratory experiments, germination tests were carried out seeds of the bean varieties with the solutions containing the thyme (0, 1, 2 and 3 ppm), fennel and garlic (0, 2, 4, 6, 8 and 10 ppm) essential oils. The germination rate, mean germination times, seedling and root lengths and seedling and root weights were examined in seeds obtained from field experiments (only pure water was applied) and laboratory tests. While the application of thyme oil in seeds obtained from field experiments is negative in relation to germination and seedling growth characteristics in Sarıkız and Şeker varieties; it effects the positive in the Burgan variety. It is determined that garlic and fennel oils showed a positive increase in the germination and seedling growth characteristics of the varieties except Sarıkız variety. In laboratory tests, doses of 1 and 2 ppm of thyme oil and doses of 2, 4 and 6 ppm of garlic oil were found having positive effects on the examined properties in all bean varieties. All doses of fennel oil caused reduced on germination and seedling growth.

KEYWORDS

Bean, Essential Oils Germination, Seedling Growth

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Poster Session 11

Submission ID: 1461

EFFECTS OF PLANTING TIMES ON SURVIVAL RATE AND PLANT DEVELOPMENT OF CAROB (*CERATONIA SILIQUA* L.) SEEDLINGS IN MARGINAL AREAS

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ABSTRACT

There are no reports and apparently studies on planting times of carob plants for non-irrigated marginal lands in the world. Therefore, in this research, the effects of planting times on survival rate and performances in terms of growth of stem diameter and plant height in field conditions were examined. The study was conducted in marginal land located in Antalya-Hurma region and observations were carried on between 2014 and 2016. One year old carob seedlings propagated from wild locust seeds were used in this study. Seedlings were planted in two different months, December and January and no irrigation were made throughout the research including time of planting. Planted seedlings were taken into plastic shelters for protection from hot summer droughts in June. Measurements for plant diameter (mm) and height (cm) were made at planting and thereafter with 3 months periods. Plant survival rate of plant were determined in October 2016. There was no planting time effect determined on survival rate of seedlings statistically. Although it was not statistically significant, the survival rate was higher in December planted seedlings compared to that found in January planted ones. Similarly, plant diameter and height values were higher in December planted ones as well.

KEYWORDS

Carob, Ceratonia siliqua, Seedling survival rate, Seedling development, Marginal areas

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Poster Session 11

Submission ID: 1462

NEW EXTRACTION METHODS USED IN THE PRODUCTION OF MEDICINAL AND AROMATIC PLANT EXTRACTS

ÖZLEM ZAMBAK¹, SAMİ GÖKHAN ÖZKAL²

ABSTRACT

New Extraction Methods Used in the Production of Medicinal and Aromatic Plant Extracts
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Medicinal and aromatic plants have become very important in recent years and our country has an important place in terms of medicinal and aromatic plants. These plants are used in many sectors such as; pharmacology, medical science and food science due to their benefits. Extracts of these plants can be obtained by various methods and these extracts can be used in many sectors. Extraction process is applied in different forms according to the final product to be obtained from these plants. In generally extracts is obtained from medicinal and aromatic plants by passing a solvent through the solid raw material. In these methods, solvent penetrates into the plant material during extraction to dissolve the components having similar polarity. The main factors affecting the quality of extracts are; part of the plant used, solvent used and extraction method. When these factors are correctly selected, the yield of extraction increases. In recent years some researches has been carried out on new extraction methods to increase extraction efficiency. Supercritical and subcritical fluid extraction, Microwave assisted extraction, Ultrasonic extraction, Pressurized liquid extraction, Solid-phase extraction methods are some of these new extraction methods. In this study these new extraction methods used in the production of medicinal and aromatic plant extracts were discussed.

KEYWORDS

Medicinal plants, Aromatic plants, Extraction

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Poster Session 11

Submission ID: 1463

THE USAGE OF PLANT EXTRACTS AS ANTIOXIDANT AND ANTIMICROBIAL AGENT IN MEAT AND MEAT PRODUCTS

SAMI GÖKHAN ÖZKAL¹, HALUK ERGEZER¹, ÖZLEM ZAMBAK¹

ABSTRACT

The Usage of Plant Extracts as Antioxidant and Antimicrobial Agent in Meat and Meat Products Sami Gökhan ÖZKAL, Haluk ERGEZER, Özlem ZAMBAK* Pamukkale University, Engineering Faculty, Food Engineering Department, Denizli, Turkey *Presenting Author: Ö. ZAMBAK (ozambak@pau.edu.tr) Lipid oxidation and microbial spoilage are the are the main factors that determine food quality loss and shelf-life reduction. The growth of microorganisms in meat products may cause spoilage or foodborne diseases. On the other hand lipid oxidation leads to loss of flavor, texture and color of meat products. Although synthetic additives have been widely used in the meat industry to inhibit both, the process of lipid oxidation and microbial growth, the trend is to decrease their use because of the growing concern among consumers about such chemical additives. In recent years different strategies have been developed in order to improve the quality of meat and meat products so the formulations of meat products are modified by different methods. One of these methods is the addition of natural plant extracts to the product. In that way lipid oxidation can be delayed and microbial safety can be provided. In recent years there has been an increase in the number of researches on natural additives. It is reported that in many cited literature tea, green tea, rosemary, artichoke, sage, onion, citrus bark, pomegranate, carob, white grape etc. extracts are used as antioxidant or antimicrobial agents in meat and meat products. The use of natural additives as antioxidants and antimicrobials will be beneficial in terms of improving quality of meat and meat based products. In this study plant extracts used as antioxidant and antimicrobial agent and their effects on the quality of meat and meat products are discussed.

KEYWORDS

Antioxidant, Antimicrobial, Plant extracts, Meat

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Poster Session 11

Submission ID: 1465

PANAX GINSENG: PHARMACOLOGICAL PROPERTIES AND DRUG INTERACTIONS

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ABSTRACT

Ginseng is one of the most popular herbal products used for thousands of years. Many species and varieties of ginseng are used. Asian ginseng (*Panax ginseng*) and American ginseng (*Panax quinquefolius*) are two of the best-known species in the world. Both contain different groups of the steroidal saponins called ginsenosides or panaxosides, as the major component. However, Siberian ginseng (*Eleutherococcus senticosus* Maxim.) that is also marketed as ginseng is a completely different plant of the Araliaceae family and its constituents are chemically different. Ginseng is used to enhance the body's resistance to stress and to improve mental and physical performance. It has also been used for diabetes, insomnia, sexual inadequacy, for degenerative conditions associated with ageing, to improve healing and as a stimulant. In vitro studies using isolated pancreatic islet cells have shown that ginsenosides stimulate insulin secretion independent of extracellular calcium. In addition, in vivo studies in rats showed that *P. ginseng* extract increases the number of insulin receptors in bone marrow and reduces the number of glucocorticoid receptors in the rat brain. Ginsenosides inhibit the reuptake of many neurotransmitters into brain synaptosomes in rats (in descending order: gamma-aminobutyrate, noradrenaline, dopamine, glutamate, serotonin). *P. ginseng* has been shown to increase interferon production in vitro and in vivo and increases killer cells and antigen-dependent cytotoxic activity in human peripheral lymphocytes. Ginseng saponins have (-) chronotropic and (-) inotropic effects with a similar mechanism of action to verapamil. Some in vitro studies has also reported increased coronary blood flow and (+) inotropic effects. Theoretically, ginseng may interact with cardiovascular system drugs. According to experimental studies, *P. ginseng* inhibits angiotensin-converting enzyme activity but does not affect nitric oxide production. The effects of ginseng about opioids are confusing. Ginseng blocks the analgesic effect of opioids. However, it potentiates the antinociceptive effect of pentazocine and aspirin. Also, it has been shown that ginseng prevents tolerance to opioids and psychostimulants in rats. In a mice study, it has been shown that saponins in ginseng increased pain threshold significantly. In their study they have speculated that saponins in ginseng might be opioid like peptide receptor agonist without addiction side reactions. *P. ginseng* may interact with monoamine oxidase inhibitors. *P. ginseng* has been reported to cause fever, headache, tremors and insomnia when used in combination with phenelzine. According to in-vitro and animal studies, ginseng preparations can show synergistic activity with cytotoxic drugs, chemotherapy and radiation. In vitro studies suggest that panaxytriol obtained from *P. ginseng* can produce a synergistic effect with mitomycin-C. According to in vitro studies, *P. ginseng* can synergistically interact with paclitaxel and reduce cisplatin-induced nausea and vomiting. Ginseng is a nonspecific central nervous system (CNS) stimulant and theoretically, increases the effects and adverse effects of prescription and

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non-prescription CNS stimulant medications. Also, it may interact with sedative drugs. According to a clinical study in 36 patients with type-II diabetes, ginseng significantly reduces blood glucose and hemoglobin-A1c levels. Therefore, attention should be taken when used with antidiabetic drugs. Ginseng may stimulate the release of the adrenocorticotrophic hormone, which may increase plasma cortisol levels. Theoretically, *P. ginseng* may have an additive effect when taken with sildenafil. Based on in vitro studies, camphor ingredient of ginseng is able to inhibit drug efflux and CYP3A4 mediated metabolism of HIV protease inhibitors. Ginseng preparations may have additive effects when used in combination with antiviral drugs such as rimantadine, amantadine, zanamivir and oseltamivir. Ginseng has side effects such as diarrhoea, loss of appetite, nausea and vomiting. This may alter the efficacy of gastrointestinal agents.

KEYWORDS

Panax ginseng, drug interaction, Asian ginseng

Poster Session 11

Submission ID: 1467

ANTI MICROBIAL EFFICACY OF CURCUMIN AND ITS POTENTIAL CONTRIBUTION TO THE ECONOMY

SERKAN ŐEN¹, MERVE ŐEN², SEFA ŐELİK³

ABSTRACT

Curcumin is a natural compound which grows in India and South East Asian regions and is obtained from the rhizomes of *Curcuma longa* plant. Curcumin is commonly used as anti-inflammatory. Curcumin has been studied for a variety of clinical practices for many years. According to researches, it has therapeutic effects on many inflammatory diseases, including diabetes, and different types of cancer. Curcuminin fungi have been shown to have antimicrobial potential against a broad spectrum of microorganisms including numerous Gram positive and Gram negative bacteria. Curcumin has been demonstrated to exhibit anti-infective activity against virulence, quorum sensing and biofilm formation in *Pseudomonas aeruginosa* infections. According to the official report published by the Association of Research-based Pharmaceutical Companies (AIFD) in 2006, the total drug market in our country has reached 9.9 billion dollars and antibiotics are ranked as the first by 20% within this cost. Similarly, according to the intellectual property rights protection index for the year 2015 of the Property Rights Alliance (PRA), Turkey is ranked as the 58th among 129 countries. As it is understood from this report, the drug in Turkey is behind the world in terms of competition with the number of local patents. In the light of all this information, the development of national antimicrobials is important in limiting the cost of antibiotics that are ranked as the first among our national drug expenditure expenses.

KEYWORDS

Curcumin, anti microbial effect, economy

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Poster Session 11

Submission ID: 1468

FOENICULUM VULGARE: PHARMACOLOGICAL PROPERTIES AND DRUG INTERACTIONS

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ABSTRACT

Foeniculum vulgare Mill. is a medicinal and aromatic plant with a lifetime of two years and belongs to the family of Apiaceae (Umbelliferae). The oil (Foeniculi aetheroleum) and seed like fruit (Fennel fruit/ Foeniculi fructus) of Foeniculum vulgare Mill. are used in medicine. Fennel fruit includes sweet fennel (Foeniculum dulce) and bitter fennel (Foeniculum vulgare). They both contains trans-anethole, fenchone, and estragole in different proportions. Fennel fruits are used as carminative, Fennel oil is used as an aromatic carminative. The main properties of fennel and fennel oil are derived from their carminative and expectorant activities. Anethole effects smooth-muscle motility in digestive tracts; higher doses have antispasmodic effects. A dose-dependent reduction in the density of respiratory secretions (bronchosecretolysis) occurs. Fenchone has antimicrobial and fungicidal effects in vitro. Fennel seed has a spasmolytic effect on the smooth muscles and accelerates the vibration rate of the ciliary epithelium of the bronchial mucosa (secretomotor action). In vitro studies shows that fennel has antimicrobial, gastric motility enhancing, antiexudative, and presumably antiproliferative effects. Fennel also shows estrogenic activity which seems to have some benefits in amenorrhea and dysmenorrhea. Fennel changes the oral absorption of quinolone antibiotics due to metal cation ingredients. Concurrent use with ciprofloxacin significantly changes absorption, distribution and elimination of ciprofloxacin after oral administration. Fennel reduces bioavailability of ciprofloxacin. In an in vitro study, 13 components that has an inhibitory effect on human CYP3A4 enzyme were isolated from methanol extract of fennel. From these, 5-methoxypsoralen (5-MoP) showed the strongest inhibition. Also, 5-MoP is an important component of grapefruit juice that has in vivo inhibitory effect on CYP3A4 which is well studied. Fennel can cause inhibition of intestinal CYP3A4 which is the most expressed CYP enzyme in the intestine. Intestinal CYP3A4 inhibition has been shown to cause a clinically significant increase in plasma concentrations of drugs such as felodipine and midazolam. Co-administration of birth control medicines containing estrogen (ethinyl estradiol, levonotgestrel ethinyl estradiol and estradiol/norethindrone) with fennel may reduce the efficacy of contraceptives. Tamoxifen is a nonsteroidal antiestrogen used in breast cancer. Combination with fennel may reduce the effect of tamoxifen. Long-term use of the fennel as a laxative may result with hypokalemia thus it may potentiate the effect of cardiac glycosides and may interact with antiarrhythmic drugs that restores sinus rhythm such as quinidine and medicinal products that prolong QT. Using with other drugs that causes hypokalemia (eg, diuretics, adrenocorticosteroids) may increase the risk of electrolyte imbalance.

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KEYWORDS

Foeniculum vulgare, fennel fruit, drug interactions

Poster Session 11

Submission ID: 1469

USING OF POPLAR (*POPULUS SPP.*) SEED HAIR FIBERS FOR SEA PETROLEUM SPILL

ERCAN VELİOĞLU¹, FILİZ TÜRKSEVEN VELİOĞLU²

ABSTRACT

Sea route transportation is more preferable way because of economic and environmentally friendly than other options but sea route may cause environmental accident that is increasing of polluted sea. Naturally sea water is ripple and flowy so oil spill is easily spread water surface. Sea water pollutions are not only effect the pollutant starter point but can easily pollute far places of accident. Principal sea pollutants are liquid petroleum and oil product. Petroleum and oil products have exhibited hydrocarbon features so sea water characteristics spoil and sea ecosystem affect badly from oil pollutant. Sea life is damaged from oil spill as well pollution is quickly spreaded of sea surface by winds and sea flows. Such as oil spill of Deepwater Horizon in 1989 and 2010 at Alaska. Main oil producing countries of north and south hemisphere use Turkey Bosphorus route for oil trade. The İstanbul and Çanakkale Bosphorus are vital important status for The Black Sea and The Mediterranean Sea countries. 9006 Tankers passed the Bosphorus of Turkey in 2013. 2292 Tankers were lading 117.1 billion ton petroleum and oil product. In 1979 and 1994 two big sea accident were occurred at Turkey Bosphorus. The accidents were cause heavy pollution. Oil absorbents are hydrophobic and preferable oil absorbents substrates which can be organic, inorganic and synthetic. Absorbents can change depend on the aim of environmental disturbance. Generally absorbents use effectively at sea side and small roundup poll. Absorbent substance not suitable for the open sea. Absorbent substance which use scramble petroleum pollution can cause secondary pollutant for environment. Absorbents are use carefully and limited. Choosing of absorbent is important for buoyancy, saturation, oil retention, strength and durability, fermentation, costs and availability, storage and transportation properties. The genus Poplar, which includes poplars are world wide known visual and fast growing tree species. Poplar seeds can cause some problems at city life. A tree have 280 000- 14 850 000 seed that can cause problem. Seeds have good properties as a petroleum and heavy oil absorbance. The absorption values of 180-211 g heavy oil/g fiber and 55-60 g heavy oil/g fiber respectively, surpass all known natural absorbents. Poplar seed hair fibers and cotton are obtained an extremely promising natural source for the production of oil super absorbents. Because of cotton is a hydrophilic substance, it can be sang in water. Poplar seed hair fibers is hydrophobic. Hydrophobic substance is preferable for petroleum and heavy oil pollutions. Slovenian National Building and Civil Engineering Institute tested poplar seed hair fibers and other polar and apolar substance. Poplar seed hair fibers can treat polar solvents (diesel fuel, row petroleum, hexane, petroleum ether, chloroform, tetrahydrofuran) from water surface. It has patent international. Poplar seed hair fibers are not harmful for human and environment.

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KEYWORDS

Poplar seed fibers, petroleum spill, sea pollution treatment, natural absorbent

Poster Session 11

Submission ID: 1470

AQUATIC PLANTS AS ALTERNATIVE SOURCES TO MEDICAL AND AROMATIC PLANTS

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ABSTRACT

Usually aquatic plants (macrophytes) are photosynthetic organisms in microscopic (algae) and macroscopic (macro algae) structures that live in fresh water and sea. Aquatic plants have been used as human food from antiquity to daily life and in our time they have begun to be used as alternative sources in various fields such as health, industry and agriculture by introducing different characteristics through scientific researches. Spirulina and Chlorella are used in the health food market as powders, capsules, tablets, or pastilles, while marine macroalgae are used as antibiotics, antiviral, anti-inflammatory, cytotoxic and antimycotic besides their use as nutrients. As in marine plants, freshwater plants are also used as human food, aquaculture and animal feed, and all parts of these plants (root, rhizome, tuber, seed etc.) are evaluated in various fields such as medicine, compost and building materials. For example; Watercress (*Nasturtium officinale*) is used as diuretic, antiscorbutic, laxative and Water spinach (*Ipomoea aquatic*) is also used for food poisoning, headache, hematuria, hemorrhoids and cough. The purpose of this study is to evaluate the information on the use of aquatic plants spreading in fresh waters, particularly in the field of medicine, by examining previously published national and international publications.

KEYWORDS

aquatic plants, alternative source, health industry

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Poster Session 11

Submission ID: 1471

ZINGIBER OFFICINALIS: PHARMACOLOGICAL PROPERTIES AND DRUG INTERACTIONS

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ABSTRACT

Ginger has been widely using as a cooking spice and medicinal plant from ancient times in India and in China. Today ginger is part of the folk medicine as well as in modern medicine. It is used for the treatment of nausea and vomiting in pregnancy and for prevention of travel and sea sickness. Many countries have approved ginger as a nonprescription drug for the prevention of motion sickness. It is also recognized with its anti-inflammatory effect in treatment of rheumatoid arthritis and osteoarthritis, being on par with many steroidal preparations. The essential oil of Rhizoma Zingiberis (Ginger) include α -zingiberene, ar-curcumene, α -bisabolene, neral, geranial, (E)- α -farnesene and zingiberol. Pungent compound (gingerols and shogaols), diarylheptanoids (gingerenones A and B), vitamins and %50 starch are also present. Fresh ginger root contains gingerols, shogaols, 6-dehydrogingerdione, and galanolactone as the major constituents. 6-gingerol is the main pungent component of dried ginger. 6-gingerol can convert to 6-shogaols due to dehydration of 6-gingerols. Fresh ginger is used as antiemetic, antitussive, expectorant, and for inducing perspiration and dispel cold, whereas dried ginger is used for stomachache, vomiting, and diarrhoea accompanied by cold extremities and low pulse, resolve phlegm retention, for cough and dyspnea with copious frothy expectoration and for abnormal uterine bleeding. In vitro studies have shown that fresh ginger extract inhibits both cyclooxygenase and lipoxygenase. Inhibition of arachidonic acid metabolism results with platelet aggregation and inhibition of prostaglandin and leukotriene production. 6-gingerol, 10-dehydrogingerdione and 10-gingerdione are the main ingredients responsible from these effects. According in vitro studies, these components inhibit prostaglandin synthesis more potently than indomethacin. The chemical structures of gingerols shows partial similarities with prostaglandins. Gingerols have been found to be potent inhibitors of prostaglandin biosynthesis. 6-gingerol reduces nausea and vomiting by increasing motility. Galanolacton, similar with ondansetron, has an antiemetic effect via serotonin (5HT-3) receptors located in ileum. Antiserotonergic activity of ginger including 6-, 8- ve 10-gingerols has also been shown by in vitro studies. Dried ginger is shown to be useful in rheumatoid arthritis. More than 75% of arthritis patients who consumed ginger rhizome powder experienced analgesic effects and reduction in joint swelling. Gingerols have been reported to be hypoglycemic in diabetic rats. Ginger can interact with antacids, H₂ antagonists and proton pump inhibitors by its potential in increasing stomach pH. The high dosage of ginger may cause central nervous system (CNS) depression and theoretically increases the effect of barbiturates, benzodiazepines and CNS depressants. Ginger may have a dose-dependent inotropic activity and theoretically may interact with positive inotropic agents and beta-blockers. In diabetic rats serum glucose levels are significantly lowered due to the hypoglycemic effect of ginger, which may

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theoretically increase the effects of hypoglycemic drugs. Ginger is a potent thromboxane synthase inhibitor, which prolongs bleeding time. Patients using warfarin and other medicines that affect platelet activity should avoid taking ginger supplements. Ginger may prevent clotting. Concomitant use with drugs like aspirin, clopidogrel, diclofenac, ibuprofen, naproxen, dalteparin, enoxaparin, heparin, warfarin may further reduce clotting and may increase risk of bleeding. Ginger may increase the absorption, bioavailability and elimination half life of metronidazole so combined use may increase side effects of metronidazole.

KEYWORDS

Zingiber officinalis, drug interactions, ginger

Poster Session 11

Submission ID: 1472

ETHNOBOTANICAL USES OF SOME MEDICINAL PLANTS ON THE ASTERACEAE FAMILY FROM HATAY (TURKEY)

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ABSTRACT

Hatay city hosts rich biodiversity, including about 225 taxa of belonging to Asteraceae family. The present study reveals the ethnobotany and traditional medicinal uses of 23 taxa belonging to 16 genera of the Asteraceae family in Hatay province (East Mediterranean of Turkey). The study was mainly focused on the medicinal plants used for treatment of various ailments/diseases by the local people in the city. The data on plants included botanical names, vernacular names, the parts used and specific purpose of use. The richest genus are; *Centaurea* L. (4 taxa), *Achillea* L., *Anthemis* L., *Artemisia* L. and *Taraxacum* F. H. Wigg. (2 taxa each). Local people generally use herbals as areal parts (45.1%), flowers (16.1%), capitulum and leaves (12.9% each). The common preparation of the medicinal plants in the museum are drink as tea (48.8%), external (20.9%) and infusion (16.3%). Local people in the region commonly use for the remedy of gastrointestinal system disorders, respiratory system disorders, genital-urinary system disorders, skin diseases and metabolism disorders. Our results were comparatively discussed with the other literatures. We believe that finding of this study will significantly contribute to the ethnobotanical studies at local or regional scales.

KEYWORDS

Ethnobotany, Medicinal plants, Folk medicine, Asteraceae, Hatay

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Poster Session 11

Submission ID: 1473

CAMELLIA SINENSIS: PHARMACOLOGICAL PROPERTIES AND DRUG INTERACTIONS

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ABSTRACT

Green tea is produced without fermentation from the leaves of *Camellia sinensis* belonging to Theaceae family. Black tea or red tea is processed by fermentation and heating, whereas oolong tea is partially fermented. Green tea contains more catechin than black tea and oolong tea. The presence of high amounts of catechins, essential minerals and vitamins are responsible for high antioxidant potential of this tea. Tea contains 5% caffeine and 24% tannins with minor amounts of other xanthines such as theophylline and theobromine. Its tea also contains flavonoids. Green tea appears to contain greater quantities of the flavonol-type flavonoids than black tea. Minor flavonols (10%), polymeric flavonoids (20%) and epigallocatechin-3-gallate (EGCG) are the major constituents of about 50-80% of the green tea catechins. Leaf buds and fresh tea leaves are used as stimulant and diuretic due to its caffeine content. Also they are used as an astringent for gastrointestinal disorders which they effect via polyphenols and tannins they contain. In addition, green tea extracts are used in the treatment of genital warts. Tea is generally preferred as a drink. Green tea extract is a rich polyphenol source. The phenolic components of green tea extract have strong antioxidant activity. The combined use of green tea with hydrochlorothiazide (HCTZ) showed myocardial protection by reducing the adverse effects of HCTZ. This finding may be important for cancer patients with hypertension and ischemic heart disease who can not undergo HCTZ monotherapy due to potential myocardial side effects. A study in rats has shown that green tea reduces myocardial toxicity induced by cyclofosamide in a dose dependent manner. Adenosine is used for arrhythmia and green tea may inhibit the effects of adenosine. Caffeine found in green tea reduces the sedative effect of benzodiazepines. Also, it can increase blood pressure in patients using metoprolol and propranolol. Patients using warfarin should not use green tea. Moderate quantities of K vitamin in green tea can reduce the effect of warfarin. Green tea and aspirin should not be used together because they both increase the risk of bleeding by acting as an inhibitor on the platelets that provide clotting. Laboratory tests involving the use of green tea in combination with chemotherapeutics such as doxorubicin and tamoxifen have been shown to improve the efficacy of these drugs. It has been shown that green and black tea extracts decreases the sensitivity of prostate cancer cell to chemotherapy drugs. Because of this potential for interaction, black and green tea (extracts of these teas) are not recommended especially for patients who receive chemotherapy for prostate cancer. If clozapine is used less than 40 minutes after green tea ingestion, the antipsychotic effect may reduce. If green tea is used in combination with ephedrine, it can increase agitation, tremor, insomnia and weight loss. Green tea has been shown to reduce lithium blood levels. The use of green tea with monoamine oxidase inhibitors such as phenelzine and tranylcypromine may cause a hypertensive crisis. The combination of phenylpropanolamine and caffeine can result with serious increase of blood pressure and mania. Clinical trials have showed that green tea and black tea

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extracts reduces folic acid bioactivity even at low concentrations. Because of its phenolic content, green tea can reduce the absorption of non-iron preparations. The inhibition of non-hem iron absorption is a potential side effect. Two important flavonols of green tea (EG and EGCG) have an important effect on organic anion-carrier polypeptides (OATP) that are expressed in enterocytes and hepatocytes. ECG and EGCG inhibits uptake by OATP1A2, OATP1B1, and OATP2B1 in a concentration-dependent way. However, OATP1B3-mediated uptake is strongly stimulated by EGCG. Therefore, they can alter the pharmacokinetics of OATP substrates such as statins.

KEYWORDS

Camelia sinensis, green tea, drug interactions

Poster Session 11

Submission ID: 1474

GARLIC AND ITS EFFECTS ON HEALTH

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ABSTRACT

GARLIC AND ITS EFFECTS ON HEALTH Garlic (*Allium sativum*) is used as flavoring since very old ages. In some societies, it is seen the healing source. It is suggested that garlic has the antioxidant, antibacterial, and antifungal effects and provides positive effects via sulfur and phenolic substances present in its content. The positive effects it shows on the health has made a current issue to use it supplements beside the use of it nutrition and flavoring. A great majority of thiosulphates (70%) the plant garlic has consist of allicin. This substance becomes active when garlic is mashed. It is stated that allicin has a strong antibiotic and antifungal feature. In addition, it was demonstrated that it was effective in gastrointestinal motility and regulation of the secretion of digestive enzymes. **AIM:** In this study, it was aimed to study the studies examining the effects of garlic on the health. **METHOD:** Studying the studies examining the effects of garlic consumption on general health condition and some chronic diseases by means of a comprehensive literature review, a compilation study was prepared in the light of actual data. **RESULTS:** In the studies carried out, it was found that the substances such as diallyl sulfide, diallyl disulfide, 5-ethyl cysteine, n-acetyl cysteine present in garlic showed significant antioxidant activity. In addition, it was seen that garlic consumption, increasing the effectivity of microphages killing pathogens, was effective in strengthening immune system. In the studies carried out on garlic and cardiovascular health, it was identified that garlic consumption reduced the level of LDL cholesterol and increased the level of HDL cholesterol in individuals, and thanks to this, lowered the risk of cardiovascular disease. In the similar studies, it was suggested that garlic consumption, reducing the formation of fibrin and plaque in the blood, could also significantly lower the risk of heart attack. In the studies, examining the relationship between garlic consumption and blood pressure, in the people having both high and low blood pressure, the positive effects of garlic consumption were frequently identified. In the studies, examining the relationship between garlic consumption and Type 2 Diabetics, in addition to the diabetic medications, it was seen that garlic consumption exhibited positive effects in the regulation of blood sugar. In the studies examining the relationship of garlic with cancer, it was suggested that frequent garlic consumption may be protective against especially breas, esophagus, gastric, colon, and rectum cancers and the studies on its use in cancer treatment are limited. **CONCLUSION:.** Garlic, its antioxidative, antithrombotic, hypolipidemic, and hypoglycemic effects, can be effective in reducing the morbidity and mortality of the disease. However, the actual literature is evaluated, particularly about its quantity used as supplementary, there are no clear suggestions and there is a need further studies. It should not be forgotten that higher dosages may show negative effects for the hearth, liver, and renal functions.

KEYWORDS

garlic, nutrition, health, allicin

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Poster Session 11

Submission ID: 1475

RESVERATROL AND CANCER

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ABSTRACT

RESVERATROL AND CANCER Cancer is a fatal disease showing increase tendency at the present days. In this increase, unchangeable genetical factors as well as changeable environmental factors play important role. It is stated that diet among the environmental factors has important effects. In cancer process, on understanding of diet, the interest toward using some nutrients and supplements has increased. This interest has also reflected to the literature. Resveratrol, which has a phytoalexin structure and is synthesized as a response to stress factors in some plants, is one of the most studied components with its cancer -protective feature. It is put forward that resveratrol shows its antioxidative effect, removing free oxygen radicals from the environment. Resveratrol, present in higher rates in the roots of plant, named Polygonum cuspidatum, grape, peanut, and ananas, is also used as supplement. AIM:In this study, it was aimed to compile the actual studies examining the relationship between resveratrol and cancer. METHOD:In the study, with examining the actual literature data, the protective and therapeutic effect of resveratrol against cancer were evaluated in detail. RESULTS:In the studies, in which the biological benefits and action mechanisms of resveratrol are examined, its anticarcinogenic and antioxidative effects were emphasized. It is considered that resveratrol shows its anticarcinogenic effect by modulating enzymes making carcinogens ineffective. Depending on its modulating these enzymes, it was seen that it could provide the positive effects on the metabolism of some medications. Some studies suggest that resveratrol makes slower the tumor development, inhibiting prostaglandin synthesis. In the studies, its antioxidative effects are examined, it was emphasized that it effectively cleaned free oxygen radicals and other oxidative molecules and prevented LDL oxidation. In the studies, in which the effect time of resveratrol was evaluated, due to its rapidly metabolizing, that its time of being kept in the body is a short time like approx.. 1 hour was remarkable. It was stated that this situation can impede to form a long term response. In the studies examining the relationship between resveratrol intake and cancer formation, it is frequently seen that there is a significant opposite relationship between resveratrol intake and cancer formation. In the literature, rather than the use of resveratrol in the use of cancer treatment, its effects preventing cancer were dealt with. Especially in preventing the formation of the colon, breast, and prostate cancer, it is suggested that it is more effective. CONCLUSION: There are the studies showing the effect of resveratrol to prevent cancer, regression its formation step, and suppress it in the early period. The dosage and time of resveratrol used in these studies show a large variability according to the sorts of cancer and there is no clear recommendations toward using it with the foods and supplements. For being able to offer the suggestions about the consumption quantity and become clear its effectivity in treatment, there is a need further studies. Keywords:Resveratrol, diet, cancer, , antioxidant

KEYWORDS

RESVERATROL,CANCER,DIET,ANTIOXIDANT

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Poster Session 11

Submission ID: 1476

GROWING AND HARVESTING OF ANATOLIAN SAGE (SALVIA TRILOBA L.) ON BUROR TERRACES IN THE FORESTRY AREA.

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ABSTRACT

Anatolian sage (*Salvia triloba* L.) which is medical and aromatic plant exported and collected from forest areas is located in Marmara ireland, Turkey. In recent years, soil treatment during afforestation practices are made in the form of grado (Buror Teras) with tracked or wheeled mini-excavators in the fields having % 60 or more slope, in Turkey. In this study, Anatolia Sage (*Salvia triloba* L.) seedlings produced in nursery conditions from seed Yalova originated is discussed development and harvest of sage planted in the spring period of 2014 on "Buror Terraces" created in the Kızılcaterzi Village, in the forest compartment number 261, in Şarköy district, Tekirdađ province of Marmara region. Sage seedlings in this area having 45-50 % slope planted in staggered with 40x40 cm. spacing and found soil tests positive reached to 40-45 cm heigh of annual sprout and harvested so that the bottom 20 cm height. According to this result, it is possible to ensure success to grow Anatolian sage as medical and aromatic plant on Buror terraces and in forested areas other forest tree species or curved empty forest areas ecologically.

KEYWORDS

Anatolia Sage, Buror Terraces, Marmara, Cultivating

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THE USE OF PROBIOTIC AND PREBIOTIC IN OBESITY

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ABSTRACT

Obesity is defined as excessive fat accumulation in the body due to the fact that the energy taken in the body is more than the energy spent. It is a serious problem of public health, which shows increase in the developed and the developing countries. Obesity is a process ranging with inflammation in the body and brings together with it a number of complication such as hyperlipidemia, hypertension, Type 2 diabetics, metabolic syndrome, fatty liver disease, coronary heart disease, and the premature death. In the recent years, the view that in the development of obesity and its complications, intestinal microbiota will also be effective revealed. Intestinal microbiota includes different sorts of microorganism more than 500 and the number of these microorganisms is affected by age, genetics, and environmental factors. The composition of intestinal mucosa of individual and effect of bacteria here on energy transformation can form personal differences in weight loss and gain of the individual. While Bacteroidetes decreases in the intestines of obese individuals, Firmicutes increases, and also, the diversity of the other bacteria in intestines also decreases. There are some studies showing that probiotics and prebiotics regulate intestinal flora. The resources of probiotics are fermented milk products, pharmacologic products, prepared from the live cells of the probiotic bacteria, and foods and drinks, enriched with probiotics. The resources of prebiotics, which form a feeding place for probiotics, are the nutrients such as onion, garlic, wheat, leek, banana, escarole, earth apple, artichoke, soya, dry legumes, asparagus, and tomato. AIM: In this study, it was aimed to compile the studies examining the relationship between the use of probiotic and prebiotic and energy balance in obesity. METHOD: In the study, actual literature studies were evaluated, which examines the effect of the use of probiotic in obese people on both body weight and fat mass and complications of obesity as a result of both variations of intestinal flora. RESULTS: The studies carried out showed that intestinal bacteria had the different effects in the decomposition of energy from nutritional elements and in its usability and storage. In especially obese people, the increasing Firmicutes filum producing in high amount of short chained fatty acid from the fibers, causes more energy production in the body. A number of studies were met, which show that the use of probiotic and prebiotic use in obese people provides decreases in body mass index, thickness of skin curl, and serum glucose, In similar way, there are also some studies showing that significant improvements were provided at the level of insulin resistance, lipid, and adipokine, There are also studies showing that the use of prebiotic provides increase in the feeling of saturity, weight loss, and decrease at the level of LDL cholesterol level. In the studies examining the effect of prebiotic use on the complications of obesity, it was seen that it showed positive effect on intestinal permeability, metabolic endotoxemia, adiposity, and insulin resistance. CONCLUSION: In the treatment of obesity, in addition to the behavioral change, physical activity, and diet treatment, the use of pro-prebiotics can be an alternative. For intestinal flora playing role in energy balance, it is necessary for the use of pro-prebiotic to be important. The studies on

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intake as supplement were dealt with rather than intake of nutrition resourced intake. The studies on probiotic and prebiotic nutritional resources should be increased. For being able to offer clearer suggestions about the sorts and quantities that are necessary to be used, there is a need further study.

KEYWORDS

obesity, probiotic, prebiotic, microbiota

Poster Session 11

Submission ID: 1478

USE OF PHYTOTHERAPY IN SURGICAL NURSING

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ABSTRACT

Today; -in spite of fast advancements in diagnosis, care and treatment in diseases- such factors as people's wish to have more control and responsibility over their treatments, to use relieving interventions against symptoms, health care team's inability to spare enough time, cost of traditional treatment modalities and psychologically feeling better have increased interest in complementary and alternative treatments. In this sense, phytotherapy –deriving Greek words “phyton (herb)” and “therapeia (therapy)”- means curing and healing with herbs. Phytotherapy is considered as the practice of pharmacognosy into modern treatments and is also called as “phytopharmacy”. Phytotherapy –used in the care and treatment of diseases, promotion and maintenance of health by all cultures since the beginning of civilization- has used every kind of herbs as medication. For example; all of the medication systems that include Native Americans' healing methods, Indian Ayurveda system and traditional Chinese medicine have placed herbs into their treatment modalities. Today; in the developed countries, Turkish and Asian medicine; numerous individuals utilize herbal products alone or mixed treatment products as a treatment modality in order to cure many diseases without consulting any medical experts. When some of the herbal medicines often used are examined in relation to surgical nursing; there may occur some side effects among patients. Use of some of these -like garlic, ginkgo biloba, ginseng, echinacea and St. John's wort surgical- should be quitted before surgeries. As a result; although herbs are frequently used for therapeutic purposes they may be omitted by health care personnel. Therefore; nurses should be aware of effects, side effects, drug interactions (drugs that should not be used together) of herbal medicines very well.

KEYWORDS

Phytotherapy, Surgical Nursing

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Poster Session 11

Submission ID: 1479

PHYTOESTROGENS EFFECTS ON MENOPAUSE SYMPTOMS

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ABSTRACT

Menopause period which is hormonal, physiological, psychological changes on women, starts at 45-55 years old, after the end of menstruation. Estrogen hormone is the most effective factor during menopause. Due to the decreasing estrogen level, the symptoms occurring after the menopause are related with the estrogen. Therefore phytoestrogens are thought to be helpful to cope with these symptoms. Phytoestrogens are used for estrogen replacement cure for menopause women. Phytoestrogens structure and functions are similar like endogen estrogen 17- β estradiol hence it makes them to connect to estrogen receptors more easily. **OBJECTIVE:** In this review, the studies related with phytoestrogens effects on menopause symptoms are investigated. **METHOD:** Phytoestrogens nutrition and supplementation properties and their effects to the menopause symptoms are investigated through literature. **RESULTS:** Use of phytoestrogens as nutrition and supplementation on healthy women which are on menopause, shows positive results on the symptoms of menopause. When phytoestrogens are used as nutrition for the women which are on premenopausal or postmenopausal stage is helpful for constriction, sleeping pattern, anxiety, depression and irritability. Also, phytoestrogens use as nutrition and supplementation have positive effects on vaginal dryness, libido, hirsutism on facial area and dryness on the skin. On the other hand, use of phytoestrogens as supplementation have positive effects on vasomotor menopause symptoms and life quality. On some of studies made it is provided that, women who use phytoestrogens as supplementation, the menopause symptoms are significantly decreased. **CONCLUSION:** Menopause symptoms have negative effects on premenopausal and postmenopausal women's life quality. Phytoestrogen supplementation could decrease menopause symptoms as an alternative for hormone replacement cure. However, there should be more studies to be made for the amount of phytoestrogen consumption during the menopause.

KEYWORDS

Phytoestrogens, nutrition, menopause

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Poster Session 11

Submission ID: 1480

SOME CHEMICAL AND SENSORY PROPERTIES OF GRISSINI PREPARED WITH GARDEN CRESS (*LEPIDIUM SATIVUM* L.) SEED POWDER

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ABSTRACT

Yet, thanks to the inception and upcoming of the science of Foods and Nutrition, a number of non- conventional food stuffs have been explored, analyzed, processed and used up in the development of food products, all in a bid to end their oblivion on one hand and accruing benefit to the masses on the other. Garden cress (*Lepidium sativum* L.) is such a food stuff that abounds not only in nutrients but also in health enhancing phytochemicals. Garden cress is an annual erect herbaceous plant, growing up to 30 cm. It belongs to Cruciferae (Brassica) family, widely grown in Europe, South West Asia and US. The plant requires minimal agricultural resources, grows well in semi-arid regions and low fertility soils. The seeds can be harvested in 70–90 days and the yield is calculated to be 800–1000 kg/ha. It is a well known culinary herb and the leaves are widely used as garnish and are consumed raw in salads. The plant is known to possess varied medicinal properties. Leaves of this plant are diuretic and gently stimulant. The seeds are traditionally used in the diet of lactating woman to induce milk secretion. The seeds are aperient, antibacterial, gastrointestinal stimulant, diuretic, tonic, demulcent, aphrodisiac, carminative, galactagogue and emmenagogue. It is also reported that the plant possess antihemogglutinating, hypoglycemic, antihypertensive, fracture healing properties and significant bronchodilatory activities. Also a preliminary pharmacological study on seeds of garden cress has suggested the presence of cardioactive substance and is shown to have probable action through adrenergic mechanisms. Aqueous extract of garden cress was found to have antihypertensive and diuretic effect when studied both in normotensive and spontaneously hypertensive rats. It is useful in hiccup, dysentery, diarrhea and skin disease caused by impurities of blood as well. The oil of the garden cress seeds is rich in alpha linolenic acid, and contains an ideal ratio of x-3 fatty acids (n-3) and x-6 fatty acids (n-6). Recent studies have proved the preventive effect of x-3 polyunsaturated fatty acids, especially alpha linolenic acid, on different types of cancer, including breast, in both animals or cell line models, and in the treatment of cancer. Bakery products are the most consumed foods in the world and among these products. Grissini are long, thin pieces of crispy, dry bread. They are better known in many English speaking nations as breadstick or bread sticks, and they are a popular accompaniment to many Italian meals. It is originated in Torino in Piemonte, a region of northwest Italy. Grissini were actually invented around the end of the 17th century to cure the health problems of young Duke Vittorio Amedeo II of Savoy. In this study, grissini were produced by the addition of 0.5, 1 and 2% of garden cress seed powder to grissini formulations, texture characteristics, color values, some chemical properties such as oil and ash content and some sensory properties of grissini were determined. It was found that the ash and oil contents of the grissini increased significantly ($p < 0.05$) by increasing the amount of garden crees seed powder in the formulation. In color analysis, it was seen

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that increasing the addition rate caused decreases in Hunter L value, and increases in a value. In the sensory evaluation, the panelists gave scores for crust color, hardness, smell, chewiness, flavor, and overall acceptance. Grissini having 1% and 2 % of garden cress received the best liking scores ($P<0.05$) in color. The samples having 0,5% of garden cress seed powder recieved lower score than other samples, although they have been received sensory scores higher than 3.5, which was the midpoint of hedonic scale.

KEYWORDS

grissini, Garden cress, seed, nutrition

Poster Session 11

Submission ID: 1481

**DETERMINATION OF SOME PHYSICAL, TEXTURAL AND
SENSORY PROPERTIES OF CRACKERS PRODUCED BY ADDITION
OF ZAHTER (THYMBRA SPICATA)**

ALİ GÖNCÜ¹, ÜNKAN URGANCI², İLYAS ÇELİK², FATMA IŞIK²

ABSTRACT

Plants and spices are generally used to bring aroma and colour in foods. In addition, they provide antioxidant and antimicrobial properties to the products. They also have therapeutic and / or preventive effects for many disorders, especially heart, vascular, diabetic and cancer diseases. With these features they are extremely important in human diet. Zahter (*Thymbra spicata*), also known as "Karabaş kekiği", "Karakekik" or "Dağ kekiği" in Turkish is a plant specie belonging to the family of Lamiaceae. It is a plant that has pink flowers and it has a height of about half a meter. It includes essential oils and tannins. It can be grown almost everywhere in our country with the consumption is mostly in Gaziantep and Hatay. It is consumed with its unique flavor in meals, in teas, in salads, in olive oil and with different spices at breakfast or raw. In this study, crackers were produced by substituting 1%, 2% and 4% of milled zahter instead of wheat flour. Moisture, ash, colour values and textural and sensory qualities of the crackers were determined. It has been determined that by increasing the zahter rates in the formulation, the amount of ash increased and the hardness decreased. In sensory analysis, panelists evaluated cracker samples with respect to external colour, odor, hardness, flavor, chewiness and overall acceptance. In color analysis, Hunter L and a values were decreased and b values were increased by increasing zahter ratios. In sensory evaluation, crackers produced with 2% of zahter received best liking scores in overall acceptance.

KEYWORDS

Cracker, Zahter, Thyme.

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Poster Session 11

Submission ID: 1482

DETERMINATION OF SOME QUALITY CHARACTERISTICS OF MUFFIN PREPARED WITH RIPENED HEMP SEED (*CANNABIS SATIVA L.*)

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ABSTRACT

Industrial hemp (*Cannabis sativa L.*) has been an important source of food, fiber and folk medicinal preparations for thousands of years in the Old World. Both the ripened seed of hemp and seed meal are excellent sources of dietary oil, fiber and protein. It contains 20–25% protein; the storage proteins consist mainly of edestin (globulin) and albumin, with a superior essential amino acid profile and high digestibility. It also has 20–30% carbohydrates, 25–35% oil (composed primarily of linoleic and α -linolenic acids) and 10–15% insoluble fibre and a rich array of minerals. The hemp seed, in addition to its nutritional value, has demonstrated positive health benefits, including the lowering of cholesterol and high blood pressure. The increased utilization of hemp seed for edible oil production has caused abundant amounts of protein-rich meal, which serves as a suitable raw material for production of peptide products, because of the presence of high levels of residues, especially arginine and branched chain amino acids, which are desirable components of bioactive peptides. Studies of hemp seed oils are expected to follow and may be extended to include clinical studies, such as arthritis, hypertension, diabetes, cancer, gastrointestinal disorders, ulcers, chronic fatigue syndrome, lupus, and more. Bakery products are the most consumed foods in the world and among these products; cakes are the most popular products due to their deliciousness and special organoleptic characteristics. Among different types of cakes, Muffin cake has a special position due to its deliciousness. In this study, muffin cakes were produced by the addition of 2, 4 and 6% of hemp seeds to cake formulations and color values, some chemical and sensory properties of cakes were determined. It was found that the ash and oil contents of muffin cakes increased by increasing the amount hemp seeds in the formulation ($P < 0.05$). In color analyses, it was seen that increasing the addition rate caused decreases significantly ($p < 0.05$) in the all Hunter L,a,b values in crumb color. In the sensory evaluation, the panelists gave scores for crust color, crumb color, crumb cell structure, texture, smell, chewiness, flavor, and overall acceptance. The samples having 2% of hemp seeds received best liking score on overall acceptance. All the muffin samples received sensory scores more than 3.5 which was the midpoint of hedonic scale.

KEYWORDS

muffin, hemp seed, sensory

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Poster Session 11

Submission ID: 1483

UTILIZATION OF BUCKWHEAT (FAGOPYRUM) IN CEREAL TECHNOLOGY

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ABSTRACT

Buckwheat is a plant species of the genus *Fagopyrum* from the family Polygonaceae. Unlike the important grains such as wheat, corn, oats, rice and barley, it can be adapted to develop in a short time at high altitudes (0-4200 m). Buckwheat is one of the most important alternative crops that can be grown without using artificial fertilizers, pesticides and other chemicals. It is a one-year-old plant that can grow even in cool climates and in poor soils. Although it is in the Pseudocereal class, it is mostly classified in cereals. Because its chemical composition and utilization areas are similar with cereals. Nine varieties of buckwheat can be cultivated, but two varieties of them are cultivated mostly. The buckwheat species most commonly used in bakery products is *Fagopyrum esculentum* moench. Buckwheat seeds are in the form of a triangular pyramid. Seed hulls are bright or matt and brown, black or gray in colour. It has been reported that it can be cultivated everywhere in our country and government pays financial incentive for its cultivation. Unlike wheat, buckwheat does not contain gluten. Buckwheat flour is commonly used with other gluten-free cereal flours and starches in the world for the development of new dietary products for celiac disease. Buckwheat is an important source for gluten-free products with its unique taste and aroma. The aim of this review is to give some information about buckwheat using in breads, pasta, noodles, biscuits, cakes, tarhana, cookies, chips and wafers.

KEYWORDS

Buckwheat, cereal, bakery products.

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THE EFFECTS OF GINKGO BILOBA ON ALZHEIMER DISEASE

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ABSTRACT

Ginkgo biloba, is a 30-40 m high tree, which takes place in the class of ginkgoales, and can live more than thousand years. It is a sort of the oldest tree still living on the earth and it is accepted as a "living fossil". Besides that it naturally grows in North China and Japan, it is also grown as decorative plant in mild regions and parks and gardens. In order to use it as medication, the extract of ginkgo biloba was first developed in Germany in 1965 and was introduced with the name of "EGb761". Later, it was registered in France (IPSEN, Paris) and started to be produced in series. Today, the extract of Ginkgo biloba takes place among the supplements often used. The extract of standardized ginkgo biloba foliage contain flavonoid glycosides (quersatin, kaempferol,, isorhamnetin, etc.) in the rate of 24%; terpenoids in the rate of 6%; and organic acid in the rate of 5-10%. Thanks to terpenes and flavonoids, accepted pharmacologic active components in the content of its leaves, it is considered that it has effect on especially cerebral vascular. This effect of it became widespread the use of ginkgo biloba in weak memory depending on age and dementia. AIM :In this study, it was aimed to compile the studies examining the effect of using the extract of using ginkgo biloba for Alzheimer disease on cognitive disorders METHOD: In this compilation study researching the relationship of the use of ginkgo biloba and Alzheimer, the actual literature data was examined and the effect of using the extract of ginkgo biloba on Alzheimer diseases were examined by utilizing the secondary study data. RESULTS: It is put forward that the pharmacologically active component EGb761, used in a number of study, are flavonoid and terpenoids. In a number of studies, EGb761, thanks to flavonoids in the content, reduced free radicals preparing ground for neuronal damage. It is also emphasized that the components of ginkgolide and flavonoid have the inflammation preventive effect seen in Alzheimer pathology. Troubles in mitochondrial functions are also associated with the pathological changes seen in Alzheimer and it is considered that EGb761 has a protective effect on mitochondrion. Besides that there are some studies showing that administrating the extract of ginkgo biloba to Alzheimer patients significantly has an effect in positive direction, there are also some studies, where its effect is not observed at all. Provided that high dosage is not used, since it is not possible to see the useful effects of ginkgo biloba, it is emphasized that it is necessary to use, instead of the plant itself, its extract. Dosage effect ranges between 240-720 mg per day and it was not dealt with a net quantity. CONCLUSION: Due to its antioxidant activity and antiapoptotic and antiinflammatory effects, its protective effects against amyloidogenes and A β regeneration, it was considered that Ginkgo biloba, can be used in Alzheimer treatment but this claim was not scientifically verified and/or the contradictory results about the subject were reached. For being able to be better understood of the effect mechanism, there is a need more comprehensive studies.

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KEYWORDS

Alzheimer, ginkgo biloba, dementia

Poster Session 11

Submission ID: 1485

DETERMINATION OF ANTIMICROBIAL ACTIVITIES OF SAGE AND LINDEN HERBAL TEAS WHICH ARE SOLD BY TEA BAG AND UNPACKED

DUYGU ZEHİR¹, HALİL İBRAHİM KAYA¹, ÖMER ŞİMŞEK¹

ABSTRACT

In this study, four sage and four linden herbal tea bags purchased from national markets and four unpacked sage and four unpacked linden herbal teas purchased from herbalist were used. The herbal tea bags and unpacked teas are first placed in cups and freshly boiled hot water is added. Brewing time for herbal tea bags was determined as 3-5 minutes and samples were taken for antimicrobial activity studies. Well diffusion method was used to determine antimicrobial activity. *Micrococcus luteus* was used as the indicator bacteria. As a result of the analyzes, it was determined that antimicrobial activity of unpacked sage herbal teas were higher than sage herbal tea bags and antimicrobial activity of linden herbal tea bags were higher than unpacked linden herbal teas.

KEYWORDS

Herbal Tea Bag, Unpacked Herbal Tea, Antimicrobial.

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Poster Session 11

Submission ID: 1486

SOME ORGANOLEPTIC PROPERTIES OF BISCUITS FROM ADDING TO CAROB (CEROTONIA SILIQUA) POWDER

FATMANUR BÜYÜKSARAÇ¹, AYDIN YAPAR¹, CANSU TOPKAYA¹

ABSTRACT

Carob (*Cerotonia siliqua*), also called locust, is an oldest plant of the world. It belongs to the family of Fabaceae and grows in many parts of the Mediterranean region. Carob pod characterized by a high content of carbohydrate, appreciable amount of protein, low levels of fat. Apart from carbohydrates, high amounts of dietary fibre and polyphenols are characteristic of this Mediterranean food. Dietary fibre itself or a diet rich in dietary fibre is known to exert a variety of physiological effects, including improved digestion and attenuation of blood cholesterol and glucose levels. Moreover, raw carob pods and carob pod flour contain substantial amounts of polyphenols especially condensed tannin. Polyphenols exhibit a wide range of biological properties, and among these, the antioxidant activity is the best known. Also, carob pods are rich in K, Ca and Mg. Pods of the carob fruit have long been used as a raw material for food additives production. Due to its sweetness and flavor similar to chocolate, as well as its low price less carob pods milled into flour are widely used in the Mediterranean region as cocoa substitute for sweets, biscuits, and processed drinks production. Additionally, the advantage of using carob powder as a cocoa substitute is that it does not contain caffeine and theobromin. Biscuits are one of the most popularly consumed bakery products by people all over the world. Traditional bakery products are produced from suitable materials, following the classic procedure and using the proper equipment. The most common materials are flour, water, yeast, sugar, vegetable fats or oils, eggs, starch, milk or milk products etc. Some of the reasons for such wide popularity are their ready to eat nature, affordable cost, good nutritional quality, different varieties, availability in different tastes and longer shelf life. Most of bakery products are used as a source for incorporation of different nutritionally rich ingredients for their diversification. The aim of this study was to determine the effect of carob powder on some sensory properties of biscuits and produce a functional food by adding carob powder to the biscuits formulation. Biscuits samples were prepared by using 4%, 6% and 8% of carob powder that were replaced with wheat flour. And also one party was produced without carob powder as control. Color of biscuits samples were determined by HunterlabMiniScan XE. L (lightness) and b (yellowness) value were decreased by increasing ratio of carob powder whereas a (redness) value was increased. Sensory parameters such as color, smell, taste, crunchiness and overall acceptability were evaluated by a panel of 26 persons using 7-point hedonic scale. All of the biscuits received sensory scores higher than 4.2 point. The biscuits having 6% carob powder in the formulation were more liked than other samples having carob powder, in all criteria.

KEYWORDS

Biscuit, carob powder, functional food

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Poster Session 11

Submission ID: 1487

IN VITRO CLONAL PROPAGATION OF A MEDICINALLY IMPORTANT SPECIES: MUSCARI NEGLECTUM GUSS. EX. TEN

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ABSTRACT

Muscari neglectum Guss. Ex. Ten is both a vegetable and an ornamental, herbaceous perennial plant that grows in the Mediterranean region with attractive and scented blue colored flowers. It is rich in total phenolics, flavonoids, monomeric, and anthocyanin contents with high antioxidant and antimicrobial activity. In this species, germination, propagation and seed formation is difficult due to high seed dormancy. The aim of this study was to develop a protocol for rapid and efficient multiplication of this plant which is rich in medicinally important metabolites under in vitro conditions. Mass propagation of surface sterilized *M. neglectum* bulbs was achieved using 4 weeks cold stored bulbs by vertically slicing them in to four. Each quarter of the bulblets was used to obtain twin bulb scales. These were cultured on MS medium containing different concentrations of BAP+NAA. Single bulblet bud noted on MS medium without plant growth regulators used as control. Mean number of bulb buds per explant excluding control ranged 1.5-17.50. The bulblet regeneration percentage ranged from 33.33 to 100%. MS medium containing 8.88 µM BAP-10.74 µM NAA and 17.76 µM BAP-10.74 µM NAA induced 100% regeneration. Mean number of bulblets per explant ranged from 1.25 to 8.00 per explant with bulblet diameter of 0.10 to 0.30 cm. These bulblets grew in the form of laminal out growths without callusing. Maximum number of bulblets per explants was noted on MS medium containing 17.76 µM BAP+2.685 µM NAA. These bulblets had mean bulblet diameter of 0.25 - 0.30 cm. These bulblets post subculturing for eight weeks, increased their diameter in range of 0.31 to 0.48 cm. MS medium containing 8.88µM BAP+10.74µM NAA showed maximum increase in the bulblet diameter. Variable axillary regeneration in range of 25-100% was also noted on each concentration of plant growth regulators post sub culturing. Mean number of axillary bulblets on the mother explants ranged 1-3.04 with bulblet diameter of 0.12 to 0.30 cm. The largest axillary bulblets were noted on MS medium containing 8.88 µM BAP-10.74 µM NAA. Following 3-4 weeks, these bulblets induced spontaneous root initials variably. These developed into visible roots at the end of 8th week. In vitro cultured plants did not differ from normal plants growing in the wild and were uniform in their morphologic characteristics. A novel protocol for micropropagation of this plant has been established. It can be concluded that in vitro production of *M. neglectum* bulbs with significant medicinal value is more advantageous, compared to its propagation under wild conditions; where it takes 4 -5 years to grow to the desired size.

KEYWORDS

Muscari neglectum, in vitro, clonal propagation, regeneration, rooting, acclimatization

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Poster Session 11

Submission ID: 1489

ANTIBACTERIAL ACTIVITIES OF THE ESSENTIAL OIL OF THYMUS SPP., LAVANDULA SPP. AND SALVIA SPP.

CEREN YAVUZ¹, SEVGI MARAKLI¹, TUBA YILDIRIM¹

ABSTRACT

Many naturally occurring essential oils from medicinal plants and herbs have been shown to possess antimicrobial properties and could serve as antimicrobial agents against pathogens [1]. Herbs and their essential oils are the most efficient natural antimicrobial agents have long been used to traditional drug [2]. The objective of this study was to investigate the antibacterial activity of essential oils found in Thymus spp., Lavandula spp., Salvia spp. The essential oils of the these plants were produced by the Clevenger hydrodistillation method. Plant materials (50 g) with small pieces placed in a distillation apparatus with double distilled water and hydrodistilled for 3 h [3]. The antibacterial activities of plant essential oils were determined by disc diffusion method and were tested against standard strains of Staphylococcus aureus ATCC 25923, Escherichia coli ATCC 35218, Klebsiella pneumoniae ATCC 70603, Pseudomonas aeruginosa ATCC 27853, Salmonella enteritidis ATCC 13076 and Proteus vulgaris ATCC 13315. Experiments were performed at three times. Consequently, some of the essential oil investigated in this study showed varying levels of antibacterial effects against the six bacteria. According to the results of disk diffusion method, the highest antibacterial effect was identified essential oil of Thymus spp., Lavandula spp. and Salvia spp., respectively. To evaluate the antibacterial activity of the all essential oil against the test bacteria, the essential oil of Thymus spp. was effective on all test microorganisms. Antibacterial activity of the essential oil of Salvia spp. against Staphylococcus aureus, Escherichia coli, Klebsiella pneumonia and Pseudomonas aeruginosa was found to be less effective than Salmonella enteritidis and Proteus vulgaris. Klebsiella pneumonia and Pseudomonas aeruginosa was the most resistant strains in the test bacteria.

KEYWORDS

Essential oil, disc diffusion, antibacterial activities

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Poster Session 11

Submission ID: 1490

PLANTS FROM ASTERACEAE AND LAMIACEAE USED TRADITIONALLY AGAINST GASTROINTESTINAL DISEASES IN TURKEY

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ABSTRACT

Turkey is rich in medicinal plants and still need more research to explore its treasure. Medicinal plants and natural products are widely used by indigenous people. Historically developed ethnobotanical heritage should be protected for new generations and further studies. As known there are a large variety of plants used to manage different gastrointestinal problems; such as ulcers, gastritis, reflux, indigestion, constipation, diarrhea, nausea, vomiting, hemorrhoids, intestinal parasites, loss of appetite, halitosis; in Turkey. This study aims to report the herbs of most used Families (Asteracea and Lamiaceae) among Turkish folk to treat gastrointestinal problems. Related studies were reviewed. Consequently 24 plants belonging to Asteraceae and 38 plants belonging to Lamiaceae have been identified (1, 2, 3). Literature studies on these plants have been carried out. Totally usages of 39 plants were consistent with previous literature (4). Due to the lack of literatural studies the purported medicinal usages of 15 plants cannot be confirmed. Usages of 8 plants are conflicting use of the information in the literature (4). This study might be useful for the researches about these species. 1) Sargın S.A., Akçiçek E., Selvi S., 2013. An ethnobotanical study of medicinal plants used by the local people of Alaşehir (Manisa) in Turkey. *Journal of Ethnopharmacology* 150, 860-874. 2) Tetik F., Civelek S., Cakiloglu U., 2013. Traditional uses of some medicinal plants in Malatya (Turkey). *Journal of Ethnopharmacology* 146, 331-346. 3) Bulut G., Tuzlacı E., 2009. Folk medicinal plants of Bayramiç (Çanakkale-Turkey). *Marmara Pharmaceutical Journal* 19, 268-282. 4) Baytop T., 1984. *Türkiye'de Bitkiler İle Tedavi*, İstanbul Üniversitesi Yayınları, İstanbul

KEYWORDS

Asteraceae, Lamiaceae, Gastrointestinal, Ethnobotany

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Poster Session 11

Submission ID: 1491

SUGAR COMPOSITION IN THE ACHENES OF THREE MEDICINAL MATRICARIA L. (ASTERACEAE) TAXA

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ABSTRACT

Matricaria L. is a genus of the tribe Anthemideae of the family Asteraceae and it is mostly distributed in Europe, northern Africa, Macaronesia, western, south-western and central Asia, and western North America. This widespread distribution and the diversity of habitats, such as vacant lots, disturbed meadows, areas along roads and railroads, and waste and dry areas, in which *Matricaria* occurs may result in different adaptations to diverse environments. Soluble sugars vary in tissues and organs within and among taxa in the plant kingdom. They are essential to the maintenance of plant-animal interactions. In this respect, carbohydrate reserves in leaves, fruits and seeds etc. are potential food sources for organisms. In this study, we have investigated sugar composition in the fruits (achene or cypsela) of three *Matricaria* taxa (*Matricaria aurea*, *M. chamomilla* var. *chamomilla* and *M. chamomilla* var. *recutita*) for the first time in the literature. Soluble sugars in the achene samples (0.5 g) were separated and quantified. Fructose, glucose, sucrose and maltose were identified on chromatograms. *Matricaria chamomilla* L. var. *recutita* exhibited a higher fructose (1.39 ± 0.12) and glucose (1.44 ± 0.12) content, while *M. aurea* had lower fructose (0.33 ± 0.02) and glucose (0.46 ± 0.05) content. *Matricaria aurea* exhibited higher sucrose (5.07 ± 0.89) content, while *M. chamomilla* var. *recutita* had lower sucrose (2.91 ± 0.73) content. *Matricaria aurea* exhibited higher maltose (0.66 ± 0.09) content, while *M. chamomilla* var. *chamomilla* had lower maltose (0.34 ± 0.06) content. This research was supported by the Scientific and Technological Research Council of Turkey (TUBITAK Project No. 106T162).

KEYWORDS

Matricaria, sugar, achene

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Poster Session 11

Submission ID: 1492

PHARMACOPOEIA AND MONOGRAPH ANALYSIS OF CYNARA SCOLYMUS (ARTICHOKE)

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ABSTRACT

Herbal monographs are guides that contain comprehensive information on the common names of plants used for medicinal treatment, their botanical properties, chemical compositions, geographical distributions, clinical characteristics, pharmacological properties, pharmacokinetic properties, indications, contraindications, safe use data, clinical research data, etc.. There are many sources that record the efficacy, quality criteria and safety of medicinal plants. Herbal medicines also have to be manufactured according to the principles of good manufacturing practices (GMP), as well as modern medicine. If the drug containing the correct characteristics of the correct plant source is supplied and used, it can be ensured that the effect of the produced drug is always the same. This is possible with standardization. The standards of pharmaceutical raw materials and auxiliary substances are registered in pharmacopoeias. Pharmacopoeia is the official book that defines the most accurate raw materials by the monographs which are constantly renewed by the specialist staff and that the pharmaceutical industry is obliged to comply with in the countries where it is valid. *Cynara scolymus* L. (Artichoke) is a plant species that is mostly grown in the eastern Mediterranean region of Turkey and consumed as food. It is used as an appetizer, urine and bile extractor in infusion (2-3 %) for medicinal purposes. Flowers of the plant carries no toxic compounds and thus are edible, while extracts prepared from fresh leaves are frequently used in liver diseases. Artichoke is also known today as an aphrodisiac. Artichoke has records in pharmacopoeia and monographs such as the worldly accepted European Pharmacopoeia, Martindale, ESCOP Monographs, Commission E monographs, French Pharmacopoeia. In this study, the features of the artichoke will be presented as appeared in the existing monographs.

KEYWORDS

Cynara scolymus, artichoke, pharmacopoeia, monograph

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Poster Session 12

Submission ID: 1493

THE EFFECTS OF OREGANO ESSENTIAL OIL SUPPLEMENTATION TO LAMB RATIONS ON SOME MICROBIOLOGICAL AND PHYSIOCHEMICAL CHARACTERISTIC OF LAMB MEAT

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ABSTRACT

Although oregano essential oil has common use in the cosmetics, pharmaceutical and food sectors, information available on its effects on meat quality and shelf life, when incorporated into lamb feed rations, is scarce. This study, the effects of oregano essential oil (OEO) in feed on the water activity, pH, lipid peroxidation, colour parameters and microbial counts of the *Musculus longissimus dorsi* (MLD) were investigated. The control group was fed on a basal ration and the OEO1 and OEO2 groups were fed on a basal ration added 200 mg/kg and 400 mg/kg oregano essential oil, respectively. Akkaraman lambs were fed on experimental rations for a period of 56 days and were slaughtered at the end of the fattening period. Meat quality parameters were investigated in the longissimus dorsi muscle of the slaughtered lambs. Lipid peroxidation of the MLD was significantly affected by storage time (ST), group (G) and ST*G, whilst pH was affected by ST. Lightness (L*) was significantly affected by ST, G and ST*G; redness (a*) by ST and G; and yellowness (b*) by ST and ST*G. The *Micrococcus/Staphylococcus*, total mesophilic aerobic bacteria and total psychrophilic aerobic bacteria counts were significantly affected by ST, G and ST*G; *Pseudomonas* spp. counts by ST; and coliform bacterial counts by ST and ST*G. The antioxidant and antimicrobial effects of oregano essential oil were confirmed.

KEYWORDS

Oregano essential oil, Antioxidant, Antimicrobial, Lamb, Meat quality

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MEDICINAL PLANTS SOLD IN THE HERBAL MARKETS IN AđRI

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ABSTRACT

As result of this research carried out to determine the plants which were used for medicinal aims by local people and sold in herbalists' in Ađrı, local names of 85 species belonging to totally 42 families and medicinal uses were detected. The biggest 5 families in terms of their number of taxon were found as Lamiaceae (12 taxa), Asteraceae (9 taxa), Rosaceae (8 taxa), Apiaceae (6 taxa) and Poaceae (5 taxa), respectively. The most frequently used parts of the plants were found respectively as leaf (18 taxa), fruit (13 taxa), whole flower and plant (9 taxa each), seed and root (9 taxa each). Distribution of taxa to phytogeographical regions were as Euro-Siberian 11, Irano-Turanian 12, Mediterranean 6, and 56 taxa were found as multi-region or region-unknown. Ađrı local people generally used medicinal plants for cough, asthma, bronchitis, and influenza, digestive disorders and kidney stone and disorders. The most common use of plants was as tea.

KEYWORDS

Agri, Medicinal plants, Ethnobotany, Herbal markets

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Poster Session 12

Submission ID: 1497

DETERMINATION OF ENVIRONMENTALLY SENSITIVE AREAS IN SEMIARID FOREST AND AGRICULTURE LAND USES

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ABSTRACT

In recent years, land degradation and decrease in biological productivity have made it necessary to take measures for combating desertification. This study was carried out in a semi-arid forest and agricultural area with a size of 1000 ha located in the Sarıkaya region of Yapraklı district, approximately 45 km north-east of Çankırı province. Environmentally sensitive areas (ESAs) in forests (pine and oak) and agricultural lands have been determined using the 'Desertification Indicator System for Mediterranean Europe (DIS4ME)' system developed for the Mediterranean countries. Soil samples were taken at 632 predetermined sites (252 from agricultural areas, 122 from oak forests and 258 from pine forests) and a desertification survey form was filled at each sampling site. ESAs sensitivity score types were calculated using the DIS4ME model system. Model calculated and field observed desertification risk values were compared to evaluate successes of DIS4ME. Significantly high correlation coefficient ($r = 0.88$) was found between observed and scored values calculated with DIS4ME. The ESAs type sensitivity score surface maps were created for the entire study area and the corresponding land uses by geostatistical methods. The DIS4ME-calculated ESA type sensitivity scores values range from 1.18 to 1.61. The majority of the study area (597.29 ha) was categorized as fragile, and 370.61 ha in critical sensitivity class. The agricultural areas are more vulnerable to desertification than oak and pine forests, respectively. Land use change from forest to agriculture should be avoided to prevent further degradation of the study area.

KEYWORDS

Desertification, geostatistics, environmentally sensitive areas, semi-arid forests.

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Poster Session 12

Submission ID: 1499

INVESTIGATION OF ANTIDEPRESSANT EFFECTS OF GENTIANA OLIVIERI IN THE CHRONIC UNPREDICTABLE STRESS MODEL OF DEPRESSION IN THE RAT

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ABSTRACT

PURPOSE: Flowering herbs of *Gentiana olivieri* known with a local name as “Afat”, is traditionally been used in south-east Anatolia to combat some mental disorders including depression in the different regions of Turkey. The aim of this study is to investigate the antidepressant effects of *G. olivieri* ethanol extract and the possibility of synergistic interactions with imipramine in combinations of different doses on chronic unpredictable stress (CUS) -induced depression. **MATERIAL AND METHOD:** Male Sprague dawley rats (n=8) were subjected to an experimental setting of CUS. The herbal extracts administered orally (1000 mg/kg, 500 mg/kg and 200 mg/kg) alone and in combination of imipramine (10 mg /kg) for 3 weeks during the CUS model; imipramine at 10 mg/kg/day given orally as a positive control. CUS-induced depression was examined by measuring serotonin, noradrenaline, dopamine and monoamine oxidase A (MAO-A) levels in brain tissue, changes in total body weight and serum corticosterone levels and the behavioral parameters of depression. **RESULTS:** Higher dose (1000 mg/kg) of *G. olivieri* and imipramine produced beneficial effects on the stressed rats by effectively improving CUS-induced low sucrose consumption, increasing brain serotonin and noradrenaline levels, reducing serum corticosterone and brain MAO-A levels in rats. *G. olivieri* at doses of 500 mg/kg also increased the brain serotonin levels on the stressed rats. There was no significant difference in body weight among the treatment groups. Our results also showed, unlike the positive control imipramine, *G. olivieri* did not affect the brain dopamine levels. The combination use of *G. olivieri* with imipramine did not show synergistic interactions. **CONCLUSION:** These findings demonstrate the antidepressant effects of *G. olivieri* within a CUS model of depression and the mechanism of action might be attributed to its attenuating abnormalities in monoaminergic system functions in brain and improvement in hypothalamic–pituitary–adrenal axis, although underlying mechanism still remains to be further elucidated.

KEYWORDS

Antidepressant, Gentiana olivieri, Rat.

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Poster Session 12

Submission ID: 1500

FORMULATION AND EVALUATION OF A GEL CONTAINING NATURAL INGREDIENTS FOR THE TREATMENT OF CELLULITE

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ABSTRACT

Cellulite is a cosmetically unacceptable problem that most women experience at some point in their lifetime. Cellulite, also called as edematous fibrosclerotic panniculopathy and local or gynoid lipodystrophy is characterized by irregular relief alterations to the skin surface of the affected areas, giving orange peel, cottage cheese, or mattress aspect. It is frequently found on the thighs and buttocks of women. Approximately 85–90 % of women over 20 years are believed to have some degree of cellulite. On the one hand, it has been recently described as a physiological condition aimed to maximize adipose retention in order to ensure adequate caloric availability during pregnancy and lactation, but cellulite is also a complex problem, involving several different factors and mechanisms, such as metabolic imbalances, alterations in connective tissue structure, genetic factors, inflammatory conditions, reduced microcirculation and hormonal factors. Regardless of the number of women affected by cellulite, only a limited number of studies have been published in the scientific literature so far, botanical derivatives being one of the main groups of evaluated compounds for its treatment. A multi-target/multi-component strategy has been recently recognized as one of the best approaches to counteract the main cellulitic symptoms and signs. The objective of this study was to develop a stable gel type formulation including a variety of natural ingredients (Centella asiatica extract, Coleus forskohlii extract, Aesculus hippocastanum extract, Paullinia cupana oil, caffeine, L-Carnitine, alpha tocopherol) which can be considered as a cosmetic product and evaluate its anti-cellulite efficacy and safety against placebo with non-invasive biophysical techniques (Skin-ph-meter 900®, Corneometer® CM 825, Aramo TS skin diagnosis system, Laser Doppler flowmeter, Infrared thermometer), clinical assessments, a dermatological test and a subjective questionnaire over a period of four weeks. In this content, twenty female volunteers (ages: 18–65 yrs), affected by fat accumulations and/or slight-to-moderate edematous-fibrosclerotic panniculopathy in the lower limbs were selected for the study. The trial was conducted in a single-blind method with the comparison within subjects (each subject being its own control), and volunteers were required to apply the test products on the thigh twice a day, unilaterally, for a period of four consecutive weeks. They underwent two medical examinations, a baseline evaluation at T0 before the beginning of the test and an evaluation at the end of the treatment period T4.

KEYWORDS

Cellulite, herbal ingredients, topical gel, cosmetic product

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Poster Session 12

Submission ID: 1503

USE OF ESSENTIAL OILS IN SEAFOOD PRESERVATION

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ABSTRACT

Essential oil is one of the many occurring compounds naturally found in plants and find their application in pharmaceutical, sanitary, cosmetic, agricultural, and food industries. There is an increasing interest in natural products, intended not only to prevent some diseases, but also to prevent the deterioration of fats and other constituents of foodstuffs. Essential oils can be identified as natural food additives which can find useful application in food preservation. Some scientific studies either *in vitro* or *in vivo* have clearly shown that essential oils have some components such as carvacrol, *p*-cymene, and *c*-terpinene which provide natural preservation effects in food. Among the essential oils, for example thyme and oregano essential oil, either by itself or with other combinations, oil has been tested for antimicrobial, antifungal, and antioxidant effects for different types of seafood such as, anchovy, red porgy, gilthead sea bream, ready-to-eat squid rings, Mediterranean octopus, sea bream and Asian bass fish. Based on the data of all those previously reporting, results were found out to be very promising.

KEYWORDS

seafood, essential oil, carvacrol, p-cymene, c-terpinene

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Poster Session 12

Submission ID: 1506

ASSESSING THE ANTIDEPRESSANT EFFECTS OF GENTIANA OLIVIERI IN THE FORCED SWIM TEST IN RATS

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ABSTRACT

PURPOSE: The aim of this study was to investigate whether *Gentiana olivieri* herbal extracts in different doses exert antidepressant effects, and the possibility of synergistic interactions with imipramine in combinations of different doses in experimental animal models: the forced swimming test (FST), and the open field test. **MATERIAL AND METHOD:** Male Sprague dawley rats were administered the ethanol extract of *G. olivieri* orally (1000 mg/kg, 500 mg/kg and 200 mg/kg) alone and in combination of imipramine (10 mg /kg) for 7 days before the FST. Imipramine was used as positive control in this study and the behavioral parameters were examined. **RESULTS:** The results showed that orally administration of the imipramine (10 mg/kg), ethanol extract of *G. olivieri* (200, 500 and 1000mg/kg) alone and in combinations of imipramine (10 mg/kg) significantly reduced the duration of immobility in FST, which was not due to the alteration in the locomotor activity. *G. olivieri* did not show any synergistic interactions with imipramine. **CONCLUSION:** This study suggests some evidence of antidepressant therapeutic potential of *G. olivieri*.

KEYWORDS

Forced swim test, Gentiana olivieri, Rat.

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Poster Session 12

Submission ID: 1507

THE ESSENTIAL OIL COMPOSITON OF HYPERICUM LYDIUM AND H. HYSSOPIFOLIUM VAR. ELONGATUM

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ABSTRACT

The genus *Hypericum* a member of Hypericaceae family, is represented by 100 taxa, 45 being endemic to Turkey. In Turkish folk medicine, the genus *Hypericum* is known as “sarı kantaron, kantaron, binbirdelik otu, mayasıl otu” and most of them, especially *H. perforatum*, have been used for the treatment of burns, wounds, hemorrhoids, diarrhea and ulcers. Aqueous extracts of the flowering aerial parts of the *Hypericum* species are used in the treatment of neuralgia, anxiety, neurosis and depression. The essential oil compositions of about 50 different *Hypericum* species have been identified in the previous studies. In this study, the essential oil contents of *H. lydium* and *H. hyssopifolium* var. *elongatum* was analyzed by GC-MS/FID. The dried aerial parts of species were cut into small pieces and subjected to hydro- distillation with water for 4 h, using a Clevenger-type apparatus to produce essential oils which were dried over anhydrous sodium sulphate and stored at 4°C until required. The essential oils were diluted by dichloromethane (1:3, v/v) before the GC run. Identification of the compounds was based on the comparison of their retention times and mass spectra with those obtained from authentic samples and/or the NIST and Wiley spectra as well as the literature data. The major components of the essential oils were identified as α -pinen, caryophyllene, β -eudesmene, α -silenene, β -elemene and caryophyllene oxide for *H. lydium* and β -ocimene, α -pinen, β -pinen, caryophyllene and germacrene D for *H. hyssopifolium* var. *elongatum*. Acknowledgements: “This work was supported by Research Fund of the Dicle University FEN.15.012 ”

KEYWORDS

H. Lydium, *H. hyssopifolium* var. *elongatum*, Essential Oil, GC-MS/FID

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RESEARCH REGARDING WITH COOKING VEGETABLE OIL CONSUMPTION HABITS OF STUDENTS

NURAN ERDEM¹, DIDEM ÖNAY DERİN², MEHTAP GÜRSOY³

ABSTRACT

This research is a situation determination and it was planned and executed for determining cooking vegetable oil consumption habits and frequencies of vocational higher education students. 360 students who attend 1. and 2. grades of Aksaray University Güzelyurt Vocational School form the universe of this research. (Total number of students who are enrolled to school is 550). Random sampling method was used in research and total 227 students consisting of 125 voluntary male student and 102 female students participated to study (participation rate is 63.06%) Research data were collected between October 2016- November 2016 by using questionnaire form. Questionnaire form consists of several questions for determining cooking vegetable oil consumption frequencies and habits of students and general information about students. SPSS package program was used for evaluation of data and necessary statistical analysis was made. Ages of students change between 17 and 38 and average age is 19.59 ± 1.97 years. Average body weight of students who had participated to research is 63.20 ± 11.71 kg, their average height is 169.19 ± 8.70 cm, average Body Mass Index (BMI) is 21.99 ± 3.08 kg/m². It was determined that 61.7% of students mostly use sunflower seed oil. It was observed that Majority of students (77.5%) spread butter over bread more than half of them (56.4%) prefers food with normal oil. It was observed that Majority of students use sunflower seed oil (78.4%), butter (60.8%), and olive oil (51.1%), the sometimes consume margarine (47.1%), tail fat (45.9%), corn oil (%45.4), semi fluid margarine (65.2%), they never consume cotton seed oil (75.8%), canola seed oil (68.3%), hazelnut oil (63.0%), lard (%56.4). Consumption of oils which are sources of energy should not be avoided provided that they are balanced. Vegetable oils should be used alternately for getting omega-3, omega-6 and omega-9 fatty acids and awareness of people should be increased.

KEYWORDS

Cooking vegetable oil, oil consumption, fatty acids, omega-3.

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KORUMA PROGRAMI, AKSARAY

EVALUATION OF COLOR AND CHLOROPHYLL CONTENT OF PARSLEY, DILL, CORIANDER AND CHERVIL LEAVES SUBJECTED TO MICROWAVE AND NATURAL DRYING

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ABSTRACT

Parsley, dill, coriander and chervil leaves, which weigh 20 ± 0.06 g with moisture of $83.70 \pm 0.06\%$, $86.96 \pm 0.10\%$, $82.05 \pm 0.02\%$ and $77.99 \pm 0.01\%$, respectively, were subjected to microwave and natural drying. Drying continued until the moisture of parsley, dill, coriander and chervil leaves was decreased to $8.18 \pm 0.01\%$, $8.39 \pm 0.08\%$, $8.23 \pm 0.01\%$ and $8.08 \pm 0.06\%$, respectively. Drying trials in microwave drying were 900 and 400 W. Drying periods for parsley, dill, coriander and chervil leaves lasted for 11-23, 16-26, 18-30 and 12-22 min, respectively, at microwave drying. Moreover, the duration of natural drying trials for parsley, dill, coriander and chervil was 4.5, 3, 5.5 and 5 days, respectively. Energy consumption of parsley, dill, coriander and chervil leaves during 400 W and 900 W at microwave drying were measured as 0.153 - 0.165, 0.173 - 0.240, 0.200 - 0.270 and 0.147 - 0.180 kWh, respectively. Measured values of moisture were compared with predicted values obtained from five thin-layer equations. The best model was selected for each trial according to coefficient of determination (R^2) as well as standard error of estimated (SEE), root mean square error (RMSE) and Chi-square (χ^2). The highest R^2 and the lowest SEE, RMSE and χ^2 were used as the deciding factor in all thin layer equations. Hue angles of fresh parsley, dill, coriander and chervil leaves were 113.92, 107.73, 104.37 and 109.60, respectively. The best color parameters of parsley and dill leaves were determined for microwave drying at 900 W, while the worst color parameters were obtained for natural drying. Furthermore, the closest color parameters to fresh chervil were found in microwave drying at 400 W, whereas the furthest color parameters were determined in natural drying. Also, microwave drying at 900 W provided the best color parameters following fresh coriander, while microwave drying at 400 W gave the worst color parameters of coriander leaves. The highest chlorophyll concentration of parsley and chervil leaves was measured in microwave drying at 400 W unlike dill and coriander leaves in microwave drying at 900 W. Consequently, for all products, not only drying parameters such as drying period and energy consumption but also quality parameters related to color and chlorophyll concentration were used in decisive factors in choosing the best drying method.

KEYWORDS

Chlorophyll, color, chervil, coriander, dill, microwave drying, natural drying, parsley.

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Poster Session 12

Submission ID: 1510

STANDARDIZATION OF EDUCATION PROGRAMS OF HERBAL MEDICINE AND AROMATIC PLANTS TRAINING IN TURKEY

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ABSTRACT

The aim of Herbal Medicine and Aromatic Plants Programs in universities of Turkey includes; 1. To prevent uncontrolled picking of plants and to prevent consumption of these special herbs and plants. This can be achieved by culture of plants in appropriate situations and standardization of procedures. 2. To provide hygienic circumstances and standardization of places where these herbs and plants are being sold. 3. To train members who can work with medical doctors and pharmacists to produce drugs from herbs and plants. Standardization of education programs in Herbal medicine and Aromatic Plants training, Turkey should be done to reach these purposes.

KEYWORDS

Herbal medicine, aromatic plants, education

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Poster Session 12

Submission ID: 1511

**EFFECT OF POLYHERBAL FORMULATION (IMMUPLUS AFS) ON
THE HEMATOLOGICAL AND BIOCHEMICAL PARAMETERS OF ;
FIRST FINDINGS.**

FATİH MEHMET BIRDANE¹, DURMUŞ FATİH BAŞER¹

ABSTRACT

The purpose of this study was to determine the clinical, hematologic and biochemical side effects of herbal mixture ImmuPlus AFS (*Tinospora cordifolia*, *Withania ashwagandha*, *Embllica officinalis*, *Ocimum sanctum*, *Andrographis paniculata*, *Azadirachata indica*, and *Magnifera india*) in newborn holstein calves (n: 22). ImmuPlus AFS were given daily at a dose of 0.05 gr / kg for 15 days starting from the day of birth. Clinical examinations were carried out daily by veterinarians. At the same time, on days 0, 7, and 20, some biochemical parameters and hematological examinations were performed on days 0 and 20. Although some differences were found in biochemical parameters, it was seen that it was within the normal accepted limits (some of them were ALT, AST, ALP, LDH, GGT, Urea, Total Biluribin, Direct Biluribin, Calcium, Phosphorus, Total Protein, CK, Glucose). In terms of measured serum and hematological values, Initial findings indicate that ImmuPlus is not an important side effects in newborn calves.

KEYWORDS

Immune modulator, Tinospora cordifolia, Withania ashwagandha, Embllica officinalis, Ocimum sanctum, Andrographis paniculata, Azadirachata indica, Magnifera india, Calves.

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Poster Session 12

Submission ID: 1512

HERBAL STORAGE MEDIA IN MAINTAINING THE VIABILITY OF AVULSED TEETH

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ABSTRACT

Dental traumas can be seen in various forms, such as crown fracture, root fracture or tooth avulsion. The avulsed teeth must be stored in a suitable environment in which the viability of the teeth can be maintained. Many natural and laboratory solutions have been used to maintain the viability of the avulsed teeth. There have also been studies in which some plants such as teas, medicinal aromatic plants, fruits, which are frequently used in the medical and pharmacological field, have been evaluated and found to be effective as a storage medium for the viability of avulsed teeth, as a result of the popularity of the natural products. In this study, it is aimed to review the easily accessible herbal storage media such as green tea, wild sage, coconut, red mulberry, rice, propolis, aloe vera in order to maintain the viability of the avulsed teeth.

KEYWORDS

Medicinal Plants; Dentistry; Trauma

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Poster Session 12

Submission ID: 1513

FATTY ACID COMPOSITION OF SOME HYPERICUM SPECIES BY USING GC/MS

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ABSTRACT

Hypericum L. is a relatively large genus of the Hypericaceae family that includes about 484 species of trees, shrubs and herbs. Recently, a growing market niche for Hyperici herba products and thus an increasing demand for crude material have resulted in considerable research into the pharmacological activities of the Hypericum genus. Most of this research has focused on Hypericum perforatum L. (Hypericaceae), which is the most common and best known member of this genus and has been certified for marketing as a traditional medicine in many European countries. Although several other Hypericum species are also used as traditional medicinal plants to treat a variety of ailments, comparatively few studies have been reported for other members of the Hypericum genus. Hypericum lydium Boiss. (Hypericaceae) is a perennial herb that can reach a height of up to 60 cm and has yellow flowers and characteristic translucent glandular dots on the sepal margin. Known in Turkish as sancı otu ("cramp herb") and mayasıl otu ("hemorrhoid herb"), H. lydium has traditionally been used in folk medicine to treat menstrual disorders, stomach pains, wounds, hemorrhoids and indigestion. In this study, the fatty acid composition of aerial parts and root of H. orientale, H. pruinatum, H. lysimachioides var. spathulatum and H. hyssopifolium var. elongatum were analyzed by GC-MS/FID. A hundred milligram of the petroleum ether extract was refluxed in 0.1 M KOH solution in 2 mL of methanol during 1h, the solution was cooled and 5 mL of water was added. The aqueous mixture was neutralized with 0.5 mL of HCl solution, it was extracted with diethyl ether: hexane (3.5: 1: 1 mL). The separating organic phase was washed with 10 mL water, and dried over anhydrous Na₂SO₄. The solvent was evaporated in vacuum and then fatty acid methyl esters were obtained. The major components of the fatty acid composition were identified as arachidic and cis-13,16-docosadienoic acids for H. orientale, stearic and cis-13,16-docosadienoic acids for H. pruinatum, H. lysimachioides var. spathulatum and H. hyssopifolium var. elongatum.

KEYWORDS

Hypericum, Fatty acid, GC-MS, cis-13,16-docosadienoic acid

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EVALUATION OF THE QUALITY PROPERTIES OF MINT SAMPLES DRIED AT DIFFERENT TEMPERATURES IN CARBON FIBER ASSISTED CABIN DRYER

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ABSTRACT

Mint (*Mentha piperita*), a medicinal and aromatic plant, is rich in bioactive compounds. In addition to wet and dry production of mint, it is widely used as dried due to not be keeping fresh for long times. Drying temperatures in medical aromatic plants are important to maintain its aroma, etheric oil, total phenolic content, antioxidant activities and color properties. This study was carried out to investigate the effect of different drying temperatures on the bioactive (total phenolic content, antioxidant activity) and color characteristics of the mint samples dried in the carbon fiber assisted cabinet dryer (CFCD), which has a heat source different from the dryers mentioned in open literature. For this purpose, mint samples were dried from initial moisture content of 81-83% to 10% in CFCD system at different drying temperatures (45, 50 and 55 ° C) with an air velocity of 0.8 m/ s. In order to determine the antioxidant activity, the EC50 value was taken into consideration which is determined by the DPPH radical reduction capacity method. L * value indicating the brightness of fresh and dry mint samples were found between 33.06 and 46.14, and a* values indicating green value were found between -7.04 and -1.08. It was also observed that as the temperature increased the green color (a* values) of the samples decreased. The brightness of samples were different than that of raw mint samples at the temperatures of 45°C and 50°C, statistically (p <0.05). Besides, it was determined that the total phenolic content (TPC), which was 103.16± 2.66 (mg/g dry matter) in raw material, decreased to 96.95± 2.8, 95.88± 1.65, 66.32± 3.09 mg / g drymatter for 45, 50, 55°C, respectively. It was found that the drying temperature has an effect on the antioxidant activity (AC) value in the dried samples; and the highest AC value was observed at 50° C It has been determined that the increase in temperature for the drying process of mint samples had negative effects on total phenolic, antioxidant activity and color values. It was recommended that the drying of the mint samples in CFCD should be conducted below 50°C.

KEYWORDS

drying, mint, carbon fiber supported cabinet dryer, quality

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Poster Session 12

Submission ID: 1517

THE EFFECTS OF NITROGEN ON GROWTH AND PHYSIOLOGICAL FEATURES OF LAVENDER

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ABSTRACT

Lavender, in the Lamiaceae family, is an aromatic shrub cultivated worldwide owing to lavender oil of commerce and is used as an ornamental plant. It is also traditionally believed to be antibacterial, antifungal, carminative, sedative, treat headaches, antidepressive, diabetes and effective for burns and insect bites. Plant nutrient requirement is essential for a healthy plant development and, obtaining high yields. Nitrogen is the most necessary element for the plant growth. In the present study we focused on determining the effects of different nitrogen treatments on plant growth and physiological parameters of lavender. For this purpose, 6 different nitrogen concentrations (0, 50, 100, 200, 400 and 800 mg l⁻¹ N; NH₄NO₃) were treated to lavender plants. Root length, shoot height, number of branch, stem diameter, root collar diameter and dry and fresh weights of plant biomass were investigated as plant growth parameters. Leaf chlorophyll concentration (SPAD readings), relative water content and loss of turgidity were evaluated as physiological parameters. As a result, root length, thickness of stem and, root collar, fresh weight of shoot and, total plant, leaf chlorophyll concentration, relative water content and loss of turgidity were significantly affected by nitrogen treatments, statistically. It was determined that up to 200 mg l⁻¹ N nitrogen levels could apply for fertilization of lavender plant in pot. Some adverse effects were observed related to growth parameters in 400 and 800 mg l⁻¹ N treatments while the similar negative effects in terms of leaf chlorophyll concentration, relative water content and loss of turgidity were detected in 800 mg l⁻¹ N. At the end of the study, some results were obtained which will form the basis for future studies to determine the requirement of plant nutrition in lavender plant.

KEYWORDS

Nitrogen, lavender, plant development, plant physiology

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Poster Session 12

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ESSENTIAL OIL COMPOSITION OF 5 ACHILLEA SPECIES BY GC-FID-MS

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ABSTRACT

The genus *Achillea* L. belongs to Asteraceae (Compositae), which is the largest family of vascular plants and distributed throughout the world. *Achillea* is represented by more than 140 perennial herbaceous species worldwide and forty-seven species, 24 of which are endemic, grow in Turkey. *Achillea* species, commonly known as "yarrow", have been used in folk medicine for thousands of years due to their numerous medicinal properties. Today, several therapeutic applications, such as anti-inflammatory, wound healing, spasmolytic and choleric uses, are approved by scientific experimental results. In Turkey, various species of the genus are used in wound healing; abdominal pain; stomachache; symptomatic relief of colds, ulcer, and diarrhea; as diuretic; emmenagog; appetizer; carminative; and insecticidal agent. In this study, essential oil composition of 4 *Achillea* species (*Achillea nobilis* L., *Achillea goniocephala* Boiss. & Balansa, *Achillea sintenisii* Hub.-Mor., *Achillea coarctata* Poir.) growing in Turkey were investigated by GC-FID-MS. As a result of the GC analysis; eucalyptol, chrysanthenone, 1R-a-pinene, o-cymene, isoborneol and spathulenol were the main components of *A. nobilis* L.; eucalyptol, endo-borneol, (-)-camphor, piperitone, terpineol and 4-terpineol were the main components of *A. goniocephala*; Beta-eudesmol, piperitone, caryophyllene oxide and endo-borneol were the main components of *A. sintenisii*; 2-bornanone, eucalyptol, endo-borneol and viridiflorol were the main components of *A. coarctata*.

KEYWORDS

Achillea, essential oil, GC-FID-MS

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Poster Session 12

Submission ID: 1519

COMPLEMENTARY AND ALTERNATIVE TREATMENT METHODS IN MALE INFERTILITY

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ABSTRACT

Objective: Increasing infertility cases cause more and more people to try alternative treatment methods. Aim of In this study determining which alternative ways people tried in case of infertility due to man. **Materials and Methods** The data were scanned in the Turkish and English databases from the Ankara University Library by entering key words such as male infertility, complementary alternative medicine, infertility treatment. The articles from the last 10 years were evaluated. **Results** When studies are examined, it is seen that the use of CAM is increasing day by day in all of the world, the usage prevalence among women is higher but the prevalence of men infertility is high. When the studies are examined, it is seen that men try to lose weight with diet and exercise, Alcohol and smoking stopped in order to increase the number and quality of sperm. In randomized controlled trials with small groups, some studies of acupuncture, vitamin C, vitamin E, saffron and scrotal cooling suggested that a combination of coenzyme Q10, glutathione, Korean red ginseng, omega-3, selenium, zinc and folate and Menevit antioxidant supplementation had a positive effect But it is emphasized that there is no work at the level of evidence. In a very large review study (scanning of textbooks between 815 and 1901) it was stated that 180 plant species were effective on the male reproductive system, but when it was shown that toxic effects were reached, 36 plants were reached and the common feature of these 36 plants was to increase libido . Some of these plants (*Boswellia carterii*, *Chlorophytum borivianum*, *Alternative viagra*, *Phyllanthus emblica*, *Withania somnifera*, *Black cumin*, *Ferula Assa-foetida*, *Crocus sativus* (saffron), *Commiphora mukul* (guggul)) are recommended in the treatment of varicocele induced conditions. **Conclusion:** Studies done with selenium especially in infertility treatment are excessive. After selenium-rich diet, there was a decrease in sperm motility and thyroid hormone levels. However, there are studies that indicate that they have increased. While there are studies showing that acupuncture is effective, it is very limited for yoga. **Conclusion:** It is a fact that complementary and alternative medical practices have been used for men's sexuality and infertility treatment since the past, including many agents and pathways. However, evidence-based work is limited. For this reason, there is a need for evidence-based studies on large groups.

KEYWORDS

infertility, male infertility, complementary and alternative treatment

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Poster Session 12

Submission ID: 1520

PHYTOCHEMICAL PROPERTIES OF GRAPE SEED OIL AND THE EFFECTS ON HEALTHY LIFE

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ABSTRACT

Our country has an important share among other countries with regard to grape growing. Grape seeds are by-products of wine industry with fruit juice and molasses industry. Grape seeds contain fiber, oil, protein, carbohydrate, phenolic compounds and mineral substances. Grape seeds are quite rich in terms of the phytochemicals which contains. The phytochemicals provide protection from many diseases by strengthening the immune system. The amount of oil in grape seeds is between 11-22% to varies with the cultivars. 90% of grape seed oil is composed of mono- and polyunsaturated fatty acids. The highest level of fatty acid is linoleic acid. This is followed by oleic acid, palmitic acid, stearic acid and linolenic acid, respectively. Which are rich in linoleic acid, grape seed oil, LDL (low density lipoprotein) as the cause of the fall is help protect cardiovascular health. Obtained by different methods and very useful for health of grape seed oil is also used in the cosmetic industry and aromatherapy. The amount of vitamin E found in grape seed oil is dependent on variety and environmental factors. Due to the high antioxidant effect of vitamin E has preservation of vascular health, Alzheimer's disease and cancer risk and therapeutical effects of tumors. Therefore, the use of grape seed oil has been suggested as anti-aging and for the prevention of chronic diseases.

KEYWORDS

Grape seed oil, fatty acids, antioxidant, vitamin E, phytochemicals

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Poster Session 12

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DEVELOPMENT OF A NEW PERFORMANCE TEST METHOD TO EVALUATE THE EFFICACY OF HERBAL SHAMPOO FOR HAIR GRAYING

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ABSTRACT

Hair is one of the most important components for the general appearance of each of us. Hair has been regarded as an expression of the personality and the social role for centuries. In many civilizations throughout history, hair has been mentioned positive attributes such as beauty and power. Today, everyone wants to get well-groomed hair without the gender difference. Hair graying, one of the leading hair problems, is associated with ageing and assessed negatively. The psychology of persons experiencing this problem is affected negatively and results in the decrease of confidence. The hair graying may occur due to factors such as heredity, thyroid problems and malnutrition. Hair graying is the whitening of hair as a result of the decrease of the colouring agent in the hair roots called melanin, which provides the hair its colour, the deceleration and even stagnation of its synthesis mechanism (1). When the melanin in the hair structure decreases, air sacs are formed instead of pigment that gives color to the hair and this condition leads to graying of the hair. One of the reasons that reduces melanin is the deficiency or lack of vitamin B. Disorders such as stress, depression, irritability, too much consumption of excessive sugary products, white flour products and animal nutritions are known to increase vitamin B deficiency. Animal nutritions make difficult of the absorption of vitamins due to causing excessive lipoidosis. All these factors lead to an accumulation of hydrogen peroxide that is known to be a major cause of hair graying in hair follicles. Air sacs accumulate from the roots towards the ends of the hair and the hair gets gray since the accumulated hydrogen peroxide at the hair roots prevent the melanogenesis mechanism (2). The hair cosmetic industry has undergone a revolutionary change over the last two decades. One of the new type of hair cosmetics is gradual hair dye. This is home-use product which give the desired color after several days of use. The product has to be applied daily on the hair strand till the desired shade is reached (3). The objective of this study was to develop a new method in order to measure coloring efficacy of an anti-gray shampoo containing natural ingredients. For this purpose, we developed an in-vitro performance test method to compare this product against a commercially available anti-gray shampoo (Alpecin Tuning shampoo). White Caucasian hair swatches were used for the test. To determine melanin content, color measurements were taken with Mexameter MX16 before washing process as a reference and after five washes. After color measurements with Mexameter MX16, photos were taken from the hair tresses for comparison.

KEYWORDS

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hair graying, cosmetic, anti-gray shampoo, topical

Poster Session 12

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UTILIZATION OF TARHANA HERB (ECHINOPHORA SIBTHORPIUNA) IN TARHANA PRODUCTION

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ABSTRACT

Tarhana is a nutritious food substance that is produced by mixing wheat products with yoghurt, some vegetables and spices, fermentation of both lactic acid and ethyl alcohol, and drying after fermentation to increase the storage time. Tarhanan's production pattern is similar to most countries and regions, but may vary in composition depending on tradition, custom and nutrition habits, as well as grain, legumes and vegetable varieties that vary from region to region. Tarhana herb is also used in some regions to provide flavor and aroma to tarhana. Tarhana otu (Echinophora sibthorpiuna) is a plant with yellow flowers, 20 to 45 cm in length and a perennial plant. A total of six species, three of which are endemic, are also known as tarhana otu, which is grown in Turkey, with the names "Çörtük", "Çördük" and "Turşu Otu". They are fresh or dried in the production of meat, pickles, helvardas, soups and tarhana. It is useful in the digestive system. Stomach is good for ulcers. It treats mental and psychological diseases. It gives positive results in asthma, bronchitis, hay fever, kidney stones, rheumatism and eczema treatments. In addition, they are also considered as drugs in the treatment of fungi. Due to the essential oils it contains, it has its own aromatic taste and is used as a flavor for this purpose in tarhans. They increase the amount of ash in the food that they are contributing to the nutritional value. In Tarhana, they are used between 0,5% and 1% of total tarhana dough mass.

KEYWORDS

Tarhana, herb, çörtük.

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THE ESSENTIAL OIL COMPOSITION OF HYPERICUM SCABRUM COLLECTED FROM DIFFERENT LOCALITIES

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ABSTRACT

Hypericum (Hypericaceae) is one of the 100 largest genera that comprise an estimated 22% of angiosperm diversity) with the presence of 484 species from 36 taxonomic sections. Hypericum species are wellknown healing agents in traditional medicine due to various medicinal properties. Despite the large number of Hypericum species, only Hypericum perforatum L. has been studied in depth as pharmaceutically important medicinal crop plant which extracts widely used in Europe as a drug for the treatment of mild and moderate depression. Turkey is an important prevalence centre of Hypericum species. According to the most recent count by Güner et al. (2012), there are a total 96 Hypericum species in the flora of Turkey, 46 of which are endemic. All Hypericum species have been used in Turkish folk medicine under the names “kantaron, peygamber çiçeği, kılıçotu, kanotu, kuzukıran and binbirdelik otu” as sedatives, antiseptics and antispasmodics. Curative value of Hypericum plants have been mainly attributed to the phytochemicals, namely phloroglucinol derivatives, naphthodianthrones, different phenolic compounds and essential oils which possess a great variety of bioactivities. In this study, the essential oil contents of H. scabrum collected from different was analyzed by GC-MS/FID. The dried aerial parts of H. scabrum species were cut into small pieces and subjected to hydro- distillation with water for 4 h, using a Clevenger-type apparatus to produce essential oils which were dried over anhydrous sodium sulphate and stored at 4°C until required. The essential oils were diluted by dichloromethane (1:3, v/v) before the GC run. Identification of the compounds was based on the comparison of their retention times and mass spectra with those obtained from authentic samples and/or the NIST and Wiley spectra as well as the literature data. The samples collected from the four different localities these all shows similar varieties as essential oil content. But when we looked at α -pinen contents, the samples specially collected from Kahramanmaraş have quite higher α -pinen contents than the samples collected from Nevşehir, Van and Elazığ.

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KEYWORDS

Hypericum scabrum, Essential Oil, GC-MS/FID

NURSING STUDENTS USAGE STATUS AND OPINIONS ABOUT MEDICINAL AND AROMATIC PLANTS

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ABSTRACT

OBJECTIVE: Increase in diseases that are difficult to maintain and treat has been observed in parallel with the increase in human life span. The high cost of new technologies used in the treatment of these diseases, obscurity about current care and treatment methods and fears about possible side effects have significantly increased the tendency to use medical and aromatic plants. Turkey has a wide variety of medical aromatic plants and many medical and aromatic plants which have been used for the protection, maintenance of health and therapeutic purposes. Therefore this study was planned to determine the use of medicinal and aromatic plants by nursing students and their opinions on these plants. **METHOD:** This descriptive research was conducted at Necmettin Erbakan University in the spring semester of 2016-2017 academic year. The universe of the research consisted of 370 students who are in 1st, 2nd, 3rd and 4th classes of Department of Nursing in Faculty of Health Sciences of Necmettin Erbakan University in 2016-2017 academic year. Sample selection was not made in the study and it was completed with 257 students who volunteered to participate in the survey. The research data were collected by a questionnaire consisting of 21 questions prepared by the researchers as a result of literature review. The data was analyzed with the use of percentage and mean. **RESULTS:** The average age of the students was 20 ± 1.82 , 80.2% of them were female, 61.5% of them resided in student residence and 90.7% of them did not have any chronic disease. 93% of the students stated that medicinal and aromatic plants are beneficial and 72.8% of them stated that they prefer the use of medicinal and aromatic plants when they are sick, and 84% of them stated that they use medicinal and aromatic plants with the advice of their mother, father or other elders in their families. The most common medicinal and aromatic plants used by the students were determined as linden (61.1%), mint (43.6) and sage (42.8%). It was found that 78.2% of the students stated that medical and aromatic plants strengthen the immune system, 86.4% of the students stated that sufficient research was needed to use these plants, 66.9% of the students stated that these plants increase motivation while studying, 73.5% of the students stated that these plants decrease the psychological stress in the classes and exams and 81.3% of the students stated that these plants can be used as sedative. **CONCLUSION:** It has been determined that students often use medicinal and aromatic plants with the advice of their elders. It is recommended to raise awareness of the community on such issues as getting recommendations from reliable sources for access to these plants and using them on appropriate criteria.

KEYWORDS

Medical, aromatic, plants, nursing students

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USE OF SOLVENT-FREE MICROWAVE METHOD FOR EXTRACTION OF ESSENTIAL OILS

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ABSTRACT

Essential oils are complex mixtures of volatile compounds with strong odor that are extracted from different parts of plants, for example, leaves, peels, barks, flowers, buds, seeds, roots etc. So far, approximately 3000 essential oils have been discovered, about 300 of which are commercially important. Essential oil components are synthesized in plant by the secondary metabolisms and stored in glandular trichomes, oil cells or ducts in plant tissue. In general, essential oils are mixture of terpenes, aromatic compounds, and terpenoids. Essential oils have been widely used for bactericidal, virucidal, fungicidal, antiparasitical, insecticidal, medicinal, pharmaceutical, agricultural and food fields. The conventional methods for extraction of essential oil widely used by the industry are steam distillation, hydrodistillation and solvent extraction. These methods have various disadvantages which greatly effects the yield and quality of the essential oil. Although these methods have been used for many years for essential oils extraction, these applications have some disadvantages in the product such as losses of some volatile compounds, low extraction efficiency, possible toxic solvent residues and damage or alter the action of chemical structure of the bioactive compounds. Therefore, researchers are in search of new technologies, which use less solvent, time and energy. Recently several new techniques like supercritical fluid extraction, pressurized liquid extraction, pressurized hot water extraction, membrane-assisted solvent extraction, solid-phase microextraction, solvent-free microwave extraction, microwave-assisted, and ultrasound-assisted extraction have been developed. Green extraction methods suggest the use of non-toxic solvents for more natural products. Among them, solvent-free microwave extraction (SFME), have become a good option in research on essential oil extractions from plants. The advantages of using SFME are faster energy transfer, shorter time and more environmentally friendly compared to conventional extraction methods. SFME is a combination of microwave heating and dry distillation, performed at atmospheric pressure. In this method, plant material is placed into a microwave reactor, without addition of any solvents including water. Essential oil is evaporated by the in situ water of the plant material. A cooling system outside of the microwave oven condenses the distillate. In this review, a short theoretical background of SFME and the basic principles of the method have been presented. Finally, the potential of the SFME technique has been compared with conventional methods in terms of the extraction of essential oils from aromatic plants.

KEYWORDS

Solvent-free microwave extraction (SFME), Essential oils, Green extraction

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THE DPPH FREE RADICAL SCAVENGING ACTIVITY AND ABTS CATION RADICAL DECOLORISATION ACTIVITIES OF ETHANOL EXTRACTS OF AERIAL PARTS AND ROOT OF HYPERICUM PERFORATUM COLLECTED FROM DIFFERENT LOCALITIES

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ABSTRACT

Synthetic and natural antioxidants are of particularly importance in maintaining the oxidative stress level under the critical point in human organism. Previous in vitro and in vivo studies reported the antioxidant capacity of several species of medicinal plants, acts at cellular level, through cell growth stimulation, membrane potential stabilizing or at molecular level, through ROS scavenging, lipid peroxidation, etc. These roles have been attributed, in part, to their biological active constituents, such as liposoluble and watersoluble vitamins (E and C, respectively) and polyphenolic substances. As plants produce a significant amount of antioxidants to prevent oxidative stress, they represent a potential source of new compounds with antioxidant activity. Some of these plants are those of the Hypericum genus, (Clusiaceae Lindley, syn. Guttiferae A.L. de Jussieu). They include a large number of species distributed worldwide. Several of the botanical species belonging to the genus are used in folk medicine and among them Hypericum perforatum L., also named St. John's Wort, is especially known as a traditional remedy for the treatment of melancholia, abdominal and urogenital pain and ulcerated bums. Over the last two decades, it has been demonstrated that H. perforatum is effective as an antidepressant, an antiviral, and an antimicrobial. The drug contains peculiar chemical constituents such as naphthodianthrones (hypericins), acylphloroglucinols (hyperforin), flavonol glycosides (quercetin derivatives) and biflavones and all the metabolites seem to contribute to its pharmacological activity. Current use of H. perforatum is mainly for the treatment of mild to moderate depression, and drug extracts for antidepressant applications have become increasingly popular. During the recent years, several phytochemical studies on other species of Hypericum have also been performed, leading to the isolation of new molecules, some having biological activity. The ethanol extracts of aerial parts and root of H. perforatum species collected from different localities (Nevşehir, Diyarbakır, Van, Kahramanmaraş and Siirt) were tested for antioxidant (DPPH free radical scavenging activity and ABTS cation radical decolorisation) activities in this study. Studied ten extracts were found quite on

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active on used both two antioxidant activity methods. Also, it was determined that collections from different localities of studied samples are very important for their antioxidant activity.

KEYWORDS

Hypericum perforatum, DPPH, ABTS

Poster Session 12

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GUNDELIA (KENGER) SPECIES NATURALLY GROWN IN TURKEY AND USED FOR MEDICAL PURPOSES

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ABSTRACT

In Turkey, the naturally spreading Gundelia genus is represented by 3 varieties (Gundelia tournefortii L. var. tournefortii L. var. Freyn et Sint, var. tenuisecta Boiss.). With the studies made in recent years, 9 species belonging to this genus have been identified in Türkiye. Of these species, 7 are endemic (G. munzuriensis Vitek, Yüce & Ergin, G. dersim Vitek, Yüce & Ergin, G. vitekii Armagan, G. komagenensis Fırat, colemerikensis Fırat, G. cilicica Fırat ve G. anatolica Fırat) and 2 are new record (G. glabra Mill. ve G. rosea M.Hossain & Al-Taey) for Turkey. In this review, information is given about 9 Gundelia species which are naturally distributed in Turkey.

KEYWORDS

Gundelia, kenger, endemic, Turkey, flora.

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Poster Session 12

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USE OF THYME, BAY, PEPPERMINT AND ROSEMARY ESSENTIAL OILS AS NATURAL ANTIMICROBIAL AGENTS FOR FOOD PACKAGING

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ABSTRACT

Aromatic plants are used since ancient times due to their flavor, preservative, and medicinal properties. Aromatic plants synthesize many compounds with complex molecular structures by their secondary metabolisms. These secondary metabolites are alkaloids, flavonoids, isoflavonoids, tanins, cumarins, glycosides, terpenes and phenolic compounds. Essential oils are obtained from aromatic plants such as oregano, rosemary, thyme, lavender, or peppermint. Essential oils are natural, volatile and complex compounds characterized by a strong odor soluble in lipid and organic solvents. Essential oils have various bioactivities including antibacterial, antiviral, antiinflammatory, antifungal, antimutagenic, anticarcinogenic, and antioxidant activities depending on the quality and quantity of their components. In general, essential oils have two or three major components in high concentrations and other components present in trace amounts. These major components of essential oils provide their biological activities. For instance, usually the main components in essential oils are carvacrol and thymol in thyme oil, 1,8-cineole in bay oil, menthol, menthone and menthofuran in peppermint oil and 1,8-cineole and α -pinene in rosemary oil. Thyme (*Thymus vulgaris* L.), bay (*Laurus nobilis* L.), peppermint, (*Mentha piperita* L.) and rosemary (*Rosmarinus officinalis* L.) are generally used in dishes for their flavors. They are also among the most commonly investigated plants for their preventive properties against microbial and chemical deterioration. The number of studies showing the possibility of using essential oils in food systems to prevent the growth of foodborne bacteria and to extend the shelf life of the food. The antimicrobial activity of essential oils is mostly due to the presence of phenols, aldehydes, and alcohols. Essential oils affect the cell membrane of the pathogenic microorganism. The plants themselves or their extracts can be included into the formulation of food products. One of the main problems about using essential oils of the plants are their negative effects on the sensory properties of the product. In many cases, they make the food undesirable due to their dominant aroma. This problem can be overcome by using the essential oils in the food packaging material rather than including them directly to the formulation of the food. By this way, the release of the bioactive compounds in the essential oils can be controlled and products with acceptable sensory properties and extended shelf life can be obtained. The aim of this study is to provide an overview of the studies concerning the food packaging applications including essential oils of aromatic plants.

KEYWORDS

Food packaging, Essential oils, Aromatic plants

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Poster Session 12

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ANTIMICROBIAL ACTIVITY AND BIOCHEMICAL ANALYSIS OF IBERIS HALOPHILA

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ABSTRACT

Iberis halophila is rare endemic species in Central Turkey, so related research doesn't exist. Antimicrobial activity was investigated against 17 bacteria and 1 fungi by using disk diffusion method. These microbial strains include *Bacillus*, *Enterobacter*, *Enterococcus*, *Escherichia*, *Klebsiella*, *Listeria*, *Pseudomonas*, *Salmonella*, *Staphylococcus* and *Candida* genuses. Twelve of them are standard species and they are important for exact determination of antimicrobial activity. 4.94, 9.87 and 19.74 mg samples were prepared by using ethanol extraction method. Also, bioactive composition of this sample was determined by Gas Chromatography-Mass Spectroscopy and National Institute of Standards and Technology (NIST) library was used for mass spectra analysis. The results were presented that *I. halophila* has antibacterial activity against eight of the tested strain. Several active metabolites were identified, but some composition of this sample is not match with library. Unknown molecule should be analyzed by NMR spectra for 3d structure determination and identification. These results are the first report for the antimicrobial potential and chemical composition of *I. halophila*.

KEYWORDS

Iberis halophila, endemic plant, antimicrobial activity, bioactive composition, ethanol extract

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Poster Session 12

Submission ID: 1537

**MUNZUR GARLIC (ALLIUM TUNCELIANUM (KOLLMANN)
ÖZHATAY, B.MATHEW & SIRANECI) AND TRADITIONAL USE**

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ABSTRACT

The most important feature of Munzur Garlic is that it is single-threaded or rarely two-threaded. It blooms in June and July. The garlic is collected by local people for use in their homes and marketing in August and September. It is traditionally used for food, medical and insect repellent. Munzur Garlic grows naturally on the slopes of Munzur Mountain, Tunceli /Pülümür, Erzincan and Sivas. The plant is under protection because of unconscious and excessive use. It is a kind of economic support to the people of the region when cultural studies are increased. In this review, we will be given information about the medical and economic value of Munzur garlic.

KEYWORDS

Munzur, garlic, Allium tuncelianum, traditional use.

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Poster Session 12

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ANTIMICROBIAL ACTIVITY AND BIOCHEMICAL ANALYSIS OF FRANKENIA HIRSUTA

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ABSTRACT

Frankenia hirsuta is widely located in Turkey, but antimicrobial potential of it wasn't determined. Broad range of microorganisms was used for this determination. By using disk diffusion method, 17 bacteria and 1 fungi susceptibility was analyzed and these microbial species are *Bacillus subtilis* ATCC 6633, *Candida albicans* ATCC 10231, *Enterobacter aerogenes* ATCC13048, *Enterococcus durans*, *Enterococcus faecalis* ATCC 29212, *Enterococcus faecium*, *Escherichia coli* ATCC 25922, *Escherichia coli* CFAI, *Klebsiella pneumoniae*, *Listeria monocytogenes* ATCC 7644, *Salmonella enteritidis* ATCC 13075, *Salmonella infantis*, *Salmonella kentucky*, *Salmonella typhimurium* SL 1344, *Staphylococcus aureus* ATCC 25923, *Staphylococcus carnosus* MC1.B, *Staphylococcus epidermidis* DSMZ 20044 and *Streptococcus agalactiae* DSMZ 6784. 0.77, 1.54 and 3.08 mg samples were prepared by using ethanol extraction method. Also, bioactive composition of this sample was determined by Gas Chromatography-Mass Spectroscopy and National Institute of Standards and Technology (NIST) library was used for mass spectra analysis. The results were presented that *F. hirsuta* has antimicrobial activity against all of the studied study except *E. aerogenes*, *E. coli*. Two of them have high susceptible (higher than 15 mm); eleven of them have moderate susceptible (14-10 mm) and only three of them have low susceptible (9-7 mm). Several active metabolites were identified, but some composition of this sample is not match with library. Unknown molecule should be analysed by NMR spectra for 3d structure determination and identification. These results are the first report for the antimicrobial potential and chemical composition of *F. hirsuta*.

KEYWORDS

Frankenia hirsuta, antimicrobial activity, bioactive composition, ethanol extract.

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Poster Session 12

Submission ID: 1540

QUINOA (CHENOPODIUM QUINOA WILLD.) AS FUNCTIONAL FOODS

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ABSTRACT

Quinoa is a plant crop in the Andean mountains in South America. Recently, there has been increased interest for the product in the United States, Europe, and Asia. Quinoa, which is called as *Chenopodium quinoa* Willd. in Amaranthaceae, is commonly mentioned as a pseudo-cereal. Both leaves and seeds of quinoa are used in human nutrition. Its leaves are consumed as a vegetable. Its seed is used like cereal crops, and can be milled into flour. Quinoa is an excellent example for functional food. The functional properties are originated from its proteins, antioxidants, fatty acids, minerals and vitamins. Quinoa has a high quality protein content and well-balanced amino acid composition. It is rich in lysine and methionine. Quinoa has not gluten. It is recommended for celiac patients because of its gluten-free nature. It is rich in saponins and antioxidants such as phenolics. Its composition particularly gives a strong contribution to human nutrition. It reduces the risk of various diseases. In this review, the functional potential and nutrient components of quinoa are discussed.

KEYWORDS

Quinoa, functional food, celiac

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Poster Session 12

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DETERMINATION OF BIOACTIVE COMPOSITION AND ANTIMICROBIAL ACTIVITY OF RANUNCULUS FICARIA

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ABSTRACT

Medical herbs have many bioactive component and they are used in microbial treatment since ancient time. *Ranunculus ficaria* one of them and it is important for folkloric medicine in Turkey. It is also called lesser celandine and it is native species of west Asia and Europe. *Ranunculus ficaria* investigation were applied against 17 bacteria and 1 fungi by using disk diffusion method. These microbial strains include *Bacillus*, *Enterobacter*, *Enterococcus*, *Escherichia*, *Klebsiella*, *Listeria*, *Pseudomonas*, *Salmonella*, *Staphylococcus* and *Candida* geniuses. Twelve of them are standard species and they are important for exact determination of antimicrobial potential. Bioactive composition of this sample was also determined by Gas Chromatography-Mass Spectroscopy and National Institute of Standards and Technology (NIST) library was used for mass spectra analysis. 5.2, 10.4 and 13 mg samples were prepared by using ethanol extraction method. The results were presented *R. ficaria* has antimicrobial activity against nine tested species. Three of them have high susceptible (more than 15); three of them have moderate susceptible (14-10 mm) and three of them have low susceptible (9-7 mm). Several active metabolites were identified, but some composition of this sample is not match with library. Unknown molecule should be analyzed by NMR spectra for 3d structure determination and identification.

KEYWORDS

Ranunculus ficaria, medicinal plant, antimicrobial activity, bioactive composition, ethanol extract

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Poster Session 12

Submission ID: 1543

ANTIMICROBIAL ACTIVITY SCREENING OF PLAGIOMNIUM ELATUM

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ABSTRACT

In the East Asia, bryophytes are mostly used as economical purpose and their cultivation is applied in moss gardening. Although bryophytes antimicrobial potential is known, most of them are not determined. Bryophyte contain active substances which are significant for healing of pathogen infection. The antimicrobial activity of *Plagiomnium elatum* was investigated against 17 bacterial and 1 fungal species with disk diffusion method. These microbial strains include *Bacillus*, *Enterobacter*, *Enterococcus*, *Escherichia*, *Klebsiella*, *Listeria*, *Pseudomonas*, *Salmonella*, *Staphylococcus* and *Candida* species. Standard species is crucial for antimicrobial screening, therefore twelve of the tested microorganisms are selected from standard species. 0.34, 0.68 and 1.13 mg samples were acquired with ethanol extraction method. Our present study has shown that the ethanol extract of *P. elatum* has antimicrobial activity against nine of the studied strains. This analysis is the first report for the antimicrobial potential of *P. elatum*.

KEYWORDS

Plagiomnium elatum, bryophyte, antimicrobial activity, disk diffusion method, ethanol extract

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Poster Session 12

Submission ID: 1544

SOME NATURAL PLANTS USED MEDICINALLY BY THE PUBLIC IN BOLVADIN, ÇAY AND SULTANDAĞI (AFYONKARAHISAR)

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ABSTRACT

This oral presentation is on medicinal uses of natural plants spreading on districts of Afyonkarahisar: Bolvadin, Çay and Sultandağı, which are located in Inner-Western Aegean region of Turkey. The subject of this presentation is a part of our ongoing master's thesis in which we investigate traditional uses of natural plants in Afyonkarahisar. In our study we identified 50 plant species belonging to 20 plant families as medicinal and here we included some of them. For the study we interviewed with 57 people from 10 villages, 8 towns and 3 district centers. From these people, information on the uses of plants was obtained.

KEYWORDS

Medicinal plants, Ethnobotany, Bolvadin, Çay, Sultandağı

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Poster Session 12

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ANTIOXIDANT PROPERTIES OF FLAVOURED BAGGED TEA AND FLAVOURED ICE TEA

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ABSTRACT

Black and green tea are produced with aromatized or without aromatized. In our country, for flavoured tea production process, some aroma compounds like mint, bergamot, jasmine and lemon are used. In this study, the total phenolic contents and antioxidant activities of flavoured bagged tea and flavoured ice tea samples were analyzed. For this purpose, bagged tea samples, including 9 flavoured green and 5 flavoured black tea samples, and 15 flavoured ice tea which are ready to drink were evaluated. Total phenolics were determined by Folin-Ciocalteu method. Ferric reducing/antioxidant power (FRAP) and 1,1-diphenyl-2-picrylhydrazyl free radical scavenging activity (as EC₅₀) methods were used to analyze the antioxidant activity. In the bagged tea samples, the total phenolic contents were between 36.89 mg GAE/g (green tea with jasmine) and 88.29 mg GAE/g (green tea with bergamot), FRAP values were between 60.44 $\mu\text{mol Fe}^{2+}/\text{g}$ (black tea with bergamot) and 557.18 $\mu\text{mol Fe}^{2+}/\text{g}$ (green tea with jasmine). The lowest EC₅₀ values were determined as 1.69 $\mu\text{g}/\mu\text{L}$ for green tea with lemon, while the highest EC₅₀ values were 104.25 $\mu\text{g}/\mu\text{L}$ in black tea with bergamot. In the flavoured ice tea samples, the lowest total phenolic, FRAP and EC₅₀ values were 170.81 mg GAE/L (ice tea with lemon-ginger), 279.43 $\mu\text{mol Fe}^{2+}/\text{L}$ (ice tea with lemon-ginger) and 5.45 $\mu\text{g}/\text{mL}$ (ice tea with lemon), respectively. The highest total phenolic, FRAP and EC₅₀ values were 872.06 mg GAE/L (lemon ice tea), 8445.08 $\mu\text{mol Fe}^{2+}/\text{L}$ (ice tea with lemon) and 86.85 $\mu\text{L}/\text{mL}$ (ice tea with lemon-ginger), respectively. According to the results of the analysis, the consumption of flavoured bagged tea and flavoured ice tea contribute to the daily intake of antioxidants.

KEYWORDS

Flavoured tea, ice tea, antioxidant, total phenolic

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DETERMINATION SOME ORGANOLEPTIC PROPERTIES OF BISCUITS SUPPLEMENTED WITH FREEZE-DRIED STRAWBERRY POWDER

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ABSTRACT

Strawberry fruits, namely *Fragaria*, is a member of the Rosaceae family. The garden strawberry or modern commercial strawberry is also known as *Fragaria×ananassa*. Strawberries are popularly consumed not only in fresh and frozen forms but also as processed and derived products, including yogurts, beverages, jams, and jellies. Regarding their nutritional and phytochemical composition, strawberries are extremely rich fruit in bioactive compounds such as vitamins A, E, and C and dietary sources of phytochemicals, mainly represented by phenolic compounds. Strawberries have immune regulator, blood-sugar regulator, anti-inflammatory and anticarcinogenic effects thanks to their phenolic content. Fresh consumption of these fruits provides a significant benefit to health. Different drying methods can be used in order to provide longer shelf life for fresh fruits and vegetables. Freeze-drying is one of the best methods to dry fresh vulnerable fruits by protecting their nutrient value. Demand of processed foods, having functional property at least one, is increasing with urbanization. Bakery products have longer shelf life than other fresh foods, easy available and have many different sorts like cakes, breads, biscuits, crackers etc., including other basics protein such as milk, eggs, flour, for human body. Besides these products are so improvable with some other foods or compounds to obtain functional food. Since ancient times biscuit is one of the basic bakery products that is widely-consumed by many people, among all ages, all over the world because wheat flour is one of the easy reachable materials to cook or to consume. Furthermore, biscuits have low humidity that is reason why has long shelf-life so it has a special place in human diet as snack food. Basic ingredients of biscuits are wheat flour, sugar, margarine, water or milk. It may contain trace amount salt, baking powder or any other ingredients depending on recipe or according to taste. The objective of this study to determine some organoleptic properties of biscuits which were fortified with freeze-dried strawberry. Biscuits were produced by replacing freeze-dried strawberry powder with wheat flour. Substitution rates of freeze-dried strawberry 4%, 8% and 12%. Color of biscuits were determined via HunterlabMiniScan XE. L (lightness) and b (yellowness) value were decreased by increasing ratio of freeze-dried strawberry powder. However, a (redness) value increased with ratio of freeze-dried strawberry powder. Color, smell, flavor, crunchiness and overall acceptance were evaluated by sensory panels. Sensory panel was done with participation of 32 people. The biscuits having 4% strawberry was more liked in terms of color and crispiness while control samples were more liked in terms of smell, taste and overall acceptance. The biscuits having 4% strawberry powder in the formulation were more liked than other added-biscuits when only added-biscuits were evaluated among themselves, in all criteria.

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KEYWORDS

Strawberry, biscuit, functional food, sensory analysis

Poster Session 12

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DETERMINATION OF LAURUS NOBILIS L. FROM HATAY REGION BY TRIPLE QUAD GC/MS

MUSTAFA KEMAL SANGÜN¹, SEVGİN ÖZDERİN², GÜRAY KILINÇEKER³

ABSTRACT

Laurus nobilis L. is from the family of Lauraceae, which comprises numerous aromatic and medicinal plants (Hogg et al., 1974). *Laurus nobilis* L. is also known as sweet bay, bay laurel, Grecian laurel, true bay, and bay. The dried leaves are generally used in cooking, and the essential oil is used in the flavourings industry (Bauer and Garbe, 1985). Laurel essential oil, also called laurel leaf oil or sweet bay essential oil, is also used for the preparation of hair lotion due to its antidandruff activity and for the external treatment of psoriasis. *Laurus nobilis* L. fruits are generally utilized for the production of perfumed soaps and candle manufacture because of their fatty acid content (Hafizoglu and Reunanen, 1993). The essential oil of leaves has antibacterial, antimicrobial properties and a potential natural agent for breast cancer therapy. (Ozcan and Erkmen, 2001,). Different studies made on the essential oil show influence of the area of culture, of variety and harvest season on the chemical composition (Flamini et al., 2007). 1.8-Cineole has been identified as the major component of many plant essential oil as well as *Laurus nobilis* L. (Sangun et al., 2007). *Laurus nobilis* L. leaves were harvested in October 2015 respectively from Antakya, Hatay region. Air-dried leaves were related to water distillation for 4 hr using a Clevenger-type apparatus to produce the essential oils. The oils were dried over anhydrous CaCl₂ and stored in sealed vials at low temperature in refrigerator before analysis. The essential oils were analysed by triple quad GC-MS using Agilent (7000 series) and compared with GC-MS Hewlett Packard GCD (model 6890) and (model 5972) equipped with a mass selective detector (MSD). In this study, the composition of the essential oil from the leaves has high content of 1.8-Cineole, Sabinene and α -Terpinyl acetate, but a low content of α -Pinene, α -Phellandrene and trans- β -osimen. 1.8-Cineole was found major component of the leaves essential oil obtained from *Laurus nobilis* L.

KEYWORDS

Laurus nobilis L., Essential oil, Triple Quad GC/MS, Antakya-Hatay, Turkey

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PLACE OF MEDICAL AND AROMATIC PLANTS ORGANIC AGRICULTURE

HÜLYA SAYĞI¹, NURGÜL TÜREMİŞ², MEHTAP BAYKAL¹, AYHAN SAYĞI¹, CELAL ERBAŞ¹

ABSTRACT

Production is the process of shaping nature in order to meet people's needs. Natural resources used unconsciously in eliminating the needs in this process caused irreparable devastation in the balance of nature. As in all areas, the agricultural production process, in which all of its activities are carried out in accordance with the nature, has suffered great damage to nature. In this process, negative impacts on human and environmental health of chemical plant protection inputs used unconsciously in agriculture to increase production led to the search for new plant protection products alternative to these inputs. Medicinal and aromatic plants, which find use in the food and cosmetic industry in a multifaceted way in coordination with the medical and pharmaceutical industries, also have an important potential in combating diseases and pests. Pyrethrum, Artemisia, Mentha, Thymus, Salvia, Origanum, Ocimum, Urtica, Melissa essential oils and extracts are harmful to organic farming with herbal medicines such as azadirachtin, nicotine, pyrethrum, rotenone, allethrin, sabadilla and ryania and some medicinal and aromatic plant species. Can be used against the fight against. Allelopathic effects of secondary metabolites produced by medicinal and aromatic plants in weed control can also be utilized. However, repellent, deterrent and antifeedant properties of these secondary compounds are now seen as an advantage for organic farming. It is stated that plants belonging to the family Lamiaceae, which contain plants with economical prescriptions such as lavender, mint, sage, thyme, reyhan, are the plants most commonly used for plant disease pest and weed control. The major producers of lavender in the world are England and France. France's Provençal region accounts for 60% of its production. A few years ago, the disease that took place in lavender fields reduced production to half. Bulgarian producers have increased their production at this point, and Bulgaria is known as the 'new lavender sovereignty'. In recent years, the effects of synthetic pesticides used in our country and in the world have come to the fore to negative effects on human beings, people and animals, and alternative methods for combating agricultural pests have begun to be preferred. Considering the developments in organic farming in particular, chemical products based on vegetable origin which are friendly to the environment have been preferred instead of chemical products. These can be in various forms, such as unprocessed plant materials, plant extracts, and pure compounds isolated from plants. Lavender plantation is being done intensely in and around Isparta province in Turkey, but it can not meet the needs of the country. It has been observed that root leaves, hulls and extracts of lavender are preventing germination and seedling formation of some weeds. In addition, medicinal and aromatic plants are potential plants that can be taken into alternative sowing seasons, and the extracts and essential oils obtained from these plants can be used to fight against some insects. In the long run, this great mistake was made when most of the people began to suffer from the consequences of this destruction. Now a new and vital constraint has emerged. This is the natural

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balance that must be observed in the production process. The solution to this important problem is the sustainable production philosophy based on the understanding that production can be done by protecting nature.

KEYWORDS

Medical plants, Organic agriculture, Lavender, Allelopathy, Fields of application

THE IMPORTANT MEDICAL PLANTS CONSUMED AS FOOD IN THE CENTRAL ANATOLIAN REGION

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ABSTRACT

Human being have been using the medicinal plants grown in the environment in food, medicine, feed, fuel and handicrafts since they exist. The most important place among these plants is the medicinal plants. Information on the use of medicinal plants for food and medicine is transmitted from generations to generations. Our country is one of the richest countries in the world in terms of its diversity of medicinal plants due to its geographical position and climate conditions. It is known that the Central Anatolia region in Turkey is the region with the most endemic plant species with about 50%. The collected of various edible medicinal plants from Anatolia and their consumption as food plays an important role in the healthy life cycle of rural areas. Edible plants also have endemic medical plants. The medicinal plants consumed by the people of Central Anatolia as food within the nutritional system based on carbohydrates such as oat, wheat, and tarhana which are mainly cereals constitute an important place. Important medicinal plants that can be cooked and renewed in the Central Anatolian Region are *Malva sylvestris*, *Rumex patientia*, *Urtica dioica*, *Polygonum cognatum*, *Ferula elaeochytris* and *Asparagus acutifolius*. The phenolic compounds contained in these plants are rich in protein, A, C and E vitamins, nutritional fibers, mineral substances and essential fatty acids, thus increasing their potential for use as vegetables in our daily diet. In the face of the nutritional problems that arise in our country, it is necessary to transfer the generations of the medicinal plants, which are extremely important in terms of healthy and balanced nutrition consumed for food, and to protect them as cultural identity.

KEYWORDS

Central Anatolia, Edible Medicinal Plants, Food, Diet

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FUNCTIONAL PROPERTIES OF RICE BRAN

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ABSTRACT

Rice (*Oryza sativa*) is one of the most important cereal product in the developing world especially Asian countries and it is the staple food of over half the world's population. It is grown in more than 100 countries and there are around 18,000 varieties accounting for about 25% of the world's food grain production. About 610 million metric tons of rice are produced annually in recent years. More than half of the production belongs to Asian countries such as China, India, Indonesia, Bangladesh, Vietnam, and Thailand. One of the major by-products is rice bran which is accounted for 8% of milled rice. Rice bran is a waste product in the milling process and obtained when it is removed from the starchy endosperm in the rice milling process. Rice bran is a source of proteins, oil, nutrients, and calories. It is high in oil content (15–25%), has a low moisture content (6–7%) and possesses a powdery consistency. It has been used as a feedstock and has the potential to be used as a food ingredient and oil source. Rice bran, which was earlier used primarily as animal feed, is now finding major application in the form of rice bran oil. India and Thailand have been the most successful countries in rice bran oil production. Rice bran has several unique properties. One such feature is the presence of significant levels of minor-elements such as oryzanol, tocotrienol and phytosterols that have a large nutraceutical application. It is a rich natural source of vitamin E, containing up to 300 mg/kg. The major components of vitamin E in rice bran are, γ -tocopherol, and γ -tocotrienol. Rice bran also contains about 3000 mg/kg γ -oryzanol. The studies confirm that rice bran has more than 20% dietary fibre and it is also an excellent source of protein, minerals, unsaturated fat and vitamins. Rice bran protein is higher in lysine content than rice endosperm protein and other cereal bran proteins. Rice bran has great potential in food applications, especially in development of functional foods. They are used in the production of healthy products. Several studies reported the minor components of the rice bran such as gamma oryzanol, phytosterols and other phytosterol conjugates have antioxidant property against the free radicals. Rice bran contains large concentrations of several compounds and has the potential to prevent a range of chronic diseases. It is believed that rice bran serves as an important functional food that has cholesterol lowering properties, cardiovascular health benefits and anti-tumor activity. The gamma oryzanol of rice bran reduced a prominent amount of elevated serum levels in hypothyroid patients. Rice bran fractions prevent high blood pressure, hyperlipidemia, and hyperglycemia.

KEYWORDS

Rice, rice bran, oryzanol

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ANTIOXIDANT ACTIVITY AND PHENOLIC PROFILES OF GRAPE SEED

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ABSTRACT

Grape (*Vitis vinifera*) is one of the world's largest fruit crops, which approximates an annual production of 58 million metric tons. Grapes (*Vitis vinifera*) have been used for their medicinal and nutritional value for thousands of years. Grape seed extract has an incredible antioxidant potential with its flavonoid phytonutrients. These polyphenols include resveratrol and unique oligomeric proanthocyanidin complexes. Grape seeds are a rich source of (+)-catechins, (-)-epicatechin and (-)-epicatechin-3-O-gallate, and dimeric, trimeric and tetrameric procyanidin. There are antimutagenic and antiviral agents of these compounds and these compounds prevent cardiovascular diseases. Today, standardized extracts of grape seed may be used to treat a range of health problems related to free radical damage, including heart disease, diabetes, and cancer. Recognition of such health benefits of catechins and procyanidins has led to the use of grape seed extract as a dietary supplement. Studies have been reported of the procyanidin composition of grape seeds. Grape seed extract may help with a type of poor circulation and high cholesterol. Grape seed extract also reduces swelling caused by injury and helps with eye disease related to diabetes. Many people are interested in grape seed extract because it contains antioxidants. There are several studies reported grape seed may be alternative to synthetic antioxidants. It was determined grape seed promote oxidative stability of cooked meats and fish filets. According to another study the addition of grape seed improved the rheological properties by increasing dough development time and stability of the dough. The results obtained from this study indicate that grape seed can be successfully used in the bread formulae both to improve rheological properties of the dough and to increase antioxidant activity of the bread. In this study, antioxidant activity, total phenolic content (TPC) and phenolic composition of grape seed were determined. Antioxidant activity was determined by DPPH free radical-scavenging assay and TEAC assay. Vitamin C and BHT were used as positive control. DPPH scavenging activity of grape seed was 93 % at a concentration of 50 mg/mL. This value is comparable with vitamin C and higher than BHT. TEAC was calculated as 490 $\mu\text{mol Trolox}$. TPC was determined using the Folin-Ciocalteu method and results were expressed as gallic acid equivalent (GAE) in mg/100 g material. The result of the analysis showed that grape seed has phenolic content of 87 mg/100 GAE. HPLC analysis demonstrated grape seed included 9.4 mg/100g gallic acid, 160 mg/100g catechin, 2.20 mg/100g ferulic acid, 4.60 mg/ 100g rutin, 2.30 mg/100g o-coumaric acid, 1.20 mg/100g p-coumaric acid, 0.80 mg/ 100 g quercetin.

KEYWORDS

Grape seed, antioxidant activity, phenolics

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EFFECT OF SINAPIC ACID ON SOME METASTASIS GENES IN LNCAP HUMAN PROSTATE CANCER CELL LINE

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ABSTRACT

Prostate cancer is also an important disease in terms of chemopreventive strategies due to late age of onset, slow progression, high incidence, identified preneoplastic lesions, and risk groups. A result of the studies demonstrating that synthetic antioxidants can be toxic and carcinogenic, public interest in fruits, vegetables, spices and herbal drugs that are sources of natural antioxidants has increased. Phenolic compounds found in foods are usually identified as inhibitors and potential antioxidants of harmful oxidative processes related to cancer and anti-inflammatory diseases. Sinapic acid (3,5-dimethoxy-4-hydroxycinnamic acid), is a phenolic compound and found in various vegetables (potato and artichoke etc.) and fruit (apples, cherries, strawberries and plums etc.) species, is a derivative of hydroxycinnamic acid. The aim of the study was to investigate the anti-metastatic effect of sinapic acid, in the LNCaP human prostate cancer cells. Cytotoxic effect of sinapic acid was determined by using XTT assay. Total RNA isolation of control and dose groups (IC₅₀ dose of sinapic acid) was conducted using TRIzol Reagent. Expressions of important genes in metastasis including MMP2, MMP9, TIMP1, TIMP2, CDH1 and CDH2 were investigated in the control and the dose groups by qPCR. IC₅₀ dose of sinapic acid was detected as 1 mM for 72h in LNCaP cells. According to qPCR results, significant decreases in the expressions of CDH2, MMP2 and MMP9 genes were determined as 3.23, 3.25 and 2.92 folds, respectively, compared with the control group cells. It is thought that sinapic acid demonstrates antimetastatic activity by regulating expression of important genes in metastasis on LNCaP cells. Furthermore, more detailed studies should be conduct to illuminate molecular mechanism of antimetastatic activity of sinapic acid on prostate cancer. Financially supported by N.E.U. Scientific Research Projects (BAP #151218023).

KEYWORDS

LNCaP cells, Metastasis, Sinapic acid.

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Poster Session 12

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COMPOSITIONS AND HEALTH BENEFITS OF POMEGRANATE PRODUCTS

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ABSTRACT

Pomegranate is a fruit that use for traditional treatment methods among society where is homeland Asia minor. It is also known since ancient times and including in many sacred book. As it consumed fresh, also used anyway like pomegranate juice, pomegranate juice concentrate, as color an flavoring agent in various nutrient; by processing the wine, liquer and vinegar; as dehydrated , which fruit is produced widely in Turkey. Some studies are reported that pomegranate prducts change in some blood value (like HDL, LDL and cholestrol), prevent the prostate cancer, be effective with Alzheimer and increase sperm quality in male patients. Especially phenolic component content of pomegranate products are very effective in preventing the occurrence some disease, causing premature deaths, like cancer, vein and hearth disorders. This article provided information on the content of pomegranate and pomegranates products and it's utility to human health.

KEYWORDS

Pomegranate, pomegranate juice, pomegranate products, antioxidant, polyphenol

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Poster Session 12

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NIGELLA SATIVA AND ITS EFFECT ON THE HEALTH

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ABSTRACT

Nigella Sativa, known one of three species of the genus Nigella from the plant family Ranuncula, is one of frequently consumed plants and has a rich historical past. It generally grows in West Asia, Middle East and Europe in the world and around Konya in Turkey. It has been used as protective and flavoring for long years. The active components of the plant take place in the seeds of Nigella sativa. In the recent years, in both our country and Middle East, it has become one of the popular spices of alternative medicine. Since it is believed that it showed positive effects on health in Middle East countries, it is also known as blessed seed. Thymoquinone, among active components of Nigella sativa, is important in terms of its effects on health.. AIM:. With this study, it was aimed to compile the studies examining the effects of Nigella sativa on health RESULTS: Some in vivo and in vitro studies carried out suggest that the active components in the seed of Nigella sativa showed effectivity inhibiting tumor formation. In the studies examining the effect of Thymoquinone, one of the active components of Nigella sativa on cancer cultures, in similar way, was showed that the growth of cancerous cell was reduced. But, there are also some studies showing that a significant effect was not provided. In a number studies carried out, it was seen that the seed of Nigella sativa provided positive effect on immune system and it was met its inhibitor effect on allergy formation and inflammation process. In a number of similar studies, it was claimed that the use of fat of Nigella sativa on allergic diseases such as allergic rhinitis, bronchial asthma, and atopic asthma may have positive effects. In addition, it was reported that it may make contribution to controlling hypertension, providing diuretic effect. In the studies examining its antibacterial effect, it was revealed that it frequently showed protective effect against many species of bacteria such as .coli, Bacillus subtilis, Streptococcus faecalis, Staphylococcus. In a number of studies carried out on the individuals with Type 2 diabetics, it was identified that Thymoquinone among the components of Nigella sativa significantly reduced HbA1C and also with antioxidative effect, its protective effect against neuronal damage was met. But there are some studies suggesting that it did not show positive effects on diabetics. Although Anticonvulsant effects of use of Epilepside Thymoquinone are met, there are no numerous supportive studies. CONCLUSION: Current literature data related to the Nigella sativa concentrated on antioxidative, antibacterial, anti-inflammatory, anticonvulsant, immune system supportive, and hyper glycaemia reductive effects and its positive effects were frequently met. But the studies carried out are frequently based on the administration of Nigella sativa as supplement, the amount of daily consumption is not clear. Any adverse effect regarding its use in high doses were not reported. But since its long term effects are not completely known, consumption in high quantity should be avoided and comprehensive studies on the subject should be carried out. Keywords: Nigella sativa, health, thymoquinone

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¹SELÇUK ÜNİVERSİTESİ AKŞEHİR KADİR YALLAGÖZ SAĞLIK YÜKSEKOKULU BESLENME VE DİYETETİK BÖLÜMÜ



KEYWORDS

Keywords: Nigella sativa, diet, health, thymoquinone

Poster Session 12

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ELLAGIC ACID

FATMA GÖNÜL SOLMAZ¹, ERKAN YALÇIN¹

ABSTRACT

ELLAGIC ACID Fatma Gönül SOLMAZ, Erkan YALÇIN Ondokuz Mayıs University, Faculty of Arts and Sciences, Department of Biology, 55139 Samsun, Turkey E-mail: gonul.solmaz@omu.edu.tr ABSTRACT Ellagic Acid (EA, 2,3,7,8-tetrahydroksi-chromeno; C₁₄H₆O₈) has been characterized as a natural dimeric derivative of gallic acid. It is found in various fruit and vegetables including strawberry, mulberry, pomegranate and walnut. Ellagic Acid, which is a phenological plant compound, has been studied extensively in various experimental cancer models. Besides a decrease in the incidence of chemically induced lung, small intestine, breast and esophagus tumors, decreases have been observed in rat esophagus tumors, chemically induced mutagenesis and tumor diversity. Ellagic Acid can be observed in different tissue and cells of mammals, such as liver, endothelial cells, immune cells, kidney and lung and it is also an anti-inflammatory agent and antioxidant. As a result of the assessment of the effects of ellagic acid on rat C6 glioma cell cultures when two dimensional culture models are used, it was found that ellagic acid decreased tumor cell viability, caused impairment in cell structure and inhibited cell proliferation. Ellagic Acid also heals oxidative damage following renal ischemia/reperfusion damage and histopathological changes that occur. In another study conducted in 2006, it was found that in patients who drank a glass of (200-250 ml) pomegranate a day following radiotherapy or surgery, the doubling period of PSA increased to 54 weeks from 15 weeks. Pomegranate juice contains polyphenols, gallotannins and anthocyanin and it has been reported to prevent prostate cancer in vitro. In our country, compounds, which are obtained from flowers, leaves, shells or other parts of various plants through different methods, are used in the treatment of almost all kinds of diseases from cancer to diabetes. For a molecule to be a drug, first of all there should be a hypothesis which predicts it can be useful in a specific disease or a symptom. According to the results of all these studies, ellagic acid is a healing compound with antioxidant effects and it prevents cell proliferation. With these properties, it is in line to become a drug. Aspirin, which is well known today (active ingredient, acetylsalicylic acid) was discovered with the observation that shells of willow tree reduced fever. Accordingly, fruit such as pomegranate, mulberry, raspberry and strawberry, which are distributed in our country with a rich flora, should be assessed effectively in terms of ellagic acid active ingredient. Ethnobotany studies should be stepped up in our country. Biologists, pharmacologists and pharmacists should assess the results obtained and their contributions to both the field of health and to the economy of the county should be increased by making the necessary attempts about the subject.

KEYWORDS

ellagic acid, pomegranate

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Poster Session 12

Submission ID: 1563

MERSİN (MYRTUS COMMUNIS L.) HERBS

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ABSTRACT

Myrtle (*Myrtus communis* L) is a medicinal and aromatic plant from the Myrtaceae family. It is found in coastal regions of our country whereas it is often grown in Mediterranean countries, Asia, America and in other countries such as Southern Russia, Iran, Tunisia and New Zealand in the world. The plant, which has got evergreen leaves, is a chick pea-sized, blackish bush with purple seeds. Myrtle is consisted of rich volatile oils, phenolic compounds, flavonoids, tannins, anthocyanin pigments and fatty acids. The plant has antiseptic, deodorant, constipating, appetising, sedative, antihemorrhagic, antioxidant, antimicrobial, antifungal, antiinflammatory, antimutagenic, insecticidal, antinociceptive, antiviral, analgesic, molluscicidal and antigenotoxic effects as well as antiprotozoal properties against *Trichomonas vaginalis* and antiparasitic properties against *Leishmania* and *Plasmodium*. *M. communis* fruit was used in Traditional Medicine in the treatment of many different infectious diseases such as diarrhea and dysentery, and its leaves were benefited as an antiseptic and antiinflammatory agent in the treatments of urinary infections, wound healing and antifungal diseases (Candidiasis) as well as an antidiabetic or an antitussive agent and were used in the management of stomachache. Although its rare incidence, toxicity of myrtles might lead nausea, vomiting and diarrhea; besides respiratory distress and asthma attacks in infants and children. In this review the traditional use of myrtle plant will be informed along the pharmacolog

KEYWORDS

Myrtle, Pharmacology, Toxicology, traditional use

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Poster Session 12

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USAGE OF LINSEED FOR FUNCTIONAL MILK PRODUCTION

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ABSTRACT

In recent years consumer demands concerning food have changed significantly and concept of functional food has been growing extensively. Functional foods are modified foods for certain physiological functions other than providing nutrient requirements. Milk fat consists mostly of saturated fatty acids resulting in negative consumer perception due to health concern related to saturated fats. Thus, there is an opportunity to alter the milk fat content and its fatty acid composition according to the consumer needs. It is very difficult to modify milk fatty acid composition for human health. Linseed contains about 36-48% oil rich in unsaturated fatty acids. Alpha linolenic acid constitute of approximately 50-55% of total fatty acids in linseed. Linseed is an important feedstuffs that can be used as an energy and protein source in lactating dairy cattle. It has high antioxidant activity due to high content of secoisolariciresinol diglucoyside as a precursor of lignans in linseed. Dietary linseed supplementation can increase the content of alpha-linolenic acid and conjugated linoleic acid, decrease the ratio of omega 6/omega 3 and saturated fat content and increase the proportion of stearic and relative to other saturated fatty acids. These enhancements in the fat profile of milk give consumers food with a healthier fat profile.

KEYWORDS

Linseed, Milk, Functional milk, Fatty acid

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DETERMINATION OF PHENOLIC CONTENTS OF CYCLAMEN ALPINUM BY HPLC

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ABSTRACT

Cyclamen genus belonging to the family Primulaceae, is used as an ornamental plant as well as a medicinal plant. Antifungal, antiinflammatory and antinociceptive activity properties have been determined in studies and are also used in folk medicine. Cyclamen alpinum Dammann ex. Sprenger was identified by Schwarz as endemic under the name Cyclamen trochopteranthum O. Schwarz in 1975 but nowadays although it is again called C. alpinum, its endemism is controversial. Phenolic compounds and quantities were determined by HPLC from C. alpinum. 9 standard phenolic compounds were performed and the amounts indicated in C. alpinum plant were determined; gallic acid (10.01 µg/g), 3,4 dihydroxy benzoic acid (33.65 µg/g), 4 hydroxy benzoic acid (125.33 µg/g), chlorogenic acid (2.73 µg/g), vanillic acid (121.35 µg/g), caffeic acid (0.13 µg/g), p-coumaric acid (5.78 µg/g), ferulic acid (3.25 µg/g), cinnamic acid (2.25 µg/g). The amount of phenolic substances at the end of the HPLC may vary according to the method of extraction of the plant and the conditions of the region it is growing.

KEYWORDS

Cyclamen alpinum, HPLC, Phenolic content

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Poster Session 12

Submission ID: 1566

HOPS (HUMULUS LUPULUS)

ÇIĞDEM ÇEBİ ŞEN¹, FÜSUN TEMAMOĞULLARI²

ABSTRACT

Humulus lupulus, also known as "Maya Herb" or "Beer Flower", is widely grown around in Bilecik-Pazaryeri, Turkey. Hops plant is a plant with a stout root, heart-shaped leaves and cone-like flowers. It is an indispensable raw material of beer production since the desired bitterness, aroma and taste is provided with hops depending on the beer. In recent years, hops, which have begun to be used in pharmaceuticals and cosmetics as well as beer making, are a multi-year industry plant. Hops preparations are used as sedatives, especially for the treatment of sleep disorders, and for activating gastric functions. It has also antibacterial and antifungal effects. A potent phytoestrogen in hops, 8-prenylnaringenin (8-PN), has an activity greater than other established plant estrogens. Although some researchers have reported no estrogenic effect of the hops, other researchers have found a high estrogenic effect. In another study conducted, the prenyl flavonoids obtained from the hops were investigated effect on cancer, menopausal temperature pressures and osteoporosis, and as a result they were found to slow down the bone erection and reduce the temperature pressures. It has also been suggested that these compounds may be responsible for a variety of reproductive disorders, including a decline in sperm concentration in men with negativ effects on sexual desire. In this review, the effect of hops on sexual activity was investigated.

KEYWORDS

Hops, sexual activity

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Poster Session 12

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THE USE OF AROMATIC PLANTS, ESSENTIAL OILS, AND THEIR ACTIVE COMPONENTS IN BROILER NUTRITION AS PHYTOGENIC FEED ADDITIVES

FİGEN KIRKPINAR¹, ÖZGÜN IŞIK¹, SELİM MERT¹

ABSTRACT

In recent years, products containing essential oils derived from several spices and herbs could be used feed additives as growth promoters in animal nutrition. The ban on the use of antibiotics as feed additives has accelerated the investigation of alternative feed additives for animal nutrition especially broiler nutrition. Herbs, spices and products derived from them are mainly essential oils. Great amounts of these active components can also be found in essential oils (EO) of the associated aromatic plants. Hence, the chemical composition and concentration of active components varies greatly dependent on their source. These phytogetic additivites may have more than one mode of action, including improving feed intake and flavour, stimulating the secretion of digestive enzymes, increasing gastric and intestinal motility, endocrine stimulation, antimicrobial, anti-viral, anthelmintic and coccidiostat activities, immune stimulation, anti-inflammatory and anti-oxidative activity and pigments. Natural feed additives of aromatic plant origin, also referred to as phytogetic substances are healthier, less regarded as chemical hazards and generally regarded as safe. Aromatic plants, essential oils, and their active components are incorporated in broiler diets to replace synthetic feed additives in order to stimulate or promote the effective use of feed nutrients which may subsequently result in better growth performance and improved feed efficiency. Moreover, active components of aromatic plants may improve digestion and stimulate the immune function in broilers. Therefore, the purpose of this review is to give an overview on and definition of aromatic plants their EO and active components as phytogetic feed additives, chemical composition and mode of action, as well as on the use of these ingredients in broiler diets with particular attention paid to broiler performance characteristics.

KEYWORDS

Aromatic plants, essential oils, broiler

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EFFECTS OF IRRADIATION AND MODIFIED ATMOSPHERE PACKAGING ON THE QUALITY OF THYME DURING STORAGE

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ABSTRACT

The aim of this study was to evaluate the effects of gamma-irradiation and modified atmosphere packaging on the quality properties of thyme during storage. Dried and ground thyme (*Thymus vulgaris*) was packaged under 100% N₂ (modified atmosphere packaging, MAP) or air (aerobic packaging, AP), and gamma-irradiated at 0 kGy (as control), 6 kGy or 14 kGy. The changes in total mesophilic aerobic bacteria and yeast-mold counts, sensory properties (odor, color intensity, overall acceptability), essential oil yield, total phenolic content (TPC), 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging activity and antimicrobial activity were evaluated during 6-month storage. Total mesophilic aerobic bacteria and yeast-mold counts of thyme were approximately 4.7 log/cfu (MAP) and 4.5 log/cfu/g (AP) in control and decreased to below 1 log/cfu after irradiation at 6 and 14 kGy at the beginning and did not change during storage. The color intensity of 14 kGy irradiated thyme in MAP was lower compared to the control at the beginning of the storage, but the difference was not significant after 6-month storage. Irradiation under MAP increased essential oil yield and DPPH radical scavenging activity at time zero; however, the differences due to irradiation were lost after 6 months of storage. Color intensity and overall acceptability of the spice were decreased after 6-month storage. There was an increase in total phenolic content in AP, but a reduction in DPPH radical scavenging activity in the essential oil of thyme during 6-month storage. An increase in antimicrobial activity against *Bacillus cereus* was noted after 14 kGy irradiation at the beginning of the storage period. The antimicrobial activity against *Escherichia coli* and *Staphylococcus aureus* was higher in MAP than AP. The antimicrobial activity of the thyme essential oil was decreased during 6-month storage. In conclusion, Irradiation under both types of packaging was highly effective on decontaminating thyme. Irradiation under MAP had a positive contribution to essential oil yield, antioxidant and antimicrobial activity of thyme, but a negative effect on color intensity compared to irradiation under AP. The effects of MAP on the irradiation-induced changes were generally become insignificant after 6-month storage.

KEYWORDS

thyme, irradiation, modified atmosphere packaging, quality

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ONOSMA MALATYANA BINZET EXTRACT MEDIATED BIOSYNTHESIS OF AG DOPED ZNO NANOPARTICLES AND ITS SENSING APPLICATION

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ABSTRACT

The fabrication of nanostructured materials have gained much attention in the field of catalysis in recent years by virtue of their unique properties, large surface area, and strong interaction with other materials. Semiconductor-based heterostructures play an important role in nanodevices and sensors applications. ZnO nanostructures are technologically important material and are used in a wide range of applications such as catalysis, photocatalysis, sensors and other industrial applications [1-4]. Similiar to other semiconductors, ZnO has poor selectivity or sensor response. ZnO is also doped with nobel metals (Ag, Au and Pt) to achive selectivty and enhance sensor response. In this study, we report a facile, simple and low cost synthesis of Ag doped ZnO nanoparticles using Onosma malatyana Binzet root extract. The synthesized Ag doped ZnO nanoparticles were detailed characterized by scanning electron microscopy, X-ray powder diffractometer, UV-vis spectroscopy and dynamic light scattering. In addition we fabricated Ag-ZnO modified carbon paste electrode (AgZnO-CPE) for detection of paracetamol (Figure 1). Figure 1. Typical cyclic voltammogram of bare CPE, ZnO-CPE, Ag-CPE and AgZnO-CPE electrode with 0.1 mM paracetamol in 0.1 M phosphate buffer solution (pH = 7.20) at scan rate 50 mV/s. Inset show magnification of bare CPE and ZnO-CPE response. Keywords: Green synthesis, Onosma malatyana, nanoparticle, sensor, paracetamol Acknowledgements This study was supported by the Research Fund of Mersin University in Turkey with Project Number: 2016-1-AP4-1429. References [1] K. Saoud, R. Alsoubaihi, N. Bensalah, T. Bora, M. Bertino, J. Dutta, Synthesis of supported silver nano-spheres on zinc oxide nanorods for visible light photocatalytic applications Materials Research Bulletin 63 (2015) 134-140. [2] B. Sarma, B. K. Sarma, Fabrication of Ag/ZnO heterostructure and the role of surface coverage of ZnO microrods by Ag nanoparticles on the photophysical and photocatalytic properties of the metal-semiconductor system Applied Surface Science 410 (2017) 557-565. [3] R. Kumar, D. Rana, A. Umar, P. Sharma, S. Chauhan, M. S. Chauhan, Ag-doped ZnO nanoellipsoids: Potential scaffold for photocatalytic and sensing applications Talanta 137 (2015) 204-213. [4] Y. Wang, X. He, K. Wang, X. Zhang, W. Tan, Barbated Skullcup herb extract-mediated biosynthesis of gold nanoparticles and its primary application in electrochemistry Colloids and Surfaces B: Biointerfaces 73 (2009) 75-79.

KEYWORDS

Green synthesis, Onosma malatyana, nanoparticle, sensor, paracetamol

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EFFECTS OF DIETARY OREGANO OIL ON NUTRITIONAL QUALITY OF BROILER MEAT

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ABSTRACT

The general consumer rejection to synthetic additives has been increasing in recently. For this reason, in recent years interest has arisen in the use of natural essential oils with the intention to improve meat quality, without leaving residues in the meat or the environment. Broiler meat has many desirable nutritional characteristic such as low lipid content and relatively high concentrations of polyunsaturated fatty acids (PUFA) such as n-3 PUFA's [eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA)]. Physicochemical and sensory properties of broiler meat as well as its storage life is very important. The addition of oregano essential oil in broiler diets could effective in delaying lipid oxidation. The better oxidative stability of broiler meat receiving the diets supplemented with oregano oil may probably the result of antioxidant constituents of the oregano oil that entered the circulatory system and were distributed and retained in meat. Furthermore, the strong smell of oregano oil may penetrate into muscles and organs, which would improve their composition, colour, pH, lipid oxidation and sensory properties as well as storage and processing values. The essential oil of oregano mainly consists of carvacrol, thymol, and their precursors, c-terpinene and q-cymene it has already been used with the intention to improve the quality and quantity of broiler meat. Furthermore, oregano oil improves meat storage stability after slaughter in poultry, protects against the negative effects of stress on broiler meat quality characteristics. Thus, the addition of oregano oil to broiler diets could significantly positive affect chicken meat quality. The purpose of this review is to provide an overview of the published data on the potential of oregano oils in broiler meat productin and to describe their possible modes of action with particular attention paid to carcass characteristics, meat composition, colour, pH and sensory quality of broiler meat.

KEYWORDS

Oregano oil, broiler meat characteristics

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IMPORTANCE OF BLACK SEED (NIGELLA SATIVA) ON LOW- CHOLESTEROL EGG PRODUCTION

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ABSTRACT

Egg as one of the animal products is an important food source. Eggs that highly consumed in the World contain many essential amino acids, fatty acids, vitamins and minerals for healthy nutrition. Egg consumption has been reported to decrease the blood glycemic index and increase the high-density lipoprotein cholesterol level. However the most important factors for not reaching an adequate level of egg consumption are consumption habits, egg cholesterol level and factors leading to arteriosclerosis and coronary heart failure of high cholesterol foods. To prevent coronary heart diseases daily cholesterol consumption is limited to 300 mg according to the reports of National Cholesterol Education Program and American Heart Association's Nutrition Committee. Egg consumption decreases in the developed countries due to the cholesterol level of 200-300 mg in an egg. Because of those reasons, low cholesterol egg production is of great importance for public health. For this purpose dietary supplementation of additives especially probiotics, various plant and plant extracts has been used. Black seed (*Nigella sativa*) from these natural additives has been widely used in traditional for respiratory health, gastrointestinal health, kidney and liver functions, circulation and immune system. Egg yolk cholesterol concentration decreased with dietary black seed. This reduction may be due to a decrease in the concentration of triacylglycerol and phospholipid in the serum. Black seed plays an important role in functional egg production by reducing cholesterol synthesis by inhibiting the lipogenic pathway of acetyl CoA in the liver.

KEYWORDS

Black seed, low-cholesterol egg, functional food

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Poster Session 12

Submission ID: 1573

GİNSENG AND CANCER

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ABSTRACT

GİNSENG AND CANCER The concept health affecting lifetime and quality of life is defined as wellbeing of the individual from the physical, emotional, and social aspect. The factors such as changing life conditions, unhealthy diet, sedentary life time, and stress, negatively affecting health, prepare a ground for the various diseases. On the prevalence of cancer, which shows rapidly increase in the present days, the effect of unhealthy diet is highly important. With understanding of importance of diet, the interests of people have increased to the various nutrients and supplements to protect their health. One of these plants is also ginseng. Ginseng makes effect on health with its components such as ginsenoside, triterpenic saponosides, polysaccharides, peptides, polyacetylenic alcohols, and fatty acid. In the recent period, particularly on the diseases such as cancer and diabetics, the studies toward the effects of ginseng have increased. **AIM:** In this study, it was aimed to compile the relationship between ginseng intake and sort of cancer. **METHOD:** In the study, the effect mechanism of ginseng in being protected from cancer were scrutinized. By examining the actual literature data studying the relationship of ginseng consumption and cancer, the effects of ginseng on cancer formation and course of cancer formed were evaluated in detail. **RESULTS** Just as there are a number of studies showing that ginseng has a protective effect against cancer, there are also a lot of publications showing that it is not effective. It was suggested that ginseng, with saponosides and ginsenosides, which present in its content, showed anticarcinogenic effect against the various sort of cancer. However, its molecular mechanism is not clear. Thanks to ginsenosides, the studies were met, which showed that it reduced cytokines and provided an effect strengthening immune system in cancer patients. It was reported that ginseng may be effective on the various sorts of cancers such as lung and liver cancers, particularly prostate and ovarian cancers on women. In addition, also in liver fibrosis with its antioxidative feature and by supplying fat destruction, its effects toward reducing fat accumulation were seen. The amounts of ginseng used in the studies differ from each other and the suggestions regarding the amount of use are not clear. **CONCLUSION:** It was seen that ginseng may be effective on the different sorts of cancers. It was identified that it had positive effects on especially prostate, ovarian, and lung cancers. However, some studies were also met, which showed that it was not effective on cancer. The studies on the use of ginseng for cancer treatment were less and it is stated that its effect mechanism is not clear. There is a need for further studies on this subject. In addition, for being able to offer clear suggestions about the amount of use, the number of studies should be increased. **Keywords:** Ginseng, cancer, diet, antioxidant

KEYWORDS

GİNSENG,CANCER,DIET,ANTIOKXIDANT

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Poster Session 12

Submission ID: 1574

INVESTIGATION OF LINDEN (*TILIA SPP.*) AND ROSEHIP (*ROSA CANINA*) SAMPLES SOLD IN TEKİRDAĞ PROVINCE IN TERMS OF AFLATOXINS

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ABSTRACT

Linden (*Tilia spp.*) and rosehip (*Rosa canina*) are widely consumed as alternative herbal tea by adults and children in order to benefit from healthy components they contain or prevent various diseases. However, studies have shown that herbal tea including linden and rosehip can be contaminated with toxigenic molds as well as pathogenic bacteria, and under favorable conditions molds can produce mycotoxins which have negative effects on human health. The presence of aflatoxins, known to be carcinogenic, teratogenic, mutagenic and hepatotoxic, and classified as "Group I: Carcinogenic to humans" by the International Agency for Research on Cancer (IARC), in these products is a threat to public health. However, the number of studies on the presence of aflatoxins in linden and rosehip is limited. For this reason, the aim of this study was to investigate the presence of aflatoxins in these products using HPLC method. 15 linden and 15 rosehip samples sold as unpackaged were used as the material of the study. The samples were provided from Tekirdağ province in Turkey in February and March 2015. In addition to aflatoxin content, moisture and water activity values and total mesophilic aerobic bacteria and total yeast-mold counts were also determined. 0.158 µg/kg AFG1 and 0.168 µg/kg AFG2 were determined in one of the linden samples and 0.162 µg/kg AFG2 was determined in another linden sample. Aflatoxin levels of these samples were not higher than the maximum permissible levels. The rest of the linden and rosehip samples were determined to be contaminated with at least one of the four aflatoxins with the levels below the limit of quantification (0.155; 0.168; 0.156; 0.162 µg/kg for AFB1, AFB2, AFG1, AFG2, respectively). The mean moisture content of linden and rosehip samples were found to be 10.97% and 14.58%, respectively. The mean water activity values were determined as 0.58 and 0.62 for linden and rosehip samples, respectively. Total mesophilic aerobic bacteria counts of the linden samples ranged between $1.0 \times 10^3 - 4.3 \times 10^6$ cfu/g and the rosehip samples ranged between $1.0 \times 10^3 - 6.4 \times 10^4$ cfu/g. Total yeast-mould counts of the linden samples ranged between $1.0 \times 10^3 - 1.2 \times 10^5$ cfu/g and the rosehip samples ranged between $1.0 \times 10^3 - 3.6 \times 10^5$ cfu/g. As a result, yeast-mold and mesophilic aerobic bacteria contamination were detected in linden and rosehip samples, and aflatoxin was detected at low levels. This results suggest that toxigenic molds can grow in linden and rosehip and under sufficient conditions aflatoxins can be produced in these products. Acknowledgment The authors thank to Namık Kemal University Scientific Research Projects Committee for the support of this study having the project number NKUBAP.00.24.YL.14.18.

KEYWORDS

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Linden (Tilia spp.), rosehip (Rosa canina), aflatoxins



Poster Session 12

Submission ID: 1576

EFFECTS OF CITRONELLOL, GERANIOL AND NEROL ON VIOLACEIN PRODUCTION

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ABSTRACT

Quorum sensing (QS) is a cell to cell communication system. Bacteria co-ordinate the gene expression of many bacterial behaviors including violacein, antibiotic, virulence factors production and biofilm formation using this system. Violacein is a purple pigment by produced *Chromobacterium violaceum* with controlled QS. In this study, inhibitory effects of citronellol, geraniol, nerol were tested on the production of violacein using *Chromobacterium violaceum* CV026 and *C. violaceum* VIR07 biomonitor strains. The results showed that citronellol, geraniol and nerol inhibited violacein production by 75%. Therefore, citronellol, geraniol and, nerol might be suitable for development into antivirulence agents.

KEYWORDS

Citronellol, geraniol, nerol, violacein

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THE EFFECT OF CORNELIAN CHERRY ON THE RISK OF CANCER

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ABSTRACT

THE EFFECT OF CORNELIAN CHERRY ON THE RISK OF CANCER In sustaining a healthy life, the role of adequate and balanced diet is relatively more. In the recent year, one of the factors kept responsible for the increase of the prevalence of cancer is also unhealthy diet. It is known for long years that providing adequate and balanced diet and give more place to antioxidative nutrients in diet had a protective effect against cancer. It was suggested that cornelian cherry, one of the antioxidative nutrients, with the strong phenolic substances in its content, could be effective against cancer. **AIM:** In this study, it was aimed to evaluate the relationship between cornelian cherry consumption and risk of cancer. **METHOD:** In this compilation study, by examining the actual literature data studying the relationship of cornelian cherry consumption and cancer, the effects of the fruit cornelian cherry toward the risk of cancer were evaluated in detail. **RESULTS:** It is known that the antioxidative effect of cornelian cherry arises from the phenolic substances in its content. It is reported that, cornelian cherry, preventing free radical formation, is protective against cancer. In addition, with components of flavonoids and amino acid, affecting lipid mechanism, it supports its antioxidative effect. In a number of studies, it was observed that the fruit cornelian cherry provided a protective effect against a number of sort of cancer at the significant level, particularly prostate cancer, breast, uterine, and liver cancers. In the individuals consuming high amount of cornelian cherry, the risk of cancer formation was found to be significantly lower compared to the individuals consuming less cornelian cherry. But there are also studies identifying that cornelian cherry consumption showed no effect on cancer. It is stated that giving place to cornelian cherry in daily diet may be protective against cancer and the amount suggested to the consumers are not clear in the studies. **CONCLUSION:** It was seen that cornelian cherry, an important antioxidant, can provide protective effects against cancer by means of the different mechanisms. Its positive effect in being protected from prostate cancer is remarkable. However, the effect of the fruit cornelian cherry on the studies toward using it in cancer treatment is not clear and there is a need for further studies on this subject. It is suggested that its consumption should be increased and the number of the studies on the amount of effective intake should be increased.

KEYWORDS

Cornelian cherry, cancer, antioxidant, , phytology, flavonoids

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AN ANALYSIS OF THE ANTIMICROBIAL ACTIVITY OF CASTANEA, RHODODENDRON AND ASTRAGALUS HONEYS

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ABSTRACT

This study aims to compare the antimicrobial activities of different honeys collected from different regions. Honey is a sweet substance that honeybees store in honeycombs after collecting flowers nectars and secretion of plants and certain living beings on the plants, and converting them by adding their unique substances. Honey consists of around 400 components. Honey has been used for medical purposes by numerous cultures since the antiquity. In this study, pollen analyses, which are compliant with the literature, were conducted on the total of 9 honey samples collected from different places, and it was detected that 3 of them were Castanea (*Castanea sativa*), other 3 were Rhododendron (*Rhododendron* sp.) and the last three were Astragalus (*Astragalus* sp.). The pH, % Brix values and antimicrobial activities were studied. Antimicrobial activities of honey samples were investigated by using disc diffusion assay method against four Gram positive bacterias (*B. subtilis*, *S. aureus*, *L. monocytogenes*, *C. perfringens*), four Gram negative bacterias (*P. aeruginosa*, *E. coli*, *S. enteritidis*, *K. pneumoniae*) and a fungus (*C. albicans*) also. pH and % Brix values were measured by pH meter and refractometer. It was established that the lowest pH value was those of G1 and G2 honey samples as 3,62, the highest pH value was detected as 4,55 on K3 sample. The lowest %Brix values was in K2 sample as 55,76 and the highest was 78,1 in R3 sample. The highest antimicrobial activity among the samples was demonstrated by K3 sample against *L.monocytogenes* (13.77 mm), while the lowest average antimicrobial activity was performed by R1 sample (8,41 mm). R2, R3, K1, K2 and K3 samples showed antifungal activity on *Candida* type fungi, while no antifungal activity was observed in R1, G1, G2 and G3 samples. The highest antifungal activity was seen on R3 sample (11.79 mm). The pH and %Brix values observed in the study have similar properties with those of previous studies. Also, the honey samples have been observed to have similar antimicrobial activities.

KEYWORDS

Honey, Antimicrobial activity, pH, Brix

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THREATENED STATUS OF MEDICINAL PLANTS COLLECTED FROM NATURE IN TURKEY

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ABSTRACT

Association between people and native plants are constituted from traditional uses and collecting from nature in Turkey where is in a rich region with a total of 12 000 plant taxa. Many of the plant species take their place in different forms in markets depending on the regional or local resources. Number of plants on the list which are obtained in different studies on this subject are also high. Collected part of 500 taxa in this group also known as non-wood forest product is also different each other. Damage level may change depending on the collected organs and collecting density. For instance, collected flower and leaf parts from linden species (*Tilia* sp.) doesn't cause a significant damage to the plant. However, collected some plants together with roots will always constitute a danger for these plants. Regular collecting of species that are widespread in Turkey and have high market value slow down the process of extinction. This situation can change depending on the ability of regeneration, rate of reproduction. According to IUCN data, 15 000 medicinal plants in worldwide are at risk in different categories. Approximately 350 plant species traded by collected from nature in Turkey, and 35 of these plants are endemic. Among the most important reasons in damage of medicinal plants are change in land use except for the collection process. In this study, threats of species that are traded by collecting from nature in Turkey are revealed; some insights have been made on this subject by taking into consideration to distribution areas. For instance, *Liquidambar orientalis* is not yet reported as endangered, but it's just on the verge of danger. While the area of this plant's distribution in 1949 is more than 6 000 hectares; it is now below 1 500 hectares. It's also seen that *Juglans regia* is in danger at near threatened status; while *Cedrus libani* is also at vulnerable status. In case these species are formed with large groups in certain areas such as valley or forests, are in danger of extinction. The danger level may increase in the shrubs or herbaceous plants that are spread in smaller areas or open into different uses. For instance, *Tchihatchewia isatidea* native endemic in East Anatolian Region is within the vulnerable status.

KEYWORDS

Medicinal plants, collecting from nature, status of threatened, Turkey

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DIETARY THYME (THYMUS VULGARIS L.) USAGE TO IMPROVE SHELF LIFE OF POULTRY MEAT

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ABSTRACT

Poultry meat has an important food among animal food sources. Meat is an important food for human health due to having protein, essential amino acids, lipids, minerals and vitamins. Poultry meat has many desirable nutritional properties such as low lipid content and relatively high concentration of polyunsaturated fatty acids. Increasing the degree of unsaturation of meat by dietary manipulation increases susceptibility of meat lipids to oxidative deterioration. Lipid oxidation affects colour, odour and flavor negatively and a reduced shelf life. In recent years researchers have focused on increasing shelf life of meat. For this reason plant and plant extracts having antioxidant activity have been used extensively. Thyme (*Thymus vulgaris* L.) has been studied by several researchers. Thyme oil contains phenolic compounds such as thymol, carvacrol and γ -terpinene having important biological activities and pharmacological properties. Thyme can improve the oxidative stability of meat due to having these phenolic compounds. Considering the consumer preference for natural antioxidants, thyme could be used as natural antioxidant for improving shelf life of meat.

KEYWORDS

Thyme, Poultry meat, Antioxidant, Shelf life

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ANTIMICROBIAL ACTIVITY OF SOME SPICES

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ABSTRACT

In this study, antimicrobial activities of methanol extracts of some packaged and unpackaged spices including thyme, cumin, mint, cinnamon were investigated against *Escherichiacoli* ATCC 11303, *Pseudomonas aeruginosa* ATCC 19429, *Salmonella typhimurium* ATCC 13311, *Enterococcus faecalis* ATCC 33186 and *Bacillus cereus* ATCC 11778. For determination of antimicrobial activity, different concentrations of these spice extracts were tested against bacterias by agar diffusion method. It was examined that the extracts of unpackaged spices exhibited higher antibacterial activity against *Enterococcus faecalis* ATCC 33186 and *Bacillus cereus* ATCC 11778 in comparison to packaged spices. Methanol extracts of all spices showed variable degrees of antibacterial activity against the other bacterias. The *Enterococcus faecalis* ATCC 33186 was determined as the most resistant strain for antimicrobial activity of packaged and unpackaged spices of methanol extracts. Also Ampicillin (10µg) and Tetracycline (30µg) were used to determine sensitivity of the tested bacterias and comparison.

KEYWORDS

Spices, antimicrobial activity, agar diffusion method

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Poster Session 12

Submission ID: 1587

PHYTOCHEMICAL AND PHARMACOLOGICAL PROPERTIES OF SUMAC SEED

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ABSTRACT

Sumac (*Rhus coriaria* L.) seed has long been used as an important spice in traditional medicine. Sumac is rich in B vitamins, gallic acid, benzoic acid, ascorbic acid, hydrolysable tannins, volatile oils, anthocyanins and flavonoids. The major volatiles are aliphatic, aldehydes, hexahydro farnesyl acetone and oxygenated terpenes. Due to the presence of these bioactive compounds sumac has properties of antibacterial, antifungal, antioxidant, anti-inflammatory, anticancer, hypoglycemic and hypolipidemic activities. Sumac is rich in oleic and linoleic acids. Myricetin is the major flavonol in sumac seed. Water extracts of sumac seeds have a strong antioxidant and antimicrobial activity against food-born pathogenic bacteria. Xanthenes and aromatic components have been active properties against *Candida albicans* and *Aspergillus flavus*. The sourness of sumac is due to the presence of organic acids such as malic, citric and tartaric acids, whereas the astringent taste is due to its tannin. Therefore sumac has an economic importance due to a source of functional food, nutraceutical ingredients, its also increasing use in cosmetic and pharmaceutical industries.

KEYWORDS

Sumac, Functional food, Phytochemical properties, Pharmacological Properties

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Poster Session 12

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IN VITRO ANTIBACTERIAL ACTIVITY OF ESSENTIAL OILS FROM MEDICINAL PLANTS AGAINST BACTERIAL FISH PATHOGENS

ÖZNUR DILER¹, ÖZNUR GÖRMEZ¹

ABSTRACT

During the last decades, there has been a continuous growth of aquaculture industries all over the world and such intensive production would experience disease problems. Various synthetic chemicals and antibiotics have been used to prevent or treat fish diseases with a partial success. However, continuous use of antibiotics leads to drug resistance and thereby to a reduced efficacy of the drugs. In recent years, the ability of medicinal plants to antimicrobial effective has been studied. The objectives of this study were: to investigate the in vitro antibacterial effect of Oregano (*Origanum vulgare*), St. John's-wort (*Hypericum perforatum*) and Nettle (*Urtica dioica*) essential oils against bacteria species (*Yersinia ruckeri* and *Lactococcus garviae*) by disc diffusion test. The essential oils except to *U. dioica* that was most antibacterial effect against *Y. ruckeri* and *L. garviae* microbial strains.

KEYWORDS

Origanum vulgare, *Hypericum perforatum*, *Urtica dioica*, antimicrobial activity

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INVESTIGATION OF RHEOLOGICAL BEHAVIOR AND PHYSICAL PROPERTIES OF THYME ESSENTIAL OIL AT DIFFERENT TEMPERATURES

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ABSTRACT

Essential oils usually economically important plant-sourced oils. They are widely used in food industry because of their aromatic and antimicrobial effect. They also have great economic importance. In food industry, thyme essential (TEO) oil is used as an antimicrobial agent and some food product used as a flavouring agent. In this study, rheological properties of TEO was investigated at different temperatures (20°C, 30°C, 40°C, 50°C and 60°C), and the best model describing the rheological characteristics of this oil was determined. In addition, the physical properties (optical rotation, refractive index, solubility ratios (v/v) with 96% ethanol, and relative density) and color analysis of TEO were evaluated at different temperatures (20°C to 40°C and 60°C). It was determined that rheological characteristics of TEO were best described with Newtonian model. For the same shear rate, shear stress values and viscosity values decreased as the temperature increased. It has been identified that color values of the essential oils were different depending on the temperature. As temperature values increased L* values decreased while a*, b* values increased. Physical property results of TEO were given depending on temperature (20°C, 40°C and 60°C) respectively, as follows; optical rotation values were 64.63±0.21, 65.84±0.22 and 86.56±0.16, refractive index values were 1.49±0.0015, 1.476, 1.4753±0.0047, solubility ratios (v/v) with 96% ethanol were 6, 3.33 and 3.83, relative density values were 0.966±0.38, 0.943±0.02 and 0.713±0.01 g/cm³. It was obtained that physical and rheological properties of TEO depends on temperature. Higher process temperatures adversely affected physical and quality properties of TEO. Low temperature process conditions are recommended to be applied to provide higher quality products including thyme essential oil. It is thought that results of these study could contribute valuable information for industrial handling of TEO especially in pumping lines and heating processes. Further study on the shelf life of TEO and its use in innovative applications should be conducted. This study was financially supported by Scientific and Technical Research Council of Turkey (TUBITAK, 2209-A Undergraduate Students National Research Funding Program).

KEYWORDS

essential oil; thyme; viscosity; quality; density

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Poster Session 12

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FUNCTIONAL FOOD: QUINOA

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ABSTRACT

Quinoa (*Chenopodium quinoa*) seed has excellent nutritive value due to having high and good quality protein and essential amino acids. Essential amino acids are higher in quinoa than wheat. Lysine in quinoa is two times higher in that of wheat. It is a good source of energy and rich in mineral, vitamin and bioactive compounds. Quinoa has bioactive compounds such as polyphenols, saponins, flavonoids and phenolic acids. These bioactive compounds decrease blood cholesterol level, prevent the development of cancer cells, eliminate toxins, improve immune system and prevent cardiovascular disease. The quinoa, which has its own unique aroma, has attracted a lot of attention recently in terms of its suitability for Turkish taste as it is preferred in world cuisines. Quinoa has a wide range of uses. Quinoa seed flour can also be used in bread making alone or mixed with other cereal flours. Pilaf can be made from rice with quinoa seed. Beer-like beverages and breakfast cereals can be produced from quinoa seeds. Since it has high nutritional value, it is also used in baby food production.

KEYWORDS

Quinoa, functional food, bioactive compounds

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THE USE OF MEDICINAL AND AROMATIC PLANTS AS A FUNCTIONAL FOOD COMPONENT IN MEAT PRODUCTS

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ABSTRACT

Functional foods are defined as foods that are formed by the addition of bioactive ingredients obtained from fully natural sources, to the foods we consume. Functional foods should provide additional benefits on human physiology and metabolic functions, as well as meeting the basic nutrient needs of the body. Essential oils, powders and extracts obtained from medicinal and aromatic plants, also conjugated linoleic acid, dietary fiber and probiotic microorganisms are widely used in meat products as a functional food components. Powders, essential oils and extracts used in meat products are obtained from seeds, leaves, stems, fruits and roots of medicinal and aromatic plants such as culinary herbs, spices, fruits and vegetables. Medicinal and aromatic plants have many functional properties (antioxidant, antimicrobial etc.) in meat products due to their secondary metabolites such as phenolic acids, flavonoids, alkaloids, terpenoids and tannins. In addition, medicinal and aromatic plants used in meat products improve sensory properties such as taste, odor and color. Different solvents (ethanol, methanol, acetone etc.) and extraction methods (maceration, percolation, soxhlet, microwave etc.) are used to obtain essential oils and extracts. It has been reported in literature studies that antioxidant activity is more effective in extracts obtained from solvent extraction, whereas antimicrobial activity is more effective in essential oils obtained from water extraction. Furthermore, medicinal and aromatic plants, and their powders, essential oils and extracts have the potential to become new generation substances for human and animal nutrition and health. In this study, information about functional properties of powders, essential oils and extracts obtained from medicinal and aromatic plants used in meat products were given, and studies about on this subject were compiled.

KEYWORDS

Meat products, medicinal and aromatic plants, functional properties

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Poster Session 12

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ANTI-FUNGAL EFFECTS OF SOME MEDICINAL PLANT ESSENTIAL OILS ON *ARUM ITALICUM* UNDER IN VITRO CONDITIONS

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ABSTRACT

Geophytes, which constitute a significant part of our biological diversity, have a considerable potential in food, perfumery, pharmaceutical industry, and ornamental plant industry owing to their rich secondary metabolites, starch contents and ostentatious leaves and flowers. It is extremely critical to produce and export of the plant *A.italicum* free from other pathogens, particularly fungal diseases. In this study, anti-fungal effect of some medicinal plant essential oils (sage, thyme, lemon, peppermint, and cinnamon) which were added into shoot regeneration medium following the sterilization procedure was examined by using shoot explants on tubers of *Arum italicum*. Explants taken from *Arum italicum* plant were washed by keeping under tap water for 30 minutes. Tubers were firstly kept in 95% ethanol for three minutes and then were exposed to sterilization process in 15% commercial bleach for 10 minutes. Sterilized shoot tips were rinsed with sterile bidistilled water 3 times for 5 minutes in each. MS medium containing plant growth regulators (1-4 mg/L BAP and 0.25-1 mg/L NAA) 2% sucrose, and 0.8% agar in different combinations of shoot regeneration hormones was prepared, essential oils in rates of 0 (Control), 125, 250, and 500 ppm were added into MS medium. Essential oils were dissolved by using 0.1 % Tween 20 and 10% n-hexane. Sterilized explants were inoculated into MS medium. They were cultured under controlled conditions in 16/8 hour illumination period, at 24±1 oC for 4 weeks. As a result of the study, it was determined that essential oils of thyme, cinnamon, and peppermint inhibited fungal contaminations (*Aspergillus* sp., *Penicillium* sp., and *Fusarium* sp.) occurring in MS medium compared to the control and increasing concentrations had a fungicidal effect.

KEYWORDS

essential oil, Arum italicum, in vitro, MS, antifungal activity

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Poster Session 12

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ANTIOXIDANT EFFECTS OF SOME AROMATIC PLANTS USED IN MEAT AND MEAT PRODUCTS

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ABSTRACT

Lipid oxidation is one of the most important changes in meat and meat products that reduce quality and limit shelf life. Lipid oxidation causes negative changes on sensory attributes such as color, flavor, odor and nutritive value of the product and potentially toxic compounds. The oxidation of lipid-containing foods can be delayed or slowed down by the use of antioxidants. The antioxidants can be of synthetic or natural origin. Although synthetic antioxidants have been widely used in the meat industry to inhibit lipid oxidation, the trend is to decrease their use because of the growing health concerns among consumers about such chemical additives. In recent years, some aromatic plants have been commonly used in meat and meat products due to their antioxidant effects. These plants, which are used as natural antioxidants, are important in terms of phenolic compounds. The antioxidant activity of phenolic compounds is due to their ability to scavenge free radicals, donate hydrogen atoms or electron, or chelate metal ions. Tea, various spices (rosemary, thyme, sage, etc.), grape and kernel, berries and citrus fruits have high phenolic content and can therefore be used as natural antioxidant in meat products. In this review, antioxidant effects of some aromatic plants used in meat and meat products were discussed.

KEYWORDS

Lipid oxidation, aromatic plants, natural antioxidants, meat and meat products

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Poster Session 12

Submission ID: 1595

ORTA ANADOLU BÖLGESİ TIBBİ ADAÇAYI (*SALVIA OFFICINALIS* L.) ISLAHI ARAŞTIRMALARI

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ABSTRACT

Salvia officinalis, Lamiaceae, known as Dalmatian Sage or common sage has been gaining popularity in food and drug industry worldwide, recently. Even the existence of many sage species on the World, the genus *officinalis* has medicinal common use. Indigestion and inflammation disorders, excessive sweating, including that associated with peri-menopause; relief of pressure spots that result from the use of a prosthesis; and as a flavoring for foods are the main areas where the plant is mainly consumed. Sage oil has also been employed as a fragrance in soaps and perfumes. Wide adaptability and non-selective climatic requirements of the plants made it possible to receive high biomass, and several harvests during the same plantation period. Present study was conducted in Ankara, during the successive two growing seasons of 2014 and 2016. Thirty-three spontaneous hybrid common sage lines (*Salvia officinalis*) were evaluated regarding their biomass production and essential oil characteristics employing 4 different standard sage cultivars and lines. Following yield parameters were recorded as; the plant height was ranged 50.3 to 97.5 cm, canopy diameter was 36.0 to 95.0 cm, fresh herb yield was changed 59.9 to 593.4 g/per plant, drug herb yield was 12.6 to 183.9 g/per plant, drug leaf yield was 16.1 to 74.5 g/per plant and the leaf ratio was around 53.42-67.01%. The essential oil components of the lines were determined by GC-MS at Western Mediterranean Agricultural Research Institute, Antalya. The essential oil ratio was changed between 0.88 and 2.42%. All the yield parameters of the lines were found statistically significant. α -thujone, 1.8 cineole, borneol, camphor, β -thujone, camphene and viridiflorol were the main components. More than ten lines had less than 20% of α -thujone. *Phytophthora cryptogea* was identified as devastating pathogen confirmed by molecular characterization, besides some other *Fusarium* species.

KEYWORDS

Common sage (Salvia officinalis L.), plant height, canopy width, drug herb yield, drug leaf yield, essential oil yield, α -thujone, Phytophthora cryptogea

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OVERDOSE OF CINNAMON BARKS IS THE CAUSE OF POISONING IN THE GEDIATRIC PATIENT: CASE REPORT

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ABSTRACT

The use of herbal medicine has existed since the beginning of human history and interest in alternative medicine has increased in the last two decades. The use of these methods has increased in treatment. Also, drug interaction, toxicity, overdose and side effects are increasing. Approximately, 70 percent of the herbal drug users continue to use another drug at the same time. The fact that the use of herbal remedies is usually unconsciously recommended by others and the herb is not mentioned in the anamnesis when the herb is being used. Moreover, the doctor is not informed and plant-drug interaction does not take place. Therefore, the prospectuses affects drug use negatively. There are many physiological changes that may affect the herbal pharmacy and the pharmacokinetics of older people. For example; the reduction of the gastrointestinal motility and the surface of the absorption, the reduction of total body water, the decrease in serum albumin depletion and protein binding, the decrease in biotransformation, the decrease in renal blood flow drug abstinence, the decrease in receptor sensitivity and the change in cellular response. Due to these factors, side effects due to herbal treatment and more intoxications are observed in the elderly. Cinnamon, also known as "Darçın", "Loğusa", "Şerbet Kokusu" among the people, is the dried shell of some *Cinnamomum* (Lauraceae) species. There are two main varieties of cinnamon bark, namely Chinese Cinnamon (*Cortex Cinnamomi cassiae*) and Ceylon Cinnamon (*Cortex Cinnamomi zeylanici*). Both cinnamon contains tannin and 1-2% volatile oil in its composition. Both plants are grown in places like Japan, Ceylon, South America, Sumatra. Cinnamon is anti-skidding, gas extractor and antiseptic properties (1,2). Apart from that, it is also used as a spice and fragrance. The cinnamon oil obtained by distillation from its shells has a pleasant smell and taste; and in the composition, cinnamic aldehyde and eugenol (3). It has been used for thousands of years in terms of health. It is used in folk medicine with psychological distress, cramenage, heart weakness, influenza, cold, flu, anorexia, indigestion, diarrhea, stomach laxity, low body resistance and intestinal worms. The use of overdose is indicated to cause agitation, hypoglycemia, tachycardia, to increase the level of the used coumarin and abortion, tachycardia and arrhythmia in pregnancy. In this article, we present a case of emergency history of hypoglycemia, agitation and tachycardia, history and clinical follow-up and a 76-year-old female patient admitted to acute poisoning of cinnamon and honey mixture. It is our goal to present this case, it should be known that with the recommendation of others and the use of an overdose of herbal medicines unconsciously will cause intoxication, especially in the elderly and doctors need to consider the use of a medicinal product in the etiology of causes such as tachycardia, agitation, hypoglycemia in patients with urgent care. References: 1. Demirhan A., Mısır Çarşısı Droğları, Sermet Matbaası, İstanbul, 1975. 2.

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KEYWORDS

geriatric patient, cinnamon, hypoglycemia, tachycardia, agitation

Poster Session 12

Submission ID: 1599

THE EFFECT OF ULTRASONIC PRETREATED MACERATION PROCEDURE ON SOME PROPERTIES OF AROMATIZED OLIVE OIL WITH THYME

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MERYEM CİHANGİR¹

ABSTRACT

In the study, natural extra virgin olive oil was aromatized with thyme by ultrasonic pretreated maceration. It was aimed to the shortening of the duration of maceration by ultrasonic pretreated application. Since mass transfer is faster and better during maceration in ultrasonic pretreated samples, a more intense in flavor and volatile components of aromatized product was obtained in the end of maceration period. The maceration procedures were carried out for 30 days in amber colored glass bottles with and without ultrasonic pretreatment with equal amounts of oil and thyme. The ultrasonic pretreated maceration process was performed in an ultrasonic bath at 20% power (253 W, 40 kHz) for 5 min and 10 min. At the end of the sonication procedure, the ambient temperature of the water bath was measured as 27 °C with an increase of 3 °C. The percentage of free fatty acids and peroxide value analysis was performed on the samples taken from ultrasound treated and non treated groups at 15th and 30th days. Alterations in the amounts of volatile components of aromatized oils (p-cymene, thymol and carvacrol) were determined by GC-MS. The percentage of free fatty acids of virgin olive oil was determined as 0.5% and the peroxide value was 14 meqO₂/kg in pre-maceration process. In all applications, the percentage of free fatty acids and peroxide values were not changed after 30 days of maceration period. The amount of p-cymene, thymol and carvacrol in the aromatized oil which macerated for 30 days and were not subjected to ultrasound, were found as 2.06 (µg/g), 391.26 (µg/g) and 585.28 (µg/g) respectively. The highest values for these components were found as 2.66 (µg/g), 614.18 (µg/g) and 1044.06 (µg/g) respectively in the maceration group which was ultrasonicated for 10 mins. The amounts of p-cymene, thymol and carvacrol of the olive oils which were ultrasonic pretreated and subjected to maceration under the same conditions were higher as much as 1.3, 1.6, and 1.8 times respectively when their amounts compared to that of untreated ones.

KEYWORDS

Olive oil, thyme, ultrasound, maceration, ultrasonic.

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Poster Session 12

Submission ID: 1600

IS ALGAE OIL ALTERNATIVE TO FISH OIL?

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ABSTRACT

Algae are usually found in damp places or bodies of water. Microalgae are the primary sources of docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA) for zooplankton, fish. It was known that EPA and DHA in fish oil have a lot of positive effects on human health such as cardiovascular diseases, hypertension, insulin sensitivity, neurological diseases etc. Recently algae oil is a new field for using as an alternative to fish oil. Several photosynthetic (*Nannochloropsis* sp., *Hibberd*, *Phaeodactylum Bohlin*, *Nitzschia Hassall*, *Porphyridium Nægeli* etc) and heterotrophic (*Schizochytrium* sp., *Ulkenia* sp., *Cryptocodinium Cohni* etc) marine microalgae are considered as a good source of omega-3 fatty acids (EPA and DHA) for production of algae oil. While photosynthetic microalgae is usually used for production of EPA rich algae oil, heterotrophic microalgae is usually used for production of DHA rich algae oil. A lot of studies indicated that DHA and EPA from fish oils and algal sources provide health benefits to human. Algal-based supplements has led to a large industry effort towards developing alternatives to fish oil. In addition algae oil is very good alternative for vegetarian who intakes low essential fatty acids. But the health benefits of algae oil are uncertain according to natural fish oils. There is a limited understanding of nutritional composition across algal species. It is needed more studies about dose of algae oil to examine the protective effects of human health. References Topuz OK. Algal oil: a novel source of omega-3 fatty acids for human nutrition. Scientific Bulletin. Series F. Biotechnologies, Vol. XX, 2016. Cottin SC, Sanders TA, Hall WL. The differential effects of EPA and DHA on cardiovascular risk factors. Proc Nutr Soc, 2011. 70:215–231 Wells ML, Potin P, Craigie JS et al. Algae as nutritional and functional food sources: revisiting our understanding. J Appl Phycol, 2016. Rossoll D, Bermudez R, Hauss H et al. Ocean acidification-induced food quality deterioration constrains trophic transfer. PLoS One, 2012. 7(4):e34737 Řezanka T, Petránková M, Cepák V, et al. *Trachydiscus minutus*, a new biotechnological source of eicosapentaenoic acid. Folia Microbiol, 2010. 55:265–269

KEYWORDS

Algae oil, omega 3, fish oil, EPA, DHA

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ANTIFUNGAL EFFECT OF SOME ESSENTIAL OILS AGAINST FACTORS OF SEEDLING ROOT ROT IN STRAWBERRY

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ABSTRACT

This study was conducted under in vitro conditions to determine antifungal effects of essential oils from sage (*Salvia officinalis*), carnation (*Dianthus caryophyllus*), thyme (*Thymus vulgaris* L.), peppermint (*Mentha piperita* L.), and eucalyptus (*Eucalyptus* sp. L.) plants against factors (*Fusarium oxysporum*, *Rhizoctonia solani*, *Macrophomina phaseolina* and *Cylindrocarpon destructans*) causing root rot in seedlings of strawberry. 7 day-old cultures of pathogenic isolates which grew in PDA medium were used. Mycelium discs of growing cultures in 5 mm diameter were inoculated into PDA medium including different doses (5,10, and 20 µl/petri) of plant essential oils and incubated at 24 °C for 7 days. Trials were conducted with 3 repetitions for each of the essential oils. PDA medium which did not include essential oil were kept as control. After trial, diameters of fungal colonies were measured and % inhibition rates of essential oils compared to controls were calculated. According to result obtained, it was found that essential oils from sage, peppermint, carnation, and eucalyptus did not show a fungistatic effect on mycelial development of *Rhizoctonia solani* and *Macrophomina phaseolina*; and increasing doses of essential oil from thyme had fungicidal and/or fungistatic effect on *Rhizoctonia solani* (93% - 100%), *Macrophomina phaseolina* (16.5% - 74%), *Fusarium oxysporum* (46% - 84%), and *Cylindrocarpon destructans* (74% - 96%). Essential oils of sage, carnation, peppermint, and eucalyptus were determined to inhibit mycelial development of *Fusarium oxysporum* at the low rate. Essential oil of peppermint had a fungistatic effect on *Cylindrocarpon destructans* (20.5% - 25.4%) and sage had a fungicidal effect by inhibiting 100% of mycelia development.

KEYWORDS

essential oil, antifungal activity, strawberry seedling, rot root pathogen

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Poster Session 12

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ESSENTIAL OIL COMPOSITION OF LEAF, FLOWER AND STEM OF STYRAX (STYRAX OFFICINALIS L.) GROWING IN ANTAKYA

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ABSTRACT

Styrax officinalis L. (Styracaceae) grows around the Mediterranean region and in East and South-Eastern Asia [1]. *S. officinalis* was used in folk medicine in the Mediterranean region as antiseptic and against respiratory diseases [2]. *Styrax officinalis* L. samples (flower, leaf and stem) were harvested in May, September and November 2015 in Antakya. First of all, collected materials were air-dried at the room temperature and then powdered. Later, oil samples were obtained by hydrodistillation for 4h, by using a Clevenger-type apparatus. Essential oils were obtained in a low yield of 0.015 %, 0.008 % and 0.005 % for leaf, flower and stem oils, respectively. The composition of the essential oils of *Styrax officinalis* L. was determined by GC/MS as below; [1] In the leaf of samples, (E)-2-hexenal (17.5%), linalool (11.8 %) and geranial (5.6 %) [2] In the flower of samples, linalool 26.7 (%). [3] In the stem of samples, Tridecanal (9.9 %) and dodecane (9.3 %), while α -terpineol (16.0 %) and eugenol (10.0 %) References: [1] Fritsch, P.W., 1999. Phylogeny of *Styrax* based on morphological characters with implications for biogeography and infrageneric classification. *Syst. Bot.* 24, 356-378. [2] Kim, Y.S., Shin, D.H., 2004. Volatile components and antibacterial effects of simultaneous steam distillation and solvent extracts from the leaves of *Styrax japonica* S. & Z. *Food Sci. Biotechnol.* 13, 561-565.

KEYWORDS

Essential oil, Styrax officinalis L.

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Poster Session 12

Submission ID: 1604

**DETERMINATION OF ANTIOXIDANT AND ANTIRADIAL
ACTIVITIES OF A NEW IDENTIFIED UNDERGROUND ORCHIDS
(RHIZANTHELLA GARDNERI) PLANT FOR THE FIRST TIME IN
TURKEY**

NAZAN DEMİR¹, SEDEF AŞIK¹, HAYRUNNISA NADAROĞLU²

ABSTRACT

The plant was collected by Prof.Dr. Nazan DEMİR from Mugla Sıtkı Kocman University, Faculty of Science, Department of Chemistry, and this plant was diagnosed as a different kind of underground orchid (*Rhizanthella gardneri*) by the lecturers of Atatürk University, Department of Biology. This orchid species have undergone, this plant development are underground. Also, it has opened red-fuchsia flowers and has been found to have a highly effective odor. The underground orchid species that bloomed in May-June are continuing their work on the registration and identification as *Nazdemir gardneri*. In order to evaluate the antioxidant and radical scavenging activities of this plant, total phenolic compound amount determination, cupric ions (Cu²⁺) reduction capacity by the Kuprak method, Fe³⁺ reduction capacity by FRAP method, superoxide anion radical scavenging activity (O₂^{•-}), 1,1-diphenyl-2-picrylhydrazyl free radical (DPPH[•]) scavenging activity, 2,2'-azino-bis-(3-ethylbenzthiazoline-6-sulfonic acid) (ABTS^{•+}) radical scavenging activity was determined in water and alcohol extracts. BHA and α -tocopherol were used as standard antioxidants in the study. It was observed that the *Nazdemir gardneri* plant from the obtained findings exhibited antioxidative reduction activities in an effective manner. It can be thought that it contributes to the protection of the soil since it is grown under the soil. Our studies on the bioactivity and protection of this plant, which is accepted as one of the most valuable flowers in the world, continue.

KEYWORDS

Underground orchid, Nazdemir gardneri, Antioxidant activity, Radical scavenging

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Poster Session 12

Submission ID: 1605

TOTAL POLYPHENOL CONTENT OF METHANOLIC EXTRACT FROM ARUM DIOSCORIDIS SM. VAR. DIOSCORIDIS

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ABSTRACT

Arum L. is a genus of flowering plants which belongs to Araceae, represented by 26 species and distributed in Northern Africa, Mediterranean Region, Western Asia, and Europe [1]. Arum dioscoridis Sm. Var. Dioscoridis (A. dioscoridis) which is traditionally used in the Mediterranean gastronomy is a member of Arum L. [2]. Phenolic compounds which belong to phytochemical substances, are secondary metabolite that are generally produced in various plants [3]. In the last few years, they have gained common attention due to their positive impact on human health. Some of the benefits of phenolic compounds are antioxidant activity, antimutagenic, anticarcinogenic activities, anti-inflammatory and neuro-protective effects [4]. In this study, we have investigated total phenolic content of A. dioscoridis. Total polyphenol content was determined as 221.5 mg GA/100 g dried weight. Acknowledgements: This study was supported by the Research Fund of Mersin University in Turkey with Project Number: 2017-1-API-2207 References: 1. Farid, M. M., Hussein, S. R., Ibrahim, L. F., Desouky, M. A. E., Elsayed, A. M., Oqlah, A. A. E., Saker, M. M., Asian Pacific Journal of Tropical Biomedicine 5 (2015) 944-947. 2. Abu-Reidah, I. M., Ali-Shtayeh, M. S., Jamous, R. M., Arraez-Roman, D., Segura-Carretero, A., Food Research International 70 (2015) 74-86. 3. Limmongkon, A., Janhom, P., Amthong, A., Kawpanuk, M., Nopprang, P., Poohadsuan, J., Somboon, T., Saijeen, S., Surangkul, D., Srikummool, M., Boonsong, T., Asian Pacific Journal of Tropical Biomedicine 7(4) (2017) 332-338. 4. Skendi, A., Irakli, M., Chatzopoulou, P., Journal of Applied Research on Medicinal and Aromatic Plants In press doi: 10.1016/j.jarmap.2017.02.001

KEYWORDS

Arum dioscoridis Sm. Var. Dioscoridis, total polyphenol content, Folin-Ciocalteu

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Poster Session 12

Submission ID: 1606

MUCOSAL BURN ASSOCIATED WITH GARLIC IN A PATIENT WITH DENTAL PAIN: A CASE REPORT

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ABSTRACT

Herbal products has been used in many cultures for treating various health problems for centuries. Garlic (*Allium sativum* L., Fam Liliaceae) which has widespread pharmacological effects, has been used as an alternative treatment method by patients in dentistry. But uncontrolled used of it may lead adverse effects. The aim of this report is to draw attention for the adverse effect occurred on the oral mucosa associated with uncontrolled used of garlic. A 38 year-old male patient was admitted to our clinic complaining of severe pain on the right mandibular posterior teeth. It was learned from the anamnesis that the patient had applied garlic topically around his teeth due to the pain. Intraoral examination revealed a broad mucosal burn which has white plaque appearance with eritematous area on the right buccal mucosa, gingiva around the right maxillary and mandibular posterior teeth. Also it was noticed that profound caries at mandibular second and third molar and, maxillary third molar. Dentists should enquire the patient about the use of herbal products while taking the patient`s history and be aware of adverse effects can occur from uncontrolled use of herbs like garlic.

KEYWORDS

Garlic, Herbal medicine, Oral mucosa, Mucosal burn

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Poster Session 12

Submission ID: 1607

ETHNOBOTANICAL USES OF SOME SALVIA L. (LAMIACEAE) SPECIES FROM HATAY (TURKEY)

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ABSTRACT

Since ancient times, Salvia L. species have been used in traditional medicine for the treatment of diabetes and skin diseases. Salvia species are commonly used in Anatolia for colds, stomach aches, and sore throats. It is the largest genus of the family Lamiaceae, including over 900 species in the world and represented in Turkey by 94 taxa belonging to 89 species with 50% endemism. This plant is represented by 15 taxa and locally called "Ballık otu", "Hint Adaçayı", "Dağ Reyhanı", "Misk adaçayı" and "Dadırac" in Hatay city. The present study reveals the ethnobotany and traditional medicinal uses of 12 species of Salvia natural distributed in Hatay province (East Mediterranean of Turkey). The data on plants included botanical names, vernacular names, the parts used and specific purpose of use. The common preparation of the medicinal plants in the city are drink as tea and external. Local people commonly use for the remedy of respiratory system disorders, gastrointestinal system disorders, skin diseases and antimicrobial. Our results were comparatively discussed with the other literatures. We believe that finding of this study will significantly contribute to the ethnobotanical studies at local or regional scales.

KEYWORDS

Ethnobotany, Traditional medicine, Medicinal plant, Salvia, Hatay.

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THE PROFILE OF VOLATIL OILS OF MENTHA SPP. COLLECTED FROM DIFFERENT LOCATIONS OF TURKEY

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ABSTRACT

Mentha species have been consumed for many years in oriental and Mediterranean culture as tea and nutritional food addition due to their special flavour and aroma properties coming from its volatile oil. The volatile oil of the various types of the Mentha and the components of these various oil indicate main variation under effect of the type, variety, ecological conditions, management and harvesting time. These compositions are mainly used in food, pharmaceutical, cosmetics and perfumery industries. In this study, the volatile oils obtained by a hydro-distillation method from dried leaves of mint grown various locations (Afyon, Kahramanmaraş and Erzincan) of Turkey are investigated by gas chromatography-mass spectrometry (GC-MS, Agilent Technologies, 7890B) with an HP-Innowax column (Agilent 19091N-116: 60 m×0.320 mm internal diameter and 0.25 µm film thickness). MS scan range was (m/z): 35-450 atomic mass units (AMU) under electron impact (EI) ionization (70 eV). Identifications of the mint compounds were confirmed by using the MS database of US National Institute of Standards and Technology (NIST), Wiley libraries and literature data. The volatile oil contents of mentha samples were 0.5 – 1.25 % and refractive indexes were found 1,48148 - 1,49160. The major volatile compounds of dried leaf of Mentha samples were identified D-Carvone (47.83 – 26.93 %), 18-Crown-6 (12.38- 12.45 %), 1,8-Cineole (10.03 – 12.25 %), dl-Limonene (3.19 - 10.76) for three locations and in addition, Linalool, (16.09%), Linalyl acetate (6.87 %), 18-Crown-14 (6.83 %) and β-Cubebene (4.25%) for Afyonkarhisar sample with representing 99.9%. The high D-Carvone compound was determined 47,83 % in Kahramanmaraş sample when the lowest dl-Limonene 3.19 % in Afyonkarhisar sample. There were a remarkable variations among compounds of locations due to Mentha sub-species, different agro-ecological conditions and various harvest techniques, storage conditions. This project is supported by Afyon Kocatepe University AKÜ-BAP (Project No: 16.MÜH.05)

KEYWORDS

Mentha spp, Turkey, volatile oil , refractive index, GC-MS

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¹AFYON KOCATEPE ÜNİVERSİTESİ MÜHENDİSLİK FAK. GIDA MÜHENDİSLİĞİ & GIDA KONTROL ARAŞTIRMA VE UYGULAMA MERKEZİ, AFYONKARAHİSAR

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DETERMINATION OF CHARACTERISTICS OF INSTANT TEA PRODUCED FROM THYME (THYMUS VULGARIS)

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ABSTRACT

Herbal teas are prepared by brewing of dried plant leaves, flowers, fruits or roots in warm or hot water. Thyme (*Thymus vulgaris*) is widely consumed as spice in Turkey. Thyme which has essential oil, is used as natural antioxidant. In this study, it was aimed to determine some important properties of water soluble herbal tea powders produced by spray drying and freeze drying techniques from extracts obtained by applying the classic brewing and boiling method of thyme plant. Instant tea powders were obtained by spray drying and freeze drying techniques from watery extract of thyme. Some physical and chemical properties of these tea powders were investigated. Solubility in water, moisture content, yield, Hunter colour values (L*, a*, b*), total phenolic compounds and total sugar quantities were determined. The antioxidant activity of instant tea powders were evaluated with FRAP and TEAC tests. Some individual phenolic compounds and flavor compounds of thyme tea powders were determined by HPLC and GC-MS, respectively. Moreover, instant thyme tea powders were evaluated for their sensory properties. The results were compared with traditional brewing method. Solubility in water of thyme tea powders by using freeze drying and spray drying techniques were found 96,00; 98,67 and moisture content were found 7,31; 0,18%. Yield of tea powder produced from thyme plant (traditional; freeze dried; spray dried) were found 14,66; 22,10; 21,27 %. Moreover, the hunter colour values of thyme teas prepared by using traditional method, freeze dried powder, spray dried powder were 27,43; 26,12; 25,27 L*, 4,01; 4,70; 5,28 a*, -3,25; -2,44; -2,18 b*. Total phenolic content of tea produced from thyme (traditional; freeze dried; spray dried) were found as 18,90; 30,85; 34,60 mgGAE/100 mL and total sugar quantities were found as 33,93; 37,27; 47,06 mgGE/100mL. FRAP activities were found as 1301,27; 1573,59; 1794,51 µmolTE/100 mL and TEAC activities were found as 3807,15; 3949,70; 3967,52 µmolTE/100 mL, respectively. Spray dried herbal tea powders had less flavoring agents because of heat application during drying. Thyme contains volatile oil, carvacrol. The boiling point of carvacrol is 237.7 ° C. Due to the high boiling point, the presence of carvacrol residue in the powdered thyme tea is an expected result. But; other thyme volatile components with lower boiling point are lost during the thermal process applied in production. But, other thyme volatile components with lower boiling point were lost during the thermal process in the production process. When the results of the sensory analysis were examined, the highest average was obtained by traditional method and followed by freeze drying techniques, spray drying, respectively. In this sense, the most important factor may be preservation or losing of volatile aroma components during processes. Because of the unique aroma of the most important feature of thyme tea, it is suggested to add flavor to the thyme tea produced by the spray drying technique.

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KEYWORDS

Thyme (Thymus vulgaris), instant tea , spray drying, freeze drying

DETERMINATION OF İSTANBUL BELGRADE FOREST PHARMACOLOGICAL OPTION VALUE BY PEARCE- PUROSHOTHAMAN (P & P) MODEL

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ABSTRACT

The Belgrad Forest is located on the European side of Istanbul, north of the residential areas, between 28 ° 53'25"29 ° 00'55 " east latitude and 41 ° 09' 44'-41 ° 14'40'th latitude . The forest begins to descend in the southeast direction of the Yıldız Mountains as a land structure, resulting in a slight fluctuation in the Istanbul Strait. The highest point is Kartaltepe in the northern part with a rise of 230 meters. Another notable elevation is Kokmuştepe in the north-east of the forest with an elevation of 219 meters. The lowest point within the forest (Kurudere) is 40 meters above sea level. The Belgrade Forest, a natural and cultural heritage, has a flora and variety of plant taxon varieties. It can be seen that the plant contains not only the Balkan Flora in terms of geography but also colchic, mediterranean and central european flora elements which are also in character. In this direction, there are approximately 400 plant taxa and 6 endemic plant taxa in the Belgrad Forest, which has an area of only 5524 hectares. Because of Istanbul's special position, the Belgrad Forest, which has a wide variety of climate, soil and ground forms, allows this variety to live in a wide variety of different species of plants and animals within the forest. The Belgrad Forest, which is the closest forest area to the city center in Istanbul, has been subject to numerous scientific researches due to its importance for the past and present day. One of the most researched forests in Turkey has come into existence. Until now, however, no study has been conducted on the pharmacological option value of this forest, which is the source of this rich biodiversity. The Pearce and Puroshothaman model is based on the rental income approach of Ruitenbeek (1989). This approach is based on the assumption that countries with herbal genetic material that will be necessary for the pharmaceutical sector in the future will need to obtain these assets - rent income, or annuity, in exchange for using the firm, and that this lease value will reflect the pharmacological value of plants. Pearce and Puroshothaman (1992), based on the rental income approach, expressed the medical (pharmacological) value of a plant in a protected biodiversity field that could produce the drug "D" in the future. In this study, pharmacological substances and drugs that can be obtained from Belgrade forests, pharmacological option value according to Pearce and Puroshothaman model; The low estimate was set at 70.60 per unit area, 905.14 with the medium estimate, and \$ 12671.97 / ha / year with the high estimate.

KEYWORDS

Belgrad Forest, Pharmacological Option Value, P & P Model

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THE CHERRY LAUREL: COMPOSITION AND İMPACT ON HUMAN HEALTH

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ABSTRACT

Cherry laurel (*Laurocerasus officinalis*) is a typical summer fruit from the eastern Black Sea Region of Turkey and locally called Karayemiş or Taflan. It is consumed as fresh, dried, marmalade, jam, canned and pickled forms in Black Sea Region. Cherry laurel is used in cosmetics industry and treatment of some diseases for example stomach ulcers, bronchitis, eczemas, hemorrhoids and etc. Also it is used food additives as flavoring agent. The annual consumption of this fruit is not known precisely because it is sold in local markets in Black Sea Region. It is getting popularity at a commercial scale in the United States, Europe, Asia and Turkey. These fruits contain high levels of micronutrients and phytochemical constituents. Although individual phytochemical constituents of cherry laurel have been studied for their biological activities, the effects of these compounds on human health are not entirely clear. The aim of this review is to outline some physical, mechanical, chemical properties, and bioactive compounds and impact on human health of cherry laurel.

KEYWORDS

Cherry laurel, bioactive compounds, human health

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MINERAL COMPOSITION OF SOME MEDICINAL MUSHROOM SPECIES GROWN IN VAN PROVINCE (TURKEY)

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ABSTRACT

Minerals are vital chemical compounds for humans which have crucial functions such as maintaining acid-base balance, the osmotic regulation of fluid and oxygen transport in the body and also playing important roles in the catalytic processes within the enzyme system associated with the metabolic, endocrine and immune systems (Koyyalamudi et al., 2013). Mushrooms have been used as important dietary supplements because of their pleasant tastes, nutritional and pharmaceutical properties such as rich protein, low-fat content, secondary metabolites, vitamins and minerals. *Tricholoma scalpturatum* (Fr.) Qué. (Tricholomataceae), *Neolentinus cyathiformis* (Schaeff.) Della Maggiora & Trassinelli (Polyporaceae), *Chlorophyllum agaricoides* (Czern.) Vellinga (Agaricaceae), *Tricholoma populinum* J.E. Lange (Tricholomataceae) and *Lycoperdon utriforme* Bull. (Agaricaceae) are five edible-medicinal mushroom species consumed for their nutritional and therapeutic properties by local people of Van province. The aim of the present study was to evaluate the mineral composition of five edible-medicinal mushrooms naturally grown in Van province, Turkey. The mushroom samples (fruiting bodies) were collected from wild areas on October 2016. Different extraction methods were applied in order to reveal the mineral composition of the samples comprehensively. The extractions were analyzed by Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES) and Atomic Absorption Spectroscopy (A.A.S). Within this presentation the concentration of Ag, As, B, Ba, Be, Cd, Co, Cr, Cu, K, Mg, Mn, Mo, Ni, Pb, Sb, Se, Si, Ti, V, Zn, Na, Ca and Fe of the extracts prepared from five edible-medicinal mushroom species will be presented in light of scientifically proven physiological activities if available will be presented. References: 1. Koyyalamudi, S.R. Jeong, S.C., Manavalan, S., Vysetti, B., Pang, G. (2013). Micronutrient mineral content of the fruiting bodies of Australian cultivated *Agaricus bisporus* white button mushrooms. *Journal of Food Composition and Analysis*, 31:109-114.

KEYWORDS

Mineral, ICP-OES, AAS, Extraction

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Poster Session 12

Submission ID: 1613

DETERMINATION OF ANTIOXIDANT PROPERTIES AND VOLATILES IN RAW AND PICKLED GREEN/BLACK OLIVES

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ABSTRACT

Olive (*Olea europea*), a member of Oleaceae, is native tree of the Mediterranean climate. Its pickled fruits are consumed in daily diet, especially in the breakfast. Olive oil obtained from fruits is also frequently used in the world. The olive may be green or black according to the degree of ripening at harvest. Ripening of olive is a long process that takes place in 6-8 months. The optimum harvesting time differs according to the purpose of the olive processing. If the green table olives are to be processed, the fruits should be harvested when their color turns to yellowish-green (September-October). On the other hand, if black olive is desired, the fruits are harvested after the fleshy part become darker (November-December). To get oil, the olives are to be harvested when there is no green fruit in the tree. In this study, dry matter (gravimetric method), total phenolic content (spectrophotometric by using Folin Ciocalteu assay), antioxidant activity (spectrophotometric by using DPPH radical scavenging assay) and volatile components (by SPME-GC-MS) were determined for the Memecik type green and black olives. The samples were obtained from the local processor of Milas (Muđla province, Turkey) during the pickling period of 0, 12, and 25 days. At the end of pickling, dry matter content of the green and black olives increased from 22.89 to 44.71% and from 41.78 to 69.66%, respectively. Total phenolic content and antioxidant activity decreased during the pickling. The total phenolic content of the raw green and black olives, which were initially 230.22 and 202.51 mg/100g, respectively, decreased to 190.12 for green olives and to 192.21 mg/100g for black olives after 25 days of pickling. Similarly, the EC₅₀ values of 0.36 and 0.44 g/mg DPPH of the raw green and black olives, respectively, increased to 0.40 in the green olive and 0.52 g/mg in the black olive after 25 days, so that the antioxidant activity decreased. GC chromatogram showed 13 volatiles in the raw green olive while 12 were found in the raw black olive (peak areas greater than 1 %). The main volatile compounds extracted from raw green olive by SPME method (using PDMS / DVB fiber) were 3-O-methyl-D-fructose (19.50%), hexanal (16.52%), butanol (13.96%), butan-2-one (11.76%) and 2-propanamine (8.65%) while butanol (18.11%), n-pentanal (14.23%), carbamic acid (9.52%), hexanal (9.32%) and formic acid (8.35%) were the main volatiles in the raw black olive. At the end of pickling, the major volatile components in the green olive were acetic acid (31.79%), mannopyranose (10.76%), D-fructose (10.23%), pentanal (7.25%) and 1,3-propanediol (7.05%) whereas ethanol (31.99%), butanol (18.25%), acetic acid (8.84%), D-mannofuranoside (8.50%) and 1,3-propanediol (4.56%) were in the pickled black olive.

KEYWORDS

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Olive, pickling, total phenolics, antioxidant activity, volatiles

EFFECTS OF DRYING TECHNIQUES ON SOME QUALITY PROPERTIES AND LIMONENE CONTENT OF ORANGE PEEL

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ABSTRACT

Excessive amounts of solid waste occur in fruit processing plants and consumption of fruit. When these wastes are released directly to the environment, they can cause environmental pollution, besides, wastes that can be used for the production of valuable biomass and nutrients will be lost. For this reason, utilization of food industry wastes provides added value in economic terms. Moreover, it also provides benefits in terms of health and nutrition because the mentioned wastes contain valuable components for human metabolism and enrichment of foods. As a result of orange peel contains ingredients that are important for nutrition, the free radicals that build are strengthening immune system. The orange peel with high bioavailability can be dried and used in the food, pharmaceutical and cosmetic industries. The purpose of this study is to investigate the effects of drying techniques on some quality characteristics (color, vitamin content, total phenolic content, anthocyanin content, bulk density, rehydration capacity) and limonene content of the orange peel. Vacuum microwave dryer (877 mbar, 50 °C, 334 watts) and tray dryer (50 °C, 1.5 m/s) were used. It has been found that the vacuum microwave dryer reduces the drying time compared to the tray dryer. Limonene content of orange peel increased with drying process. It has been found that the vacuum microwave dryer significantly preserves color (L*, a*, b*, ΔE, Hue°, and ΔC), vitamin C content, aroma components and total phenolic content more than tray dryer.

KEYWORDS

orange peel, color, drying, quality, limonene

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Poster Session 12

Submission ID: 1616

KONJAC (AMORPHOPHALLUS KONJAC) FLOUR

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ABSTRACT

Although Konjac (*Amorphophallus konjac*) is an unknown plant in Turkey, it has been used in countries like China, Japan, Indonesia and South East Asia for many years as a food source and as a traditional medicine. It is a large, perennial exotic plant with large starchy corms (underground storage organ) and a single large leaf. Konjac flour is obtained from the corm which is washed, peeled, sliced, dried and ground. The flour is known to be a valuable source for glucomannan; a high-molecular weight and water-soluble polysaccharide (dietary fibre). The flour is used as a functional food in the form of noodle, spaghetti, rice, tofu and snacks. These foods lower blood sugar in patients with diabetes due to konjac glucomannan delays glucose absorption. Furthermore these foods may help weight loss by filling the stomach and promote colonic mucosal health due to increase fecal weight and reduce transit time by dietary fiber. It is also widely used in food and pharmaceutical industries as a emulsifier and stabiliser because of its valuable properties for example it is easily dispersed in water, it is a favorable thickening agent and it has high water absorption. Konjac gel is a well-known traditional medicine in China for more than 2000 years. It is prepared from konjac flour and it is used for the treatment of asthma, breast pain, infection, burns, atopic skin disorders etc. The purpose of this paper was to introduce the konjac flour in a larger scale. Thus, use of the konjac plant in both food and pharmaceutical industry may increase.

KEYWORDS

Amorphophallus konjac, Konjac glucomannan, Konjac flour, Traditional medicine, Functional food,

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Poster Session 12

Submission ID: 1617

THE USE OF MEDICAL AND AROMATIC PLANTS AND SOCIO ECONOMIC LIFE

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ABSTRACT

Our country, which has a rich biodiversity, is home to countless medical and aromatic plants. Since the early days of human history, plants have been characterized as a fundamental resource for the production of medicines used to protect human health, as well as providing the nutrients that humans need for the continuation of human life. Therapeutic use of plants has begun with the history of mankind, and people have used the therapeutic power of plants to solve their health problems and stay healthy. Herbal medicines, which are common in local medical practices, also called alternative medicine, have been produced at the end of long experiences and are widely used today. Many medicines used in modern art are also derived from plants. It was unthinkable that medicinal and aromatic plants with so much precaution did not fall within the scope of economic activities that produced solutions for human needs. As a result, medical and aromatic plants are estimated to reach \$ 95 billion in 2015, while the market is expected to reach \$ 110 billion by the end of 2016. Turkey's medical and aromatic plants are worth \$ 2.5 billion (Source: Dünya Gazetesi 16.03.2017). These figures are proof that our country's medical and aromatic plant diversity is a new opportunity for our people to survive in the countryside. The employment provided in the production process for the medical and aromatic plants of our country will improve the socio-economic situation of the people living in the rural areas by providing justice in the income due to the high income to be provided while being a solution to the problem of unemployment. In this study, it is aimed to investigate the advantages provided by the production of medicinal and aromatic plants and socio-economic development effects.

KEYWORDS

Medical Plants, Aromatic Plants, Human Health, Traditional Usage of Plants, Economy

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INVENTORY OF MEDICAL AND AROMATICAL PLANTS

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ABSTRACT

Interest in medicinal and aromatic plants has greatly increased recently due to their commercial, nutritional and medical importance. These plants derived from natural forests are used as pharmaceuticals, herbal remedies, flavourings, perfumes and cosmetics, and other organic products. Utilization from medicinal plants as traditional remedies is very common for rural population in developing countries. World Health Organization (WHO) decelerated that about 80% of world population still is used medical plants for remedies. Medicinal and aromatic plants play a critical role for health service and rural development because of their additional income. Turkey is considered to be a rich country in terms of plant diversity. Of the estimated 11,707 plant species as well as sub species and varieties (Güner et al. 2012) naturally occurring in the country, about 1/3 are considered as aromatical plants. While about 347 medical and aromatical plants with their parts of leaves, roots, bark, flowers or fruits are consumed in the domestic markets, about 100 plants are exported to the international markets (Başer, 1997). The high economic value in national and international markets caused to increase harvesting of these plants by rural people. Remarkable amount of medical and aromatic plants belonging to about 100 species are being harvested. The urgent need for sustainable utilization from medicinal and aromatic plants is characterizing their species diversity, spatial distribution, abundance and ecology with suitable inventory methods. Because these studies are difficult to measure or time and money consuming for all species, these information should be prepared for economically priority plants. Beside inventory methods, inventory time, sample size and shape for each medicinal and aromatic plants and their beneficial parts have serious deficiencies. This paper tries to highlight all the important aspects in inventory of medicinal and aromatic plants and identify some useful inventory methods for these products.

KEYWORDS

Plant-based NWFP, Sustainable Forest Management, Inventory

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MS

Poster Session 12

Submission ID: 1619

STEM AND LEAF ANATOMY OF FOUR MEDICINAL REPRESENTATIVES OF CREPIS L. (ASTERACEAE)

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ABSTRACT

The genus *Crepis* L. belongs to the tribe Cichorieae of the Asteraceae family. Most of this genus's members have "Crepin" matter. *Crepis foetida* subsp. *foetida*, *C. foetida* subsp. *rhoeadifolia*, *C. vesicaria* and *C. zacintha* are medicinal plants which are used in the folk medicine. However, no stem and leaf anatomy of these medicinal plants have been studied till now. Anatomical studies were performed in the stem and leaf. Transverse sections from middle parts of the stem were taken by hand using commercial razor blades. The leaf anatomy has been observed both side of the leaves. The anatomical characters were measured using an ocular micrometer under the light microscope. The stem structure of *Crepis foetida* subsp. *foetida*, *C. foetida* subsp. *rhoeadifolia*, *C. vesicaria* and *C. zacintha* is composed of epidermis, collenchyma, parenchymatous cortex and pith. These species have anomocytic stomata in both the upper and the lower surface of the leaves. This study was supported by the Scientific and Technological Research Council of Turkey (TUBITAK, Project no. 112T132).

KEYWORDS

Crepis, anatomy, stem, leaf

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THE INVESTIGATION OF BIOLOGICAL ACTIVITIES AND HPLC-DAD-MS ANALYSIS OF MAJOR PHENOLIC COMPOUNDS OF HELICHRYSUM PLICATUM DC. SUBSP. PLICATUM

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ABSTRACT

The tribe Gnaphalieae of Asteraceae comprises 185 genera and more than 1240 species. Helichrysum Mill. is the largest genus of this tribe, including approximately 600 species occurring in Europe, Asia, Africa and Madagascar. This genus which is represented by 24 species, 30 taxa of which, 17 are endemic, has been recorded in the Flora of Turkey (1). Helichrysum species are largely known as "ölmez çiçek, altınotu or mantuvar" in Anatolian folk medicine. Helichrysum species have been used as folk medicine for at least 2000 years against gall bladder disorders in the form of medicinal teas, because of their bile regulatory and diuretic effects. In Turkey several Helichrysum spp. are used in folk medicine for removing the kidney stones and as diuretics. The diuretic and bile regulatory effects of the Helichrysum spp. are due to the flavonoids that they contain (2). In Turkish folk medicine, H. plicatum DC. subsp. plicatum has been used as a diuretic, antidiabetic, lithagogue and for stomach ache (3). The aim of this study was to investigate phenolic composition and compare evaluation of biological activities of H. plicatum subsp. plicatum. In the present study, The total flavonoids contents, antioxidant, anti-urease, antimicrobial activities of different extracts from H. plicatum subsp. plicatum were compared. The extracts were quantitatively analyzed for total flavonoid contents using aluminium chloride colorimetric assays. Antioxidant activity of the extracts was measured using the DPPH., ABTS.+ scavenging activities and FRAP assay. The urease inhibitory activities of the extracts were determined according to a reported method (4). In addition, antimicrobial activities of extracts were investigated using microdilution methods (5). The methanol extract obtained by using Soxhlet method of H. plicatum subsp. plicatum had the highest amounts of total flavonoids and showed the highest DPPH. radical scavenging and ferric reducing activity. Subsequently, we tried to identify the major phenolic compounds in methanol extract by HPLC-DAD/ESI-Q-TOF LC/MS. The major phenolic compounds were identified as: chlorogenic acid, dicaffeoylquinic acid, luteolin, luteolin 7-O-glycoside, naringenin-O- hexoside and isoquercetin. References: 1. Öztürk B, Özek G, Özek T, Başer KHC, Chemical Diversity in Volatiles of Helichrysum plicatum DC. subspecies in Turkey, Rec. Nat. Prod. 2014; 8(4) 373-384. 2. Suzgeç S, Meriçli AH, Houghton PJ, Çubukçu B, Flavonoids of Helichrysum compactum and their antioxidant and antibacterial activity, Fitoterapia, 2005; 76)269-272. 3. Kolaylı S, Şahin H, Ulusoy E, Tarhan Ö, Phenolic Composition and Antioxidant Capacities of Helichrysum plicatum, Hacettepe J. Biol. & Chem., 2010; 38 (4) 269-276. 4. Ghous T, Akhtar K, Nasim FUH, Choudhry MA. Screening of

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KEYWORDS

H. plicatum subsp. plicatum, phenolic compounds, biological activity, Q-TOF LC/MS

SUSTAINABLE PLANNING OF MEDICAL AND AROMATICAL PLANTS

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ABSTRACT

Turkey forest ecosystems have abundant resources of medicinal and aromatical plants. In case the forest ecosystems are managed based on sustainable production, these natural resources provides economic, ecologic and social-cultural benefits to the people. Medicinal and aromatical plants and mushrooms with their various parts of fruit, leaf, root, flower and bark are vital forest resources and have to be integrated into multiple-use forest management plans. However, these economically important plants is being threatened with forest destruction, land use changes and excessive collection from their natural habitats. Therefore, there is an urgent need to integrate these products into multiple-use forest management plans both conservation and utilization. The initial step towards the integrated management is to perform the inventory and documentation of existing medicinal and aromatical plants. All information on quality and quantity of population as well as their location. It would be necessary to identify priority medicinal and aromatical plants and to decide priority interventions and policies on conservation and harvesting. The second one is to estimate the relationship between these valuable products and climatic, topographic and stand parameters and to develop empirical models to predict the annual yield of these products. The last step of medicinal and aromatical plants integrated management is to use decision support systems enabling decision making process with trade of analysis of both timber and related non-wood forest products (NWFP). Though much information exists on the species diversity in medicinal and aromatical plants in the country, relatively very little is known about the spatial distribution, productivity and ecology of the great majority of medicinal and aromatic plants. This study explains the fundamental components of joint production of timber and medicinal and aromatical plants and conceptional framework of the integration of medicinal and aromatical plants into multiple-use forest management plans. In addition, this paper presents some examples of integration of medicinal and aromatical plants into forest management plans.

KEYWORDS

Forest management, Non-Wood Forest Products, Multiple use planning

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Poster Session 13

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APOPTOTIC EFFECT OF FERULIC ACID ON MCF-7 HUMAN BREAST CANCER CELL LINE

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ABSTRACT

Breast cancer is the second considering the most common cancer-related mortality in women. In the worldwide, about 1 million people are diagnosed with breast cancer each year. In recent years, studies have been focused on investigating anticancer features of various phytochemical compounds. These compounds can be used as complementary or alternative therapeutic agents. Ferulic acid (FA; 4-Hydroxy-3-methoxycinnamic acid) is known as an abundant phenolic compound found in various fruits and vegetables. It has been described to act as a potent antioxidant and the anticarcinogenic effect of FA has been demonstrated through studies involving various cancer cell lines. The aim of study was to investigate the effects of FA on apoptosis in MCF-7 human breast cancer cell line. The effect of FA on cell viability was determined by using XTT method. Total RNA was isolated with TRIzol Reagent. Expressions of genes are important in apoptosis including BAX, BCL2, CASP3, CASP7, CASP8, CASP9, CYCS and FAS were evaluated in control and dose groups by qPCR. IC50 dose of FA was found as 600 μ M for 72h in MCF-7 cells. When compared with the control group, qPCR results illustrated that a significant increase was observed in the expressions of FAS, CASP3, CYCS and CASP9 genes as 1.85, 2.35, 2.67 and 5.82 folds respectively, whereas there was a decrease in the expression of BCL2 gene as 1.91 fold. In conclusion, it is thought that FA demonstrates apoptotic effect by regulating expression of important genes in apoptosis on MCF-7 cells. However, further molecular and functional analyses are required to clarify its effect on breast cancer.

KEYWORDS

Apoptosis, Ferulic acid, MCF-7 cells

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DETERMINATION OF SOME BIOACTIVITIES AND CHEMICAL COMPOSITION OF TULIP (TULIPA ARMENA) PLANT & INVESTIGATION OF USABILITY AS HOMEOPATHIC DRUGS

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ABSTRACT

Tulip (*Tulipa armena*) plant is from family of Liliaceae. It is a perennial herbaceous plant. The tulip has a special place in eastern culture and mythology. Also it has a unique place in our culture. It has name after a historical period. More than 100 tulip cultivars naturally grow in our soil and a large part of them is endemic. The tulip, a kind of national flower, therefore it has specially selected in our study and it has been investigated whether it can be used in the production of homeopathic medicines by getting some information from the public. Homeopathy is based on the principle of "heal similar alike". A disease is treated only with the substance that produces an indication similar to the patient's complaints. Homeopathy was found by German physician Samuel Hahnemann in the early 18th century and it is an alternative treatment system that helps the body develop itself naturally. According to the data of the World Health Organization, it is the most commonly used complementary medicine method. In Europe, more than 50% of people are treated with homeopathic treatment. Furthermore more than 50% of doctors recommend homeopathy together with other treatment modalities. Homeopathic medicines are produced by the original material being stored in water or alcohol followed by a series of dilution and mixing methods. For this purpose, the tulip were collected from Mugla countryside, defined as botanical followed by content analysis was performed with LC MS. Moreover, this research include investigation of protein, phenolic component and some enzyme activities (protease and peroxidase). Three-phase partitioning method was used for purification of enzyme from flowers of Turkish tulip. The values of optimal pH and optimal temperature were determined. The SDS-PAGE technique was used to check the purity of the purified enzyme and determine the number of subunits, if any. The molecular weight was also calculated using gel filtration chromatography. As a result, the protease enzyme was purified from Turkish tulip flowers and its phenolic components were determined. It has been found that the purified protease enzyme has high activity. The plant extracts were prepared in different organic solvents and water. Furthermore Dilution grades of extracts were determined for animal experiments. As a result of preliminary surveys and content analyzes, it is understood that the plant is a flower that can be used in homeopathy. It is planned that it is submitted to the approval of The Ministry of Health as a traditional and complementary product by optimizing usability as a medicine. REFERENCES [1] Lehninger, A. L. (2013) Principles of biochemistry, Worth Publishers Inc., New York, 1152s. [2] Demir N., Demir Y., Kaya E. and Aydın B., "Cysteine Protease from Primrose (*Primula vulgaris*)", Asian Journal of Chemistry, 24(4), 1479-1482 – 2012. [3] Demir N., Uçkaya F., 2015 *Citrus sinensis* (L.) Osbeck (Orange) and *Citrus lemon* (L.) Burm. F. Purification

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of Protease and Peroxidase Enzymes from Lemon Flowers and Investigation of Endustrial Usability,
44-46s.

KEYWORDS

Tulip (Tulipa armena), Homeopathic medicine, Protease enzyme activity, Phenolic compounds

Poster Session 13

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NATURAL ANTIMICROBIAL SUBSTANCES OF VEGETABLE ORIGIN

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ABSTRACT

The main goal of food technology is to prevent food spoilage, thereby ensuring food safety in foods is to take control of microorganisms. Therefore, adding additives to the product of microbial activity declines biggest advantage, which can maintain stability for a long time after opening the package of the food. Food industry, competition for the market share to be effective and must meet the demands of consumers. Consumers too much untreated, naturally, at least at the level of protective foods containing chemicals are wanted. Investigate the possibility that new types of antimicrobial drug use is encouraged. Artificial preservatives due to their adverse effects on the health of consumers has increased the interest for natural antimicrobial substances. In recent years, for medicinal purposes and the use of plant nutrients kept focused on the research and therefore the importance of using plants as natural antimicrobials is increasing every day. Natural protection systems of animal, plant or microbial origin are used in the protection of foods. Antimicrobial agents obtained from natural sources such as plants has managed food safety and plant extracts naturally in foods can be used as an antimicrobial has been proven by scientific research. More than 1340 types of plants formed about 80 of them from spices and herbs, most of them have a small molecular weight is known to be a source of potential antimicrobial agents. Studies made until today proved antimicrobial effect of plant extracts such as *Parmelia furfuracea* L. Zopf. (lichen), *Crocus chrysanthus* Herbert (crocus), *Myrtus communis* L. subsp. *communis* (mersin), *Asphodelus aestivus* L. (çiris) *Eugenia caryophyllata* Thunb. (carnation), *Artemisia absinthium* L. (wormwood herb), *Ornithogalum Umbellatum* L. (akyıldız), *Hedera helix* (ivy), *Datura stramonium* (pipeflower), *Ficus carica* (fig), *Avena sativa* (oat), *Xanthium strumarium* (pıtrak grass), *Nicotiana tabacum* (tobacco) etc.

KEYWORDS

Antimicrobial, artificial preservatives, natural preservatives, food safety

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ANTIOXIDANT CAPACITY AND PHENOLIC COMPONENTS OF ENTEROMORPHA INTESTINALIS ALGAE

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ABSTRACT

Algae take an important place in the ecosystem because of their protecting effect on the balance of the ecosystem, generating almost one-third of total photosynthetic carbon on Earth, and also feeding aquatic creatures [1]. Enteromorpha genus is a common macrophytic green alga with a tubular thallus found mainly in salty waters. It is often possible to observe some species in from different types of freshwater habitats to the coastal region where photosynthetic light is available. Enteromorpha intestinalis have a wide range of acceptable salinity, temperature and light conditions, meaning that it can be found frequently. Enteromorpha intestinalis have approximately 20-26% protein, some oil ,and 19-23% mineral. They contain low level of sodium and high level of iron and calcium. The level of vitamin B and vitamin A in Enteromorpha intestinalis is higher than that of most plants [2]. In this study, Enteromorpha intestinalis that were gathered from Trabzon-Sürmene in March (2017) were used. Antioxidant activity of methanolic extract of the algae and phenolic profile were investigated. As antioksidant parameters, total amount of phenolic components, 2,2-diphenyl-1-picrylhydrazil (DPPH) and Iron(III) reduce/antioxidant capacity (FRAP) were performed [3][4][5]. The total amount of polyphenol in Enteromorpha intestinalis was seen as 240 mg GAE/100g. Via Reversed phase-High Performance Liquid Chromatography(RP-HPLC-UV) and liquid- liquid extraction, phenolic components in Enteromorpha intestinalis were analyzed. The amount of gallic asid, p-OH benzoic asid, vanilic asid, coumaric asid, epicatechin, rutin, daidzein, and luteolin were determinated. Protocatequic acid, catechin, caffeic acid, syringic acid, ferulic acid, and t-cinnamic acid were not determinated. As results of the study, it is seen that Enteromorpha intestinalis have considerable amount of phenolic components and high level of antioxidant capacity. References; 1. Özdemir, N., & Erkmn, J. (2013). Yenilenebilir biyoplastik üretiminde alglerin kullanımı. Karadeniz Fen Bilimleri Dergisi, 3(8): 89-104. 2. Nisizawa, K. (1987). Preparation and marketing of seaweeds as foods. Food and Agriculture Organization of the United Nations, pp. 147-189. 3. Benzie, I.F.F., Strain, J. J., In Methods in Enzymology, 299, 15-27, 1999. 4. Apak, R., Güçlü, K., Özyürek, M., Karademir, S. E., J. Agr. Food Chem., 52, 7970-7981, 2004. 5. Yu, L., Haley, S., Perret, J., Harris, M., Vilson, J., Qian, M., J. Agr. Food Chem, 50, 16191624, 2002.

KEYWORDS

Algae, Enteromorpha intestinalis, Antioxidant, phenolic

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Poster Session 13

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USE OF AROMATIC AND MEDICINAL PLANTS BY LOCALS IN SOUTH ASIA

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ABSTRACT

Plants, both aromatic and medicinal, have been used in different forms by humans throughout the history. Various civilizations have used these plants in different forms; single or a formulation. In Indo-Pak, they are used in the form of Yunani medicine, Ayurveda and other folk medicines. In Ayurveda medicinal system, the formulation may be derived from roots, leaves, seeds, fruits and barks of various plants. Purified opium is used in eight Ayurvedic preparations to cure diarrhea, dysentery, as well as to increase the sexual and muscular ability. Yunani medicinal system is based on the teaching of Greek physicians Hippocrates and Galen. This medicinal system is mostly used in Pakistan and muslim cultured central Asia as an alternative to chemotherapy. This system was practiced in Mughal India for treatments of different diseases. Various plant extracts are prepared in the form of syrups and pastes for oral administration. In addition to the medicinal plants, there are various locally prepared perfumes in the market that are used in the religious activities by Muslims and Hindus.

KEYWORDS

Aromatic plants, Yunani medicines, Ayurvedic medicines, south asia, folk medicines

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FOLK MEDICINAL AND AROMATIC PLANTS OF TOKAT

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ABSTRACT

Tokat which take part in Karadeniz region, is flanked by Samsun to the north, Amasya to the northwest, Yozgat to the southwest, Sivas to the southeast, and Ordu to the northeast. Yeşilyurt and Sulusaray districts of Tokat remain in Central Anatolia Region. Tokat is located between 39° 51'- 40° 55' north latitudes and 35° 27'- 37° 39' east longitudes. Surface area of Tokat is 10,071 km² and elevation from sea level of agricultural land varies between 230 m and 1500 m. Climate type of Tokat has transition characteristic. Tokat has considerably rich flora of medicinal and aromatic plants due to convenient of climate and soil characteristics. Some of the medicinal and aromatic plants grown in Tokat are peppermint (*Mentha piperita* L.), thyme (*Thymus vulgaris*), basil (*Ocimum basilicum* L.), sage (*Salvia officinalis*), madımak (*Polygonum cognatum* Meissn), sorrel (*Rumex acetosella*), yarrow (*Achillea filipendulina*), couch (*Agropyron repens*), mahaleb cherry (*Prunus mahaleb*), hollyhock (*Alcea rosea*), wormwood (*Artemisia absinthium*), daisy (*Bellis perennis*), lavandula (*Lavandula* spp.), echinacea (*Echinacea* spp.), parsley (*Petroselinum crispum*), garlic (*Allium sativum*) haw (*Crataegus aronia*), herba equiseti (*Equisetum arvense*), fumitory (*Fumaria officinalis*), tipton's weed (*Hypericum perforatum*), mallow (*Malva sylvestris* L.), caper (*Capparis* spp.), lemon balm (*Melisa officinalis* L.), rosehip (*Rosa canina*), holunder (*Sambucus nigra*), butterbur (*Tussilago farfara*), nettle (*Urtica* sp.), mullein (*Verbascum pyroliforme*), fenugreek (*Trigonella foenum-graecum* L.) coriander (*Coriandrum sativum* L.), poppy (*Papaver somniferum* L.), sorb (*Sorbus* L.), linden (*Tilia* L.), black sesame (*Nigella sativa*), cornelian cherry (*Cornus mas* L.), goji berry (*Lycium barbarum*), jujube (*Ziziphus zizyphus*), etc. Increasing interest of consumers in health care, herbal medicines and organic, natural foods reawaken medicinal and aromatic plants in the world. Medicinal and aromatic plants can be used against high blood pressure, kidney ailments, rheumatism, urinary system diseases stomach ailments, diabetes, anaemia etc in folk remedy. For instance, Madımak (*Polygonum cognatum* Meissn) is widespread in agricultural areas or non-agricultural areas such as cropland boundaries, roadsides, slopes and the cliffs in Tokat. Besides being consumed as food, Madımak is used diuretic and against nephrolithiasis and diabetes mellitus in folk remedy. Medicinal and aromatic plants which has wide field, are used mainly at pharmaceutical, cosmetic, food and chemical. There are some private establishment on medical and aromatic plants in Tokat and its region. Studies for improving the cultivation of medicinal and aromatic plants are being carried out in Tokat.

KEYWORDS

Folk medicine, aromatic plant, medicinal plant, Tokat

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¹GAZİOSMANPAŞA ÜNİVERSİTESİ, MÜHENDİSLİK VE DOĞA BİLİMLERİ FAKÜLTESİ, GIDA MÜHENDİSLİĞİ BÖLÜMÜ

USE OF SEVERAL MEDICAL AROMATIC HERBS WITH ANTI- OXIDATIVE AND ANTI-MICROBIAL EFFECT IN FOODS

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ABSTRACT

Medical and aromatic herbs and the products such as essential oils obtained from those herbs are widely used in medicine, cosmetic, and food industries, as well as they meet the food requirement of humans in our country and throughout the world. Various antimicrobial and anti-oxidative materials used in order to maintain the physical, chemical, and biological properties of foods may be exposed to various sorts of deterioration during the storage period. Since it was determined that the use of synthetic preservatives causes various diseases, their use in food was limited. In food industry, the researches on natural materials to be used in order to prevent the oxidation and microorganism-origin deteriorations were initiated. In such studies, many of medical and aromatic herbs were found to contain high level of antimicrobial and antioxidant effects. It was determined that the herbs such as thyme, sage, rosemary, black sesame, ginger, and marjoram were found to have antimicrobial effect on microorganisms such as *E. coli*, *L. monocytogenes*, and *S. aureus*. Moreover, the essential oil components such as Carvacrol p-cymene were found to have preventive effect on lipid peroxidation. Prevention of oxidation positively affects maintaining the sensorial qualities of foods such as taste and color, and this contributes to the higher quality of products to be served to customers after a storage period. The medical and aromatic herbs being used may also be utilized in order to flavor the foods. Furthermore, some of the plants might be used as tea. In performed studies, the bee balm plant used as additive in food industry was found to have antioxidant effect on gels, fruit salads, and cold beverages and to neutralize the free radicals. Beside the use of medical and aromatic herbs in foods, they are also used in feeding the animals, and they were reported to contribute to increasing the quality of layer hens and broilers. In recent years, when the use of natural materials in food products instead of using synthetic antioxidant or antimicrobial agents increased, these natural herbs having positive effects on human health should be corroborated and encouraged via the researches.

KEYWORDS

Antioxidant, antimicrobial, oxidation.

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Poster Session 13

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THE ROLE OF NUTRACEUTICALS ON HEALTH

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ABSTRACT

The nutraceutical term is combination of ‘‘nutrition’’ and ‘‘pharmaceutical’’ words. Nutraceuticals which have strong physiological functions and bioactivitie, can protect health and restrain some diseases, is regulated as drug, dietary supplement, food ingredient or food. They show protective or physiological benefits against chronic diseases, but they are not considered as medicines. Gamma-aminobutyric acid (GABA), hyaluronic acid (HA), glucosamine (GlcN), N-acetylglucosamine (GlcNAc), glutathione (GSH), alpha-ketoglutaric acid (α KG), vitamin B12, folate, riboflavin, carotenoids (β -carotene, lycopene, lutein, zeaxanthin etc.), glutathione (GSH), oleic acid, docosahexaenoic acid (DHA), eicosapentaenoic acid (EPA), arachidonic acid (ARA), conjugated linoleic acids (CLAs), γ -linolenic acid, coenzim Q10, β -glucan, ascorbic acid, caffeic and gallic acid, catechins, phytosterols, minerals (zinc, calcium etc.), resveratrol, quercetin, oleuropein, hydroxytyrosol, capsaicin, inulin, fructooligosaccharides (FOS) can be given as example of nutraceuticals. Nutraceutical have shown therapeutic effects. For instance, caretenoids have capacity to quench oxidative radicals, They exhibit anticancerogenic effect. Lycopene which reduces the risk of prostate, breast, digestive tract, bladder, skin and cervix cancer, is found tomatoes, watermelons and red grapefruits. Phytosterols reduce serum cholesterol levels in humans. When foods containing β -glucan is consumed, blood cholesterol, LDL cholesterol levels and the risk of coronary heart disease are reduced. Hyaluronic acid which extracted from animal tissues, stimulate fibroblast proliferation and collagen synthesis. CLAs reduces plasma lipoproteins, strengthens immunity and inhibits cancer cells. α -KG induces procollagen and protein synthesis, regulates blood sugar level, helps treated to nervous system diseases and acute lung injury. Nutraceuticals have many more effects such as hypolipidemic, antiinflammation, antiaging, antidepression, antiulcer, immunity booster, detoxifier, etc. Nutraceuticals are usually obtained by chemical synthesis and extraction from natural sources. Microbial synthesis is more convenient for nutraceutical production due to the fact that chemical synthesis and extraction from natural sources have some disadvantage such as requirement high energy, occurrence of toxic by-products. GRAS (Generally Regarded As Safe) strains are used for microbial synthesis of nutraceuticals. Lactic acid bacteria, propionibacteria, Saccharomyces cerevisiae, Yarrowia lipolytica, Spirulina from GRAS strains used production of common nutraceuticals such as hyaluronic acid, trehalose, folate, riboflavin, carotenoids, conjugated linoleic acids (CLAs), γ -linolenic acid, gamma-aminobutyric acid (GABA). Nutraceuticals are generally considered safe, but they can be harmful if taken at high doses. Moreover, People which posses special conditions such as chronic patients, pregnants should consult their doctor or pharmacist before using nutraceuticals.

KEYWORDS

Nutraceutical, nutrition, bioactivitie, health.

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Poster Session 13

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AN ETHNOBOTANICAL STUDY ON THE HERBALISTS IN TRABZON

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ABSTRACT

The study area was in Trabzon province which has a rich structure for ethnobotany and floristic studies with its history and cultural values. The study was conducted with data of questionnaire performed in urban, 10 herbalist and local people used this herbalist in Trabzon. The study aimed to reveal the utilization of medicinal and aromatic plant of urban and rural people. The rates of plant utilization, the plants they use and the problems they have encountered and their suggestions were determined. Information regarding latin name, public name, medicinal and other uses, opinion and problems were collected with this questionnaires. Demographic characteristics of participants also recorded. As a result of this study, we took an inventory of these plants, classified the plant species into their respective families. The plants with the most sales are, linden, carob, rosehip, daisy, corn tassel, nettle, sage and ginger. It was determined that local people use more medicines and they prepare their herbal medicines by themselves. Native people used medicinal plants most frequently for the treatment of sedative problem, diuretic, constipation problem, diarrhea, blood pressure disorders, respiratory tract problem and intestinal disorders. This research therefore, specifically determined the ethnobotany of plants for reproductive health conditions;

KEYWORDS

Herbalist, Ethnobotany, Trabzon, Medicinal, Aromatic

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THE USE OF ST. JOHN'S WORT EXTRACT IN PRODUCTION OF PROBIOTIC AYRAN

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ABSTRACT

Use of St. John's wort in depression and treatment of cancer and diseases originating from certain viruses increases its use value. Although it is widely used for medical purposes, its use in food products is not that wide yet. Given the literature, the use of this plant in foods is very limited. Total phenolic matter content of the extract of this St. John's wort (*Hypericum perforatum* L.) used in this study was determined using various solvents, and the values obtained were compared. Moreover, some of the characteristics of probiotic ayrans prepared using St. John's wort extract (*Hypericum perforatum* L.) were analyzed. In this study, 3 types of ayrans were prepared by adding 3 concentrations of St. John's wort extract (0.1, 0.01, and 0.005%). While preparing the extracts, total phenolic content was 677.85 g/kg GAE in case of using ethanol as solvent and 656.6 g/kg GAE in case of using methanol. In this study, the effects of addition of St. John's wort extract into the ayrans on titration acidity, pH, dray matter content, taste/odor, and general hedonic scale scores were examined. According to the results obtained, it was determined that, of the probiotic ayrans, dry matter content of Ayran A (added with 0.1% St. John's wort extract), Ayran B (added with 0.01% St. John's wort extract), and Ayran C (added with 0.005% St. John's wort extract) to be 12.0301%, 11.9586%, and 11.9511%, while the acidity values were found to be 0.648, 0.594, and 0.639, respectively. pH values were also determined to be 5.46, 5.64, 5.63. While statistically significant differences were observed in acidity and pH parameters, no significant difference was found in dry matter content ($p < 0.05$). From the aspect of taste-odor and hedonic scale scores, the samples added with 0.005% extract were appreciated at most. The use of this plant, use of which is difficult and not preferred in general, can be increased by using it in food products appreciated by people. As in this study, its extract can be made in beverages such as ayran that is widely consumed by young individuals, and thus a new, alternative and healthy product can be obtained. Use of such a plant in a food that we widely consume in our daily lives may improve its usability.

KEYWORDS

Probiotic ayran; St. John's wort ; phenolic.

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Poster Session 13

Submission ID: 1637

MICROWAVE ASSISTED EXTRACTION OF POMEGRANATE PEEL

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ABSTRACT

The pomegranate peels are rich in terms of ellagitannins which are valuable pharmacologic components (ellagic acid, gallic acid, punicalin and punicalagin (A and B)). It can be obtained these chemicals with pomegranate peel extraction, as well as it can also solve waste problem of pomegranate processing plants. In this study, pomegranate peels were extracted by microwave assisted extraction method to investigate the effect of extraction time, solvent /solid ratio, solvent type and ratio and particle size on extraction yield. Ellagic acid in the extract was determined by HPLC. Experimental studies are under way.

KEYWORDS

pomegranate peel, microwave assisted extraction

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Poster Session 13

Submission ID: 1638

OBTAINING LEMON PEEL OIL WITH SOLVENT-FREE MICROWAVE ASSISTED EXTRACTION

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ABSTRACT

Lemon peel which is food and beverage production processes' waste, includes many pharmacologic components such as fatty acid esters, phenols, coumarin derivatives such as osthole, hexadecane and squalene, terpene derivatives. The aim of this study is obtaining lemon peel oil with solvent-free microwave assisted extraction which is eco-friendly. The effects of microwave power and extraction time are investigated. The most extraction yield as 0,128 g oil/g lemon peel were obtained 360 W microwave power and 12 minutes extraction time.

KEYWORDS

lemon peel, solvent-free microwave assisted extraction

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NEXT GENERATION DNA MARKERS IN SALVIA L. FOR ENGINEERING OF HIGH-QUALITY PLANTS WITH ENHANCED ACTIVE INGREDIENTS

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ABSTRACT

An ideal DNA maker system is expected to have: (i) high level of polymorphism, which is the simultaneous occurrence of allelic variability for a trait within the same population; (ii) co-dominant inheritance to allow discrimination of homozygote and heterozygote locus; (iii) frequent occurrence in a genome to assay more genomic regions or genes; (iv) selective neutral to environmental conditions, developmental stage of the organism or management practices; (v) easy access (availability); (vi) easy, sensitive and fast assay; (vii) high reproducibility within and between experiments and (viii) easy exchange of data between laboratories. The second and third generation sequencing (NGS) methods greatly affected the ways of DNA marker development and utilizations. Among the second generation DNA sequencing method, 454 pyrosequencing, Solexa deep RNA sequencing (RNA-seq), Illumina RNA-seq have been utilized to identify genes involved in pathways of secondary metabolism in *Salvia L.* Data obtained from these experiments are used to aid in the selection and engineering of high-quality plants with enhanced active ingredients. These data obtained in these experiments have also been used DNA marker development studies. Several emerging and established next generation approaches including restriction site-associated DNA sequencing (RAD-seq), specific length amplified fragment (SLAF) sequencing and genotyping by sequencing analyses are breakthrough technologies that enable scientists to efficiently discover and genotype large amounts of genetic information, in any plant species. Genotyping by sequencing seems to have advantages over to RAD-seq and SLAF-seq techniques in terms of sample preparation, amplification, analyses and reduced cost. Next generation DNA marker techniques could be used in single nucleotide polymorphism and microsatellite identification, genome wide association studies, construction of high-density genome maps, phylogenetics studies, identification of candidate genes and genetic linkage analysis. In comparison to conventional DNA markers such as RFLP, CAPS, SCAR, SNP, SSCP and SSR, next generation DNA markers do not need sequence information, many sample handling, PCR and purification steps. They have efficient bar-coding system and capable of high-throughput, mass parallelisation of simultaneous marker discovery and genotyping. Also these techniques do not require high cost per marker analysis. The genus *Salvia L.* consists of about 1000 species, most of which have not been genetically characterized at the DNA level. Sufficient DNA markers in the genus have not been developed, and the most of species in the genus *Salvia* do not have high-density genetic linkage maps. Thus next generation DNA marker technologies could be very helpful for genetic studies of *Salvia*. Among these next generation marker technologies, SLAF-seq has already used in *Salvia miltiorrhiza Bunge*, also known as "danshen". In a previous study researchers extracted from two parents and their 96 F1 individuals of *Salvia* and subjected to high-throughput SLAF-seq studies. A total of 155.96 Mb of data

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contained 155,958,181 pair-end reads. The final linkage map consists of 5,164 SLAFs in 8 linkage groups and spans 1,516.43 cM, with an average distance of 0.29 cM between adjacent markers. In this study, step by step comparison of next generation DNA marker technologies are made and advantages and disadvantages of these technologies in comparison to old and next generation methods are discussed.

KEYWORDS

DNA markers, marker development, Next Generation Sequencing, Salvia, SNP

MICRONUTRIENT MINERAL COMPOSITION OF PLANTAGO ANATOLICA TUTEL & R. MILL.

MUZAFFER MÜKEMRE¹, ABDULLAH DALAR¹

ABSTRACT

Plantago anatolica Tutel & R. Mill. is an endemic medicinal plant species which is growing in Eastern Anatolia Region and extensively used in the treatment of various disorders by indigenous people. Plant species belong to *Plantago* genus have been extensively used in folk medicine worldwide and in our country. Although the phytochemical composition and various health attributing properties of these species were partly investigated, there is no or relatively limited study in the scientific literature regards to *Plantago anatolica*. Within this study, investigation of *Plantago anatolica* plant in the respects of micronutrient mineral composition was targeted. Plant materials were extracted by using 4 different extraction methods: sequential extraction (using different organic solvents sequentially including n-hexan, chloroform, ethyl-acetate, acetone, ethanol and pure water), infusion, decoction and pure water extraction. Micronutrient mineral compounds were analyzed by Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES) and Atomic Absorption Spectroscopy (A.A.S). Within this presentation the amount of Ag, As, B, Ba, Be, Cd, Co, Cr, Cu, K, Mg, Mn, Mo, Ni, Pb, Sb, Se, Si, Ti, V, Zn, Na, Ca and Fe of different lyophilized extracts obtained from plant materials will be discussed with the updated scientific literature.

KEYWORDS

Plantago anatolica, minerals, extraction,

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Poster Session 13

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EFFECT OF AIR DRYING TEMPERATURE ON DRYING KINETICS, ANTIOXIDANT CAPACITY AND TOTAL PHENOLIC CONTENT OF CELERY LEAVES

SEDEM TFEKI¹, EZGI ZGREN², SAMI GKHAN ZKAL²

ABSTRACT

Effect of air drying temperature on drying kinetics, antioxidant capacity and total phenolic content of celery leaves Senem TFEKI¹, Ezgi ZGREN², Sami Gkhan ZKAL²* 1 Pamukkale University, Vocational School of Acipayam, Department of Food Processing, Denizli, Turkey, 1 Pamukkale University, Faculty of Engineering, Department of Food Engineering, Denizli, Turkey, *Presenting Author: S.G. ZKAL (sgozkal@pau.edu.tr) Drying of spices and herbs is a common method for producing of flavoring ingredients. Celery leaves have characteristic aroma and odor that makes them a potential flavoring agent. It also have medicinal usage against asthma, bronchitis, and rheumatism. In this study, it was aimed to investigate the effect of drying temperature on dehydration kinetics, antioxidant capacity and total phenolic components of celery leaves. For this purpose, celery leaves dried in a hot air oven and drying temperature was chosen as 40 °C, 50 °C, and 60 °C. Drying temperature effected drying rate of celery leaves and shortened drying time significantly. Time to reduce moisture ratio of samples to 0.05 for drying experiments at 40°C, 50 °C and 60 °C air temperatures was found as 140, 80 and 60 minutes, respectively. Five different thin layer drying models were fitted to experimental drying data. Page and Modified Page models gave the higher R² (0.9903-0.9982) and lower χ^2 (0.000089-0.001073) and RMSE (0.002579-0.007279) values, and therefore these models were found to be the most suitable models for describing drying characteristics of celery leaves. The transport rate of water during drying was described by effective moisture diffusivity (Deff) based on Fick's equation and its value was found as 2.74×10^{-10} , 4.56×10^{-10} and 7.30×10^{-10} m²/s for samples dried at 40 °C, 50 °C and 60 °C, respectively. The values were in agreement with the general range of 10⁻¹² – 10⁻⁸ m²/s for drying of biological material. Dried celery leaves were analyzed for antioxidant activity and total phenolic content using 1,1-diphenyl-2-picrylhydrazyl (DPPH) and Folin-Coicalteu methods. Both antioxidant activity and total phenolic content of the samples dried at 40°C had higher values. Results suggest that there is no significant (p>0.05) difference in antioxidant activity and total phenolic content between dried samples. Antioxidant activity and total phenolic content showed a slight reduction for 50°C dried sample in comparison with 60°C sample. Therefore, 60°C can be selected as a drying temperature for celery leaves by considering the short drying time and negligible losses of antioxidant activity and total phenolic content.

KEYWORDS

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*Celery leaves, air drying temperature, antioxidant activity, total phenolic content,
mathematical modelling*



Poster Session 13

Submission ID: 1646

ANTIMICROBIAL ACTIVITY SCREENING OF FRANGULA ALNUS

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ABSTRACT

According to traditional medicine of America and Europe knowledge, some species of Frangula genus are widely used. Frangula alnus bark extracts have anticancer, antifungal, antioxidant, antiviral and antibacterial activity, so it is significant for official and folk European medicine. Barks of this medical plant investigation were applied against 17 bacteria and 1 fungi by using disk diffusion method. These microbial strains include Bacillus, Enterobacter, Enterococcus, Escherichia, Klebsiella, Listeria, Pseudomonas, Salmonella, Staphylococcus and Candida geniuses. Twelve of them are standard species and they are important for exact determination of antimicrobial potential. 6.32 and 21.06 mg samples were prepared by using ethanol extraction method. The results were presented that F. alnus has antimicrobial activity against all tested microbial strains. Six of them have high susceptibility (higher than 15 mm); nine of them have moderate susceptibility (14-10 mm) and only three of them have low susceptibility (9-7 mm).

KEYWORDS

Frangula alnus, medicinal plant, antimicrobial activity, disc diffusion method, ethanol extract.

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COMPARATIVE EVALUATION OF THE INHIBITORY EFFECT OF SOME ESSENTIAL OILS ON ACETYLCHOLINESTERASE ACTIVITY IN HUMAN LUNG CARCINOMA (A549) CELLS

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ABSTRACT

Current therapeutic strategies for Alzheimer Disease (AD) focus on increasing acetylcholine (ACh) bioavailability at the synapse. Therefore, revealing enzyme response against therapeutic agents that alter acetylcholinesterase (AChE) activity is extremely important for orienting treatment strategies. Today, there is an increasing considerable interest in the use of essential oils as alternative therapeutic. In this study, we investigated the biological activity (acetylcholinesterase inhibition) of some essential oils (*Helichrysum italicum* and *Rosmarinus officinalis*) in A549 cells. For this purpose, human lung cancer cells (A549) were treated with different concentrations of *Helichrysum italicum* (1-10 μ l/well) and *Rosmarinus officinalis* (1-5-10 μ l/well) essential oils. *Rosmarinus officinalis* essential oil was found the active AChE inhibitor followed by *Helichrysum italicum* essential oil. Decreased AChE activities in A549 cells were observed in a dose-dependent manner. We aim that the results to be obtain from this study is considered to be contribute for further researchs that may result in the annotation of therapeutic drugs improvement or treatment strategy for AChE related diseases.

KEYWORDS

A549, Acetylcholinesterase, Essential oil, Inhibition

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Poster Session 13

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COMPARISON OF ANTIOXIDANT CONTENTS OF DIFFERENT SOLVENT EXTRACTS FROM A FRESHWATER ALGAL SPECIES

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ABSTRACT

Algae, including both microscopic and macroscopic organisms are photosynthetic organisms that develop in all environments except extreme drought place. Especially, they are the main source of primer productivity in all aquatic ecosystems. Generally, to supply both medicine and food for people are used organisms which easily cultivated and accessed. However, in recent times due to the increasing needs, use of algae having rich biological diversity are also increase in these areas. Algae are used in many industries such as food, medicine, cosmetics, construction, textile, paper, biofuels and microbiological media. *Microspora sp.* (Chlorophyta = Green Algae) was collected from localised a lake at an altitude of 2730 meters in the district of Torul in Gümüşhane province in Turkey. Algal samples were collected at a depth of 0-0.5 m from the surface of the lake during the summer when the biomass was high (algal bloom present). The obtained sample was washed several times with distilled water, dried, then ground, and methanol, ethanol, acetonitrile, acetone and ethyl acetate extracts were prepared. Antioxidant activity of each extract was determined by three different antioxidant assay methods: DPPH cleaning, iron (III) reduction / antioxidant power (FRAP) and copper (II) reducing antioxidant capacity (CUPRAC). When the calculated test results were compared, similar results were observed in all three methods. While the highest antioxidant activity was determined in methanol extract (31.15%), the lowest activity was measured in acetonitrile extract (8.97%). In conclusion, *Microspora sp.* has antioxidant activity in different solvents. Therefore, studies can be made for its use in many fields, such as mainly food and medicine.

KEYWORDS

Microspora sp., DPPH, FRAP, CUPRAC, Antioxidant

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Poster Session 13

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ANTIMICROBIAL ACTIVITY SCREENING OF RHYNCHOSTEGIUM MEGAPOLITANUM

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ABSTRACT

In North America, Europe and China, bryophyte have been used as medicinal purpose since 400 years ago. Although antifungal and antibacterial potential of some bryophyte species are determined, most of them are not investigated. Broad range antimicrobial activity of bryophyte species is became a crucial, therefore related research must be applied. In this research, antimicrobial potential of *Rhynchostegium megapolitanum* against a wide range of microorganisms was analyzed. The analyses contain ethanol extract of *R. megapolitanum* against 17 bacterial and 1 fungal species. These microbial strains include *Bacillus*, *Enterobacter*, *Enterococcus*, *Escherichia*, *Klebsiella*, *Listeria*, *Pseudomonas*, *Salmonella*, *Staphylococcus* and *Candida* geniuses. Twelve of them are standard species and they are important for exact determination of antimicrobial screening. 0.34, 0.68 and 1.13 mg samples were prepared and their activity was analyzed by using agar diffusion method. Our present study has shown that *R. megapolitanum* has antimicrobial activity against eight of the studied species. Antimicrobial potential of *R. megapolitanum* are being investigated for the first time.

KEYWORDS

Rhynchostegium megapolitanum, bryophyte, antimicrobial activity, disk diffusion method, ethanol extract.

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USAGE OF NUTRITIONAL SUPPLEMENTS IN TURKEY

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ABSTRACT

Dietary support and nutrient enrichment for the treatment and prevention of nutritional problems are interventional methods commonly used in both developed and developing countries. Nutritional supplements are defined as vitamins and minerals can be used in the form of pills, capsules, syrups in quantities corresponding to high doses. These generally have a wide array of including vitamins, minerals, amino acids, essential fatty acids, fibre, various plants and their extracts. The purpose of this study was to evaluate the use of nutritional supplements according to age, gender, settlement and NUTS 12 regions in Turkey. In this review, data was obtained from Turkey Nutrition and Health Survey (TNHS)-2010 about the use of nutritional supplements. At the TNHS-2010, the participants were asked about the nutritional supplements they had used in the last week; were evaluated according to the variables such as age, gender, settlement and NUTS 12 regions. In Turkey, 23.9% of children aged 0-5 use at least one nutritional supplement. When the use of nutritional supplements was examined according to the region, it was seen that the highest usage rate was in Western Marmara (34.1%) and the least used region was Middle East Anatolia (15.6%) for this age group. The most commonly used nutritional supplements for children in this age group were vitamin D and iron supplements. The rate of use of food supplements in children aged 6-11 years was low (3.1%) and it was determined that they did not use vitamin D, folic acid and iron as nutritional supplements. When the age of 12 years and over were examined, the most commonly used nutritional supplements were reported as vitamin B12 and zinc as the least used. When evaluated in terms of gender, it was determined that the highest amount of calcium (3.4%) and vitamin B12 (3.3%) were used in women, and vitamin B12 (1.6%) was the highest in men in Turkey. When nutritional supplements are used, the amount of consumption and type of these supplements must be determined by the experts. Determining the rates of these products is important at the point of setting the strategies for producers, the state and related non-governmental organizations.

KEYWORDS

Nutritional supplements, TNHS-2010, gender, age

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COMPARISON OF ANTIOXIDANT ACTIVITY OF BAKED AND RAW MATERIALS OF GYROMITRA ESCULENTA

KÜBRA ELİK¹, MEHMET ÖZTÜRK¹, ERHAN KAPLANER¹, ZAIN ULLAH¹, YUSUF SICAK¹, MEHMET EMİN DURU¹, ABDULSELAM ERTAŞ², RIADH BEN MONSOUR³, MEHMET HÜSEYİN SİNĞEÇ⁴

ABSTRACT

Comparison of Antioxidant Activity of Baked and Raw Materials of Gyromitra esculenta Kübra ELİK, Erhan Kaplaner, Zain Ullaha, Yusuf SICAka,b, Abdulsalam ERTAŞc, Riadh Ben Mansour, Mehmet ÖZTÜRKa, Mehmet Emin DURUa E-mail: kubra_elikk@hotmail.com aDepartment of Chemistry, Faculty of Sciences, Muđla Sitki Koçman Üniöersitesi, Mentese-Muđla, Turkey bDepartment of Herbal and Animal Production, Köyceđiz Vocational School, Muđla Sıtkı Koçman University, Koycegiz-Muđla, Turkey cDepartment of Pharmacognosy, Faculty of Pharmacy, Dicle University, Sur-Diyarbakır, Turkey dEcole Nationale d'Ingénieurs de Sfax, Route de la Soukra km 4 - 3038 Sfax, Tunisia Abstract Gyromitra esculenta (Pers.) Fr. is delicious food consumed in Scandinavian countries to Anatolia. Gyromitra esculenta is found in temperate coniferous forests, especially in coniferous trees, which grow on sandy soil; It is a mushroom species that has a red-brown cover under pine trees and sometimes poplar trees and darkens as it gets older. Locally, it is called false morel and when consumed raw it poisons. Despite poisonous in raw form, Gyromitra esculenta is very popular and has been consumed in Scandinavia and North America. It is sold in the market with attached cooking instructions; and consumed in omelets, soups, salads and other common food. Before consume, required cooking should be even necessary. The active constituent of this mushroom exhibiting toxic effects is gyromitrin which is hydrolyzed to monomethylhydrazine during cooking. In giromitrin hydrochloric acid and ethanol catalysis the input is converted to monomethylhydrazine (MMH) This toxin affects liver, central nervous system and sometimes kidneys. Because of its consumption and widely growing in Anatolia it was aimed to study the antioxidant activity of extracts of both raw and baked materials. Gyromitra esculenta (Pers.) Fr. was purchased from local market and divided in to two parts. One part was baked in an oven at 200°C for 30 minutes. The other part was left raw. Then both cooked and uncooked materials were airdried under shadow. The dried both samples were grinded and extracted with petroleum ether, acetone and methanol and water, successively. The extracts were studied for their antioxidant activity using complimentary assays; for this purpose, CUPRAC experiments were carried out based on measuring the total antioxidant amount based on β -carotene-linoleic acid chromophore method, DPPH free radical scavenging activity method, ABTS cation radical scavenging antioxidant activity method and copper (II) reduction capacity. For each antioxidant activity assay, the extracts were dissolved at concentrations of 4000 ppm, 2000 ppm, 1000 ppm and 500 ppm, respectively. These solutions were chosen as the control solution. The initial absorbance was adjusted according to each method by

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means of a spectrophotometer. For example, the initial absorbance at 517 nm for the DPPH assay was chosen as 490 nm for the β -carotene linoleic acid decolorization method. The absorbance values of the control solution in the cuvettes and the absorbance values of the sample substances in the test result were compared and the results were calculated. The total phenolic content of the extracts was determined as pyrocatechol equivalents. The results in β -carotene lipid peroxidation and DPPH radical scavenging experiments, it was shown that the *gyromitra esculenta* mushroom samples cooked for each of the petroleum ether, acetone, methanol and water extracts had higher antioxidant capacity than the raw extracts. **Keywords:** *Gyromitra esculenta*, Antioxidant activity, Baking effect
Acknowledgement: This study is supported by the TUBİTAK with the Project number KBAG-114Z635. **References** [1] Mat, Afife. (2000). *Türkiyede Mantar Zehirlenmeleri ve Zehirli Mantarlar*, Nobel Tıp Kitapevi Press, 2.Edition, Istanbul Turkey. [2] Arshadi, M., Nilsson, C., Magnusson, B., 2006. "Gas chromatography-mass spectrometry determination of the pentafluorobenzoyl derivative of methylhydrazine in false morel (*Gyromitra esculenta*) as a monitor for the content of the toxin gyromitrin", *Journal of Chromatography A*, 1125(2), 229-233.

KEYWORDS

Gyromitra esculenta, Antioxidant activity, Baking effect

THE INVESTIGATION OF ANTIOXIDANT AND ANTI-UREASE ACTIVITIES AND PHENOLIC COMPOUNDS OF THYMUS PRAECOX SUBSP. SKORPILII VAR. SKORPILII

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ABSTRACT

Thyme species (genus *Thymus*, family Lamiaceae) are well known aromatic perennial herbs used extensively throughout the Mediterranean basin. This genus is represented by 38 species and altogether 64 taxa, 24 of them are endemic in Turkey. Members of this genus are called “kekik” in Turkish and are used as herbal tea. Several thyme species are used as medicinal remedies against a variety of diseases as well as for aromatic, culinary, and food preservative purposes. A wide range of biological and pharmacological properties have been reported for these species, such as antiseptic, antitussive, expectorant, antispasmodic, and anti-inflammatory activities. These biological and pharmacological properties have been mainly attributed to the rich essential oils contained in the majority of thyme species as well as nonvolatile compounds including polyphenols and flavonoids (1,2). *Thymus praecox* subsp. *skorpilii* var. *skorpilii* essential oil was found to contain thymol and o-cymene as the major components (2). The aim of this study was to investigate phenolic composition and compare evaluation of antioxidant and anti-urease activities of *Thymus praecox* subsp. *skorpilii* var. *skorpilii*. In the present study, The total phenolic contents, antioxidant and anti-urease activities of different extracts from *Thymus praecox* subsp. *skorpilii* var. *skorpilii* were compared. The extracts were quantitatively analyzed for total phenolic contents using FCR assays. Antioxidant activity of the extracts was measured using the DPPH., ABTS.+ scavenging activities and FRAP assay. The urease inhibitory activities of the extracts were determined according to a reported method (3). The methanol extract of *Thymus praecox* subsp. *skorpilii* var. *skorpilii* had the highest amounts of total phenolics (0.070±0.0001 mgGAE/mg extract) and showed the highest biological activity (ABTS radical scavenging activity: 98%; FRAP: 17.40±0.004 mM FeSO₄/mg extract). Subsequently, we tried to identify the major phenolic compounds in methanol extract by HPLC-DAD/ESI-Q-TOF LC/MS. The major phenolic compounds were identified as: chlorogenic acid, luteolin 7-O-glycoside, quercetin hexoside, apigenin 7-O-glucuronide and feruloylquinic acid. References 1.Jamali CA, Bouzidi LE, Bekkouche K, Lahcen H, Markouk M, Wohlmuth H, Leach D, Abbah A, Chemical composition and antioxidant and anticandidal activities of essential oils from different wild Moroccan *Thymus* species, *Chemistry and Biodiversity*, 2012; 9 1188-1198. 2.Ozen T, Demirtas I, Aksit H, Determination of antioxidant activities of various extracts and essential oil compositions of *Thymus praecox* subsp. *Skorpilii* var. *skorpilii*, *Food Chemistry*, 2011; 124 58-64. 3.Ghous T, Akhtar K, Nasim FUH, Choudhry MA. Screening of selected medicinal plants for urease inhibitory activity, *Biology and Medicine*, 2010; 2 (4): 64-69.

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KEYWORDS

Thymus praecox subsp. skorpilii var. skorpilii, phenolic compounds, antioxidant anti-urease,
Q-TOF LC/MS

SOME CHARACTERISTICS OF INSTANT TEA PRODUCED FROM MINT (*MENTHA PIPERITA* L.)

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ABSTRACT

Mint (*Mentha piperita* L.) is widely consumed as herbal tea in Turkey. Mint which is a very old culture plant, take parts among the medical plants due to its biological effects such as anti-inflammatory, cardioprotective, antioxidant, antibacterial. In this study, it was aimed to enhance alternative methods for instant mint tea production. Instant tea powders were obtained by spray drying and freeze drying techniques from watery extract of mint. Some physical and chemical properties of these tea powders were investigated. Solubility in water, moisture content, yield, Hunter colour values (L^* , a^* , b^*), total phenolic compounds and total sugar quantities were determined. The antioxidant activity of instant tea powders were evaluated with FRAP and TEAC tests. Some individual phenolic compounds and flavor compounds of mint tea powders were determined by HPLC and GC-MS, respectively. Moreover, instant mint tea powders were evaluated for their sensory properties. The results were compared with traditional brewing method. Solubility in water of mint tea powders by using freeze drying and spray drying techniques were found 96,23; 98,33 and moisture content were found 5,56; 0,24%. Yield of tea powder produced from mint (traditional; freeze dried; spray dried) were found 13,77; 23,53; 23,28%. Moreover, the hunter colour values of mint teas prepared by using traditional brewing, freeze dried tea powder, spray dried tea powder were 26,04; 26,19; 26,56 L^* , 3,81; 4,06; 4,48 a^* , -3,65; -2,45; -1,82 b^* . Total phenolic content of tea produced from peppermint (traditional; freeze dried; spray dried) were found as 12.01; 30.85; 34.24 mgGAE/100 mL and total sugar quantities were found as 36,07; 40,98; 44,94 mgGE/100mL. FRAP activities were found as 2936,73; 3774,64; 4323,66 $\mu\text{molTE}/100$ mL and TEAC activities were found as 2854,18; 3398,69; 4008,85 $\mu\text{molTE}/100$ mL, respectively. Hesperidin, rosmarinic acid, linarin, didimin, nevadensin, retusin were identified and quantified of peppermint teas by using high performance liquid chromatograph (HPLC). The amount rosmarinic acid (major phenolic of mint) determined 5,73; 15,17 and 15,58 mg/100 mL, respectively. The amount of phenolic compounds obtained by spray drying and freeze drying techniques are higher than traditional brewing method. However, spray dried herbal tea powders had less flavoring agents because of heat application during drying. When the results of the sensory analysis were examined, the highest average was obtained by traditional method and followed by freeze drying techniques, spray drying, respectively. In this sense, the most important factor may be preservation or losing of volatile aroma components during processings.

KEYWORDS

*Mint (*Mentha piperita* L.), instant herbal tea, spray drying, freeze drying*

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AMINO ACID COMPOSITIONS OF SOME IMPORTANT AROMATIC PLANTS

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ABSTRACT

The goal of the research was to determine the similarities and differences in the compositions of amino acids in some important aromatic plants grown by Good Agricultural Practices (GAP) in Turkey. In the study, *Pimpinella anisum* (anise), *Nigella sativa* (blackcumin), *Papaver somniferum* (poppy), *Coriandrum sativum* (coriander) and *Foeniculum vulgare* (fennel) samples were examined. Chromatographic separations of amino acids were achieved by an Hypersil Gold 100 mm x 2.1 mm x 1.9µm C18 column with 5mM ammonium acetate in water: MeOH (95:5) %0.1 formic acid (A) and MeOH (B). Separated amino acids were identified by liquid chromatography tandem mass spectrometry (LC MSMS) without the need for derivatization. A total of 15 amino acids (arginine, aspartic acid, cysteine, glutamic acid, histidine, isoleucine, leucine, lysine, methionine, phenylalanine, proline, serine, threonine, tyrosine and valine) were analyzed. The method was found to be selective, linear ($r^2 > 0.99$) and precise for all of interested amino acids. The limits of the quantifications (LOQ) were found to be in the range from 0.53 to 1.20 mg kg⁻¹. Results showed that the amino acid contents of anise, blackcumin, poppy, coriander and fennel were found to be 2511.04, 422.54, 666.96, 594.19 and 579.05 respectively. None of the analyzed samples was contained cysteine. Threonine, histidine and valine amino acids were detected in only anise samples. In addition, the highest concentration of lysine, arginine, aspartic acid, proline, methionine, tyrosine, leucine + isoleucine and phenylalanine amino acids were found in anise samples. Fennel has the highest concentration of serine. In conclusion, anise has the most valuable aromatic plant in tested samples due to its high content of amino acids. Therefore, it can be preferred in medicinal and healthcare treatment which amino acid compositions are accepted as important.

KEYWORDS

Amino acid, Aromatic plants, Composition

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Poster Session 13

Submission ID: 1661

INVESTIGATION OF FIELD CROPS AND SOME QUALITY CHARACTERISTICS (*SIDERITIS CONGESTA* DAVIS ET HUBER-MORATH) OF CULTIVATED MOUNTAINS

EMİNE BİLGİNOĞLU¹, YÜKSEL KAN¹

ABSTRACT

This research has been conducted under Konya ecological conditions to determine the effect on yield and quality of some characters of nitrogen fertilizers applied at the different doses of *Sideritis congesta* in Medicinal Plants laboratory and Medicinal Plants Experimental Farm of Agriculture Faculty, Selçuk University. Experiment was designed and applied in randomized complete plot design with three replications in the year of 2012-2013. According to results of this research; the plant height of *Sideritis congesta* 58.66-64.33 cm, the number of flowering branches 49.00-55.00, fresh flowering yield 446.66-623.33 kg / da, essential oil yield 0.24-0.33 % and major essential oil component (β -pinene) was varied between 43.245 and 48,459. The highest dry flower yield and essential oil yield for mountain tea in Konya and similar ecology 10 kg/da nitrogen fertilizer application is reasonable.

KEYWORDS

Mountain tea, Sideritis congesta, Essential oil, β -pinene, Fertilizer

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Poster Session 13

Submission ID: 1663

HERBAL MEDICINES USED IN THE TREATMENT OF DIABETES IN VAN PROVINCE (TURKEY).

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ABSTRACT

Diabetes is a group of metabolic diseases characterized by hyperglycaemia resulting from defects in insulin secretion, insulin action, or both. (American Diabetes Association, 2012). The prevalence of diabetes for all age-groups worldwide was estimated to be 2.8% in 2000 and 4.4% in 2030. The total number of people with diabetes is projected to rise from 171 million in 2000 to 366 million in 2030 (Wild et al., 2004). Commercially available antidiabetic drugs (acarbose, metformin, miglitol and voglibose) used in the treatment and/or management of diabetes have potentially hazardous side effects (liver problems, diarrhoea etc.). Phytopharmaceuticals are seen as complementary medicines or an alternative to conventional medicines with fewer side effects. Phytochemicals identified from traditional medicinal plants present an exciting opportunity for the development of newer antidiabetic agents. Some natural herbal sources which have extraordinary antidiabetic potential are tea polyphenols, pine bar extract, and kotalanol. Local people of Van province have been used various medicinal plants in the treatment of diabetes for a long time. Antidiabetic preparations have been used as valuable alternative and/or complementary agents to conventional medicines in the province. We have detected several antidiabetic herbal medicines in this region such as *Diplotaenia* sp., *Ferula* sp., *Heracleum* sp., *Artemisia* sp., *Centaurea* sp., *Helianthus* sp., *Helichrysum* sp., *Astragalus* sp. and etc. Within this presentation scientific and local names of these plant species used in the treatment of diabetes, their preparation and utilization methods will be presented. References: 1. American Diabetes Association., 2012. Diagnosis and classification of diabetes mellitus. *Diab. Care.* 35 (Suppl.), 64-71. 2. Wild, S., Roglic, G., Green, A., Sicree, R., King, H., 2004. Global prevalence of Diabetes: Estimates for the year 2000 and projections for 2030. *Diab. Care.* 27 (5), 1047-1053.

KEYWORDS

Diabetes, Van province, herbal medicines

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ANTIOXIDANT ACTIVITY, TOTAL PHENOLIC AND FLAVONOID CONTENTS IN SOME HERBAL TEAS

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ABSTRACT

Medicinal and aromatic plants are widely used as herbal teas for the prevention or remedy of many diseases because of their high antioxidant activity and secondary metabolite contents. Antioxidant activity and metabolite contents of plants are analyzed in different solvents and extraction methods in scientific research; however they are widely consumed from peoples in boiling water infusion. The aim of this study is to determine total phenolic, total flavonoid contents and antioxidant activity of some herbal tea including, mint (*Mentha piperita*), lemon balm (*Melissa officinalis*), marshmallow (*Althea officinalis*), chamomile (*Matricaria chamomilla*), green tea (*Camellia sinensis*), sage (*Salvia officinalis*). The antioxidant activity of these six medicinal and/or aromatic plants were evaluated by measuring 1,1-diphenyl-2-picrylhydrazyl (DPPH.), ferric reduction power (FRAP) and 2,2-azino-bis (3-ethylbenzthiazoline-6-sulfonic acid radicals (ABTS+). The samples (1 g) were brewed in boiling water (100 ml) for 5 minutes and the extracts were used for estimation of these parameters. The extraction method was specially selected in the form of widespread use by people. Total phenolic content of the extracts ranged from 6.71 ± 0.29 to 89.82 ± 0.78 mg GAE /g DW. The extract of *Camellia sinensis* exhibited the highest total phenolic content. The flavonoids concentrations of the extracts ranged from $0.292 \pm 0,003$ to 0.965 ± 0.02 mg QUA/g DW from which the extract of *Salvia officinalis* had the highest flavonoids content. Among the plants studied, *Camellia sinensis* showed the highest antioxidant activity in terms of the three parameters. After the green tea, the highest ABTS and FRAP activities were observed in *Mentha piperita* and *Salvia officinalis* respectively, but the DPPH activity of the *Salvia officinalis* is higher than *Mentha piperita*.

KEYWORDS

Medical and aromatic plants, phenolic compounds, DPPH, ABTS, FRAP

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EFFECTS OF PLANT-DERIVED COMPONENT TRANS FERULIC ACID, RESVERATROL AND COMBINATION ON RAT BRAIN CANCER GLIOMA (C6) CELL LINES

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ABSTRACT

Resveratrol (trans-3,5,4'-trihydrocystilbene), a polyphenolic compound, is a natural phytochemical found in many plant species including red grapes, blueberries, peanuts, various fruits and herbs as well as in processed products such as wine. Resveratrol, which acts as an antioxidant to prevent DNA damage that can lead to tumor formation in healthy cells, induces the onset of apoptosis in cancer cells. Ferulic acid (4-hydroxy-3-methoxy-cinnamic acid, FA) is a compound commonly found in plants. It is synthesized from phenylalanine or L-tyrosine and is formed essentially as a trans isomer. Ferulic acid, which is known to effectively cleave free radicals, is known to have a number of physiological functions, including a strong anti-oxidant, anti-inflammatory and anti-cancer properties, by increasing the stress response. In this study, the effects of trans ferulic acid, resveratrol and combinations on time and attenuated rat brain cancer, Glioma (C6) cell line, were investigated in phenolic compounds with high antioxidant capacity in shells, roots and hips of fruits and vegetables. Rat brain cancer cell culture (C6); Cells grown with Dulbecco's Minimum Essential Medium (DMEM), HAMS F 12 (1: 1) + 5% FBS and containing trans ferulic acid, resveratrol and combinations between doses 0.19-100 μ M were incubated for 24 hours at 37 ° C, 5% CO₂ incubator. Cell proliferation was determined by MTT method (3- (4,5-dimethylthiazol-2-yl) -2,5-diphenyltetrazolium bromide). The IC₅₀ values of the working materials were determined by PROBIT analysis of SPSS 18 statistical program and applied to C6 cell lines and intracellular metal determinations were made by DNA-RNA isolations, fluorescence staining and apoptotic cell images and ICP-MS. cDNAs were obtained from the obtained RNAs and gene expression levels were examined. The IC₅₀ values of the substances administered in the C6 cells at the 24th hour were determined as 100 μ M. The application of trans ferulic acid, resveratrol and combinations led to DNA damage (Sod: 23.5 fold, 8.8 fold, 4.0 fold, CAT: 5.4 fold, 1.9 fold, 1.3 fold) by inducing increases in oxidative stress genes in C6 cells. When trans ferulic acid alone was applied, the cytochrome c in the inner surface of mitochondria with a 2.8-fold increase in BAX gene was cytosolic and complexed with APAF-1, resulting in a 12.0-fold increase in the amount. In addition, the tumor suppressor is suppressed by the increase in the p53 gene and apoptosis begins. In resveratrol administration, a 5.8-fold increase in BAX gene resulted in a 29.9-fold increase in the amount of cytochrome-c and initiated apoptosis with the apoptosis inducing protein APAF-1. In addition, the combination of trans ferulic acid and resveratrol has been tumor suppressed by a 16.1-fold increase in p53 gene expression in glioma cells. Furthermore, in the RAPD-PCR results, the combination of trans ferulic acid and resveratrol in combination resulted in more deaths than those performed alone, suggesting that this death may be due to oxidative stress when considered in changes in real-time PCR results. As a result;

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Trans ferulic acid, a plant-derived component, and resveratrol brain cancer cell line Glioma C6 cells, which induce cell death by inducing oxidative stress and also impair mitochondrial structure, thereby enhancing the function of apoptosis proteins.

KEYWORDS

Trans Ferulic Acid, Resveratrol, Antioxidant, Anticancer, Brain Tumor

Poster Session 13

Submission ID: 1666

THE ANTICANCER AND ANTIOXIDANT EFFECT OF L-DOPA, GALLIC ACID AND MIXTURES OF THESE SUBSTANCES ON RATTUS NORVEGICUS BRAIN CANCER CELL LINE (C6)

AYTEN BOSTANCI¹, NEBIYE PELİN TÜRKER¹

ABSTRACT

The dopamine, a neurotransmitter substance and released from the brain, provides communication between nerve cells. Dopamine deficiency causes Parkinson's, Alzheimer's and cancer. It is thought that L-DOPA, an amino acid used as a substitute for dopamine that does not break the blood-brain barrier, exhibits dopamine metabolism in the brain and thus exhibits an action mechanism. It is known that L-DOPA, which is used in the absence of dopamine, is found in bean plant. Gallic acid (3,4,5-trihydroxybenzoic acid, GA), a natural antioxidant, is a polyhydroxyphenol compound with many fruit types such as green tea, grape, strawberry, and banana. It has been observed that GA induces apoptosis in cancer cell lines but does not have a cytotoxic effect on healthy cells. In this study, we aimed to assess single and combined effect of l-dopa and gallic acid on rattus norvegicus brain cancer (C6) cell lines. C6 cells were grown in cell media (Dulbecco's Minimum Essential Medium (DMEM), HAMS F 12 (1:1)+ % 5 FBS). Cells, were treated with single and combined in 0.78 to 800 μ M doses of octopamine, naringin, p-coumaric acid, and then incubated 5% CO₂ incubator in 37°C for 24 hours. Cell viability were observed by MTT assay (3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide). IC₅₀ values of the studied substances were determined by PROBIT analysis of SPSS 18 statistical program and applied to C6 cell lines. DNA-RNA isolations, intracellular metal determinations by ICP-MS and apoptotic cell images by fluorescence staining were performed. CDNA libraries were generated from the obtained RNAs. The IC₅₀ values at 24 hours of the substances administered in C6 cells were determined as μ M. The application of L-dopa, gallic acid, and combinations caused oxidative stress in C6 cells, leading to DNA damage by bringing 2,5 fold, 12,2 fold, 3,6 fold, 1.4 fold, 8.7 fold, 4.8 fold increase in SOD gene respectively. Bcl-2, which is an apoptosis inhibitor, was broadly suppressed in the administration of the combination of L-Dopa and Gallic acid to glioma cells and showed a 3.0-fold increase in BAX compared with the control. This increase in BAX gene disrupted the mitochondrial membrane and initiated apoptosis by providing cytosolic release of cytochrome-c. L-dopa and Gallic acid alone did not inhibit the activity of BCL-2 but increased the mitochondrial ion balance. Furthermore, in RAPD-PCR results, it is thought that application of the combination of l-DOPA and gallic acid alone is more effective on cancer cells than antagonistic effect in cells. As a result; The herbal origin of l-DOPA and gallic acid showed an anticancer effect on the brain cancer cell line glioma C6 cell lines and it has also been determined that gallic acid induces cell death by producing more oxidative stress in C6 cells compared to l-Dopa and combination alone.

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KEYWORDS

Gallic Acid, L-Dopa, Antioxidant, Anticancer, Brain Tumor

FULVIC ACID POTENTIAL OF HUMUS CREATED IN LOCATIONS OF THE RHODODENDRON (RHODODENDRON PONTICUM L.) IN WEST BLACK SEA REGION

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ABSTRACT

The aim of this work is to reveal the potential of fulvic acid of humus formed at Rhododendron (*Rhododendron Ponticum L.*) locations in West Black Sea Region. It is thought that humic substances occurring in these locations will constitute an important resource for fulvic acids. Fulvic acids are macromolecular compounds found application area in wide range as agriculture, industry, environment and biomedicine. Plot areas was taken from humus created on O2 (organic) horizon in 27 different locations with 3 replicates in the spreading area of Rhododendron in this work. It was used 35 ml (25,25 gr) from the resine of XAD-8 for the extract of 100 ml fulvic acid in the purification of fulvic acid. It was utilized various spectroscopic methods as FTIR and UV for the characterization of the purified fulvic acid structures. Structural and combination properties related fulvic acids is obtained using the methods of UV-Visible, IR methods and some decomposition. The results found from this research were compared with values of 3 different Turkish leonardite. According to this, the amount of fulvic acids in its content of the humic substances in locations of Rhododendron in Black Sea region is found as 7,12 % while fulvic acid content of humic substance originated from leonardite is average 0,2 % . Bu durum ormanlardaki humusun fulvik asit için önemli bir potansiyel oluşturduđunu göstermektedir. This situation, it is seen that humus in the Rhododendron forests is an important fulvic acid source.

KEYWORDS

Rhododendron humus, fulvic acid, humic substances, leonardite

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Poster Session 13

Submission ID: 1668

INVESTIGATION OF FIELD CROPS AND SOME QUALITY CHARACTERISTICS (SIDERITIS STRICTA DAVIS ET HUBER-MORATH) OF CULTIVATED MOUNTAINS

EMİNE BİLGİNOĞLU¹, YÜKSEL KAN¹

ABSTRACT

This research has been conducted under Konya ecological conditions to determine the effect on yield and quality of some characters of nitrogen fertilizers applied at the different doses of *Sideritis stricta* in Medicinal Plants laboratory and Medicinal Plants Experimental Farm of Agriculture Faculty, Selçuk University. Experiment was designed and applied in randomized complete plot design with three replications in the year of 2012-2013. According to results of this research the plant height of *Sideritis stricta* 118.33-138.66 cm, the number of flowering branches 14.30-32.60, fresh flowering yield 513.33-743.33 kg / da, essential oil yield 0.06-0.10% and major essential oil component (β -pinene) was varied between 27.8 and 38.666%. According to the results of this research; The highest drug floweryield and essential oil yield from mountain tea in Konya and similar ecology 10 kg/da nitrogen fertilizer application is reasonable.

KEYWORDS

Mountain tea, Sideritis stricta, Essential oil, β -pinene, Fertilizer

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Poster Session 13

Submission ID: 1670

**THE ANTIOXIDANT CAPACITY OF THE ACETONE, METHANOL
AND WATER EXTRACTS CRATAEGUS MONOGYNA JACQ SUBSP
MONOGYNA COLLECTED FROM THE EASTERN ANATOLIA
REGION OF TURKEY**

ÖZEL ÇAPIK¹, MERYEM ŞENGÜL KÖSEOĞLU¹, RAHIMEH JABERİ¹, GÜLERAY AĞAR¹

ABSTRACT

The genus *Crataegus* is the largest genus among the subfamily in the family Rosaceae which comprises 2830 species in 95 genera, which are generally known as the hawthorns. *Crataegus monogyna* (C.M) is one of the most common species used as the “hawthorn” of traditional herbalism. In traditional medicine, hawthorn has been widely used to treat human diseases. The *Crataegus monogyna* has enough research on the biological activities such as antimicrobial, antioxidant, antitumor, antiviral, cardioprotective, neuroprotective, nephroprotective, hepatoprotective and anti-inflammatory. The clinical studies have shown that there are no significant adverse effects associated with hawthorn consumption. There are a great number of studies that suggest the huge potential of *Crataegus monogyna* fruit extract in the treatment of various toxicities due to the presence of various bioactive natural compounds, such as flavanoids and triterpenic compounds. But up to now there are limited number of investigations related to *Crataegus monogyna* Jacq subsp *monogyna* species antioxidant activity. In this working was aimed to determine antioxidant activity of acetone, methanol and water extracts of *Crataegus monogyna* Jacq subsp *monogyna* fruits in different concentrations (5; 10; 20; 40 and 80 µg/mL) that collected in the eastern Anatolia, Turkey by DPPH(2, 2-Diphenyl-1-picrylhydrazyl) radical scavenging method. The fruit extracts are used as fresh due to their broad pharmacological effects and minimal adverse effects. Extracts at different concentrations were added to 0.5 mL of methanolic DPPH solution (0.1 mmol). The estimated time of reaction (30 min) was determined by considering the reduction of the absorbance at 517 nm. The absorbance was measured at room temperature, in darkness, against a blank. The absorbance of the control (3ml of methanol in 0.5 mL of DPPH solution) was measured. According to the results of the study, *Crataegus monogyna* Jacq subsp *monogyna* has antioxidant activity. The strongest antioxidant activity of acetone and methanol extract could be due to the presence of flavonoids and phenols. The 40-80 µg/mL doses of fruit extracts were more effective than other doses. As a result, *Crataegus monogyna* Jacq subsp *monogyna* can be recommended for future clinical trials and chemotherapeutic drugs aimed at examining its beneficial effects.

KEYWORDS

Antioxidant capacity, DPPH, Crataegus monogyna

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¹ÜNİVERSİTE

USE OF AROMATIC PLANTS TO REDUCE RUMINAL METHANOGENESIS AND AMONIA CONCENTRATION

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ABSTRACT

Aromatic plants, also known as herbs and spices, have been used in the Middle East since approximately 5000 BC for their preservative and medicinal properties, in addition to enhancing the aroma and flavour of foods. Currently, there is an increasing interest in using herbs and spices in animal nutrition, in order to replace the use of antibiotics and ionophore anticoccidials, after the ban of antibiotics used as feed additives in 2006 by EU. The aromatic plants, their extracts and their essential oils have been examined due to their advantages over the antibiotics as growth promoters. They are residue free and generally recognized as safe. Aromatic plants and its essential oils have been used to manipulate ruminal metabolism in order to improve feed efficiency and animal productivity. Some promising results have been obtained from in vitro batch culture studies that essential oils or their components have the potential to improve nitrogen and/or energy utilization in ruminants. It has shown that some aromatic plants derived substances had a strong bactericidal activity against pathogenic bacteria. This has prompted some researchers to study potential of aromatic plants derivatives to reduce ruminal methanogenesis for limiting the release of this gas into the atmosphere. In vivo research using novel aromatic plants in rumen nutrition has the potential to benefit animal production and health, as well as the environment. In this review effect of aromatic plants and its essential oils on reducing ruminal methane and ammonia and its mode of action in the rumen will be focused.

KEYWORDS

aromatic plant, essential oils, ruminant, methane, ammonia, mitigation

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Poster Session 13

Submission ID: 1672

USE OF LICORICE ROOT (GLYCYRRHIZA GLABRA) IN ANIMAL FEED AS ACTIVE INGREDIENT

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ABSTRACT

Interest in aromatic plants and extracts has been increased following the ban of antibiotics use in animal nutrition in 2006 due to the risk of animal and human health. These plants and extracts are natural and reliable substances and they have been used widely for medical purposes and as spices for centuries. Since food safety is at the forefront nowadays, the use of natural additives and extracts have gained of importance. For this reason, great emphasis is placed on the use of plants and extracts containing antioxidant active compounds in their structure. As a matter of fact, these plants and extracts have some characteristics such as antimicrobial, antioxidant, antilipidemic, antifungal, antiviral, digestive system stimulator and also have some positive effects on organism such as optimizing performance, improving feed efficiency and vitality. Licorice root (*Glycyrrhiza glabra*) is among the oldest and most widely known medical plants in the world. A large number of pharmacologically active compounds have been isolated from the Licorice root plant. The main components of these bioactive compounds are triterpenoid saponins and various types of phenolic compounds. Experiments on animals have shown that the bioactive substances contained in the plant caused significant decreases in plasma total lipid, cholesterol, triglyceride, LDL, VLDL and increases in the HDL-cholesterol content. It has been shown that licorice root causes an increase in antioxidant enzyme activity. This review provides a brief overview on general structure of the Licorice root and its use as an active ingredient in animal nutrition.

KEYWORDS

active ingredient, animal nutrition, aromatic plant, extracts, Licorice root

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Poster Session 13

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MEDICINAL USES AND CHEMICAL CONTENTS OF MARIGOLD (CALENDULA OFFICINALIS) PLANT

CAHİDE YETİŞ¹, ŞAHANE FUNDA ARSLANOĞLU¹

ABSTRACT

It is as old as human history that people meet their clothing, food and treatment needs from natural products. The increase in the world population and the development of the industry have rapidly increased the availability of the active substances from the plants found in the ending country, and the demands of the countries of the world have also increased. When the origins of the drugs developed between 1981-2006 were examined, 32% of them were proved to be natural or semisynthetic. In addition, the fact that nearly half of the drugs are based on natural resources, prompts drug development efforts to the nature. The effect of herbal medicines on human health is extremely important. Herbal remedies for the prevention and treatment of various diseases have been used since ancient times. Marigold (*Calendula officinalis*) used for the treatment of external and internal wounds is not cultured for any purpose except being an ornamental plant in our country. . For this reason, cultural studies and evaluation as a herbal drug in our country at the scientific level of work is almost not to be tried. The plant, which is unique to the Mediterranean, is a single annual and perennial varieties and has 20-30 varieties. The plant is green every season. It is called as “pot marigold”, “calendula”, “ringerblume” and “souci des jardins” in various countries of the world,. It is known in our country with the names as “aynısafa”, “kadife çiçeđi” and “tıbbi nergis”. It is also used medically in addition to giving color to desserts. Chemical ingredients include triterpenes, flavonoids, essential oils and sesquiterpenes. As a detox in chronic skin disorders such as eczema, acne, in bowel and liver diseases, bed wounds, antiseptic, hepatitis (a, b, c), in the treatment of foot wounds, baby creams, wound healing, diuretic, diarrhea, antibacterial and antifungal effect is used as a medicinal plant for the purpose. In this study, the chemical content of *Calendula officinalis* plant and its use as medicinal plant will be investigated.

KEYWORDS

Calendula officinalis, Aynısefa, marigold, medicinal plant, herbal drug

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Poster Session 13

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NATURAL DYES FROM PLANTS

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ABSTRACT

NATURAL DYES FROM PLANTS Merve Yüzbaşıođlu, Ayşe Kuruüzüm-Uz Hacettepe University Faculty of Pharmacy, Dept. of Pharmacognosy, 06100, Ankara, TURKEY Plants in modern society are valued for their flavor, fragrance, medicinal and healthful qualities, economic and industrial uses, pesticidal properties and colorizing materials (dyes). Natural dyes are derived from naturally occurring source such as plants, insects, animals, clays and minerals. The range of colors is limited, but lovely. Due to their non-toxic properties, less side effects, more medicinal values and eco-friendliness, natural dyes are suitable for dyeing textiles, drugs, foods, cosmetics etc. They can also provide extra properties such as UV protection, skin moisturizing, anti-aging, antimicrobial, insect repellent and deodorizing (1). Most natural dye colors are found in the roots, bark, leaves, flowers, fruits, skins and shells of plants. The well-known ancient dyes include red dye from roots of *Rubia tinctorum* L. and leaves of the plant *Lawsonia inermis*, blue indigo dye from leaves of *Indigofera tinctoria*, yellow dyes from stigmas of saffron (*Crocus sativus*) and rhizome of turmeric (*Curcuma longa*). Flavonoids (flavonols, flavones, flavanones, chalcones/ aurones, anthocyanins), hydroxycinnamic acids, carotenoids, tannins, naphthoquinones and anthraquinones are the phyto-colour compounds found in the plants. As synthetic dyes develop, they cause several kinds of pollution in the environment. Likewise some dyes can cause allergic dermatoses, respiratory diseases, contact dermatitis and mutagenicity. Synthetic dyes are so problematic because the families of chemical compounds that make good dyes are also highly toxic and carcinogenic to humans. In recent times natural dyes has regained importance due to the environmental awareness about health problems caused by synthetic dyes. But contrary to this popular opinion, natural dyes are often neither safer nor more harmful than synthetic dyes. They are less permanent, more difficult to apply, wash out more easily, and often involve the use of highly toxic mordants. Mordants help make the dye colour fast by chemically bonding the dye to the fabric. Not all natural dyes require toxic mordants to create light and wash fast colorways. Also, garments dyed with lichens, onion skins etc. don't always have a mordant, which could be good for people with sensitivities because they are substantive dyes- that is, they don't require the use of a mordant. But, some natural dyes, such as the hematein derived from logwood (*Haematoxylon campechianum*) are themselves significantly poisonous. It is very important that to improve the quality and quantity of dye yielding plants and to detect their toxicological characters are required. References: Ashis KS, Konar A. 2011. Dyeing of Textiles with Natural Dyes, Natural Dyes, Kumbasar EA (Ed.), InTech, 29- 56. "Dyes and Chemical Sensitivities." Organic_Clothing. Accessed March 31, 2017. http://organicclothing.blogs.com/my_weblog/2005/10/dyes_and_chemic.htm Kasturi A. 2015. Hazardous Materials In Chemical Dyes And Natural Solutions, International Journal Of Engineering Research (Online) S-1. Senthilkumar RP, Bhuvaneshwari V, Sathiyavimal S, Amsaveni R, Kalaiselvi

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KEYWORDS

Natural dyes, mordants, synthetic dyes, anthraquinones, naphthoquinones

THE SUSTAINABILITY, PRODUCTION AND QUALITY FROM SOME OF BLACK CUMIN SPECIES IN TURKEY

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ABSTRACT

Black cumin (*Nigella sativa* L. and *Nigella damascena* L.) is a annual, herbaceous that is plant belongs to Ranunculacea family. The origin of black cumin extend to from Eastern Mediterranean countries to Eastern and Southern Europe. *Nigella sativa* L. is widespread cultivated in Afyon, Burdur, Isparta, Kütahya and Konya regions in Turkey. *Nigella damascena* L. species is not yet cultivated in our country. The parts of the black cumin used are seeds and have a very important place due to fixed oil, volatile oil and nutrients constant obtained from its seeds. The oil obtained from the seeds of the plant is used in the treatment of many diseases with medical purposes as well as being used as a spice and flavor in food products. *Nigella sativa* L. and *Nigella damascena* L. are commercially available varieties of plants in Turkey. Known the name of black cumin species commonly used in Turkey is *Nigella sativa* L. whereas the use of *Nigella damascena* is not common. In this study, information about the biology, chemical structure, production and evaluation of every both species will be given.

KEYWORDS

Black cumin, fixed oil, essential oil, traditional medicine

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EFFECTS OF GREEN TEA IN THE TESTICULAR TISSUE

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ABSTRACT

Tea is commonly consumed beverage in the world. Tea can be categorized into three main types, depending on the level of oxidation, as green tea, oolong tea and black tea. Tea polyphenols are important due to the positive association between tea consumption and beneficial health effects. Green tea extract contains polyphenols which make up 25–35% of the dry weight of green tea leaves. Green tea polyphenols including epigallocatechin-gallate (EGCG), epigallocatechin (EGC), epicatechin-gallate (ECG), and epicatechin(EC) show antioxidant properties. Many investigations have been performed on the antioxidant activity of tea catechins on testicular tissue stimulated with agent which causes oxidative stress. Messarah M. et al. report that green tea has protective effect on toxicity of testis tissue via arsenic. In a study, green tea extracts show ameliorative effects on nicotine-induced oxidative stress as well as the reproductive effects by improving the oxidative status, semen quality and the testicular histological damage. In another study, it is observed similar results, and also an increase number of Leydig cells in nicotine stimulated rats. Awoniyi DO. et al. report that green tea supplementation causes an increase in GSH levels, in the superoxide dismutase activity, and a decrease in lipid peroxidation in testicular tissue of rats stimulated with oxidative stress agent. Oxidative stress increases in diabetes due to overproduction of reactive oxygen species (ROS) and decreased efficiency of antioxidant defenses. Therefore diabetes mellitus causes harmful effects on male sexual and reproductive functions. It is observed that administration of green tea to diabetic rats improves the testis structure, induces the proliferation index and reduces apoptotic index. Green tea affects in the protection of testicular tissue against oxidative damage by possibly increasing the antioxidant defense mechanisms in rats. Excess amounts of ROS have adverse effects on sperm motility and fertility due to damaging to lipids and DNA of spermatozoa. Administration of green tea supplements to rats which stimulated with oxidative stress causes increasing the antioxidant defence mechanisms and thereby improving the sperm quality and function. In conclusion, antioxidant property of polyphenols in green tea has beneficial effects on testicular tissue damages due to oxidative stress.

KEYWORDS

Green Tea, Testicular Tissue, Polyphenols

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SPICES IN POULTRY NUTRITION: ANTIOXIDANT EFFECT AND MODES OF ACTION

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ABSTRACT

In recent years, spices and their components have received attention as antioxidant source. Some spices exert antioxidant properties, and may enhance immune status. The mode of action of spices on poultry contain high concentrations of phenolic compounds that have strong H-donating activity. The aim of this paper is to provide an overview of the published data on the potential of spices and their components in poultry nutrition, and to describe their possible modes of action. The current knowledge on potential antagonistic and synergistic effects is presented and areas for future research are proposed.

KEYWORDS

Spices, poultry nutrition, antioxidant effects, mode of action

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Poster Session 13

Submission ID: 1680

EXTRACTION METHODS OF ESSENTIAL OILS FROM MEDICINAL AND AROMATIC PLANTS

HATICE BETÜL KAPLAN¹, SEBAHATTIN NAS¹

ABSTRACT

Essential oils are used in a wide variety of consumer goods such as detergents, soaps, toilet products, cosmetics, pharmaceuticals, perfumes, confectionery food products, soft drinks, distilled alcoholic beverages (hard drinks) and insecticides. The world production and consumption of essential oils and perfumes are increased very fast. And also the use of alternative/herbal medicine for the prevention and treatment of various illnesses has been increasing interest worldwide in recent years. A wide range of technologies is available for the extraction of active components and essential oils from medicinal and aromatic plants. Production technology is an essential element to improve the overall yield and quality of essential oil. The traditional technologies pertaining to essential oil processing are of great significance and are still being used in many parts of the globe. The extraction methods are traditional technics such as distillation, expression (cold pressing), solvent extraction and modern (non-traditional) technics such as Supercritical fluid extraction, Microwave-assisted extraction, Solid phase micro-extraction, Simultaneous distillation extraction. All methods has advantages and disadvantages. The choice of extraction method depends on the economic feasibility and suitability of the process to the particular situation. The various extraction methods of essential oils from medicinal and aromatic plants oils are reviewed in this presentation.

KEYWORDS

Medicinal Plants, Aromatic plants, extraction methods, essential oil

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COMPARISON OF ANTIBACTERIAL ACTIVITIES OF GRAPE SEED, BLUEBERRY POMACE AND FOX GRAPE POMACE EXTRACTS ON GRAM POSITIVE AND GRAM NEGATIVE BACTERIA

MELIKE DEMİRKOL¹, ÖMER FARUK ÇELİK¹, ZEKAI TARAÇI¹

ABSTRACT

Many in vivo and in vitro studies suggest that flavonoids possess a variety of biological functions including antiallergic, anticarcinogenic, antihypertensive and antimicrobial properties. They are potential antioxidants thus may play an important role in the persistence of health. There are many plant based compounds exhibiting antimicrobial activity against pathogen microorganisms due to the presence of hydroxyl groups and conjugated double bonds in the reactive groups such as flavonoids. Berries and grapes are regarded as rich fruits in terms of their flavonoid contents. In this study, the antibacterial activities of extracts of dried grape (*Vitis vinifera*) seed, fox grape (*Vitis labrusca*) and blueberry (*Vaccinium myrtillus*) pomaces will be investigated. Grape seeds were sun-dried while both pomaces were lyophilized. After grinding, the extracts of regarding powders will be prepared using methanol as the solvent. All extracts will be applied at different concentrations in order to observe and evaluate their antibacterial activity. *Escherichia coli* and *Staphylococcus aureus* will be used as model microorganisms representing gram negative and gram positive bacteria, respectively. Antibacterial activities of extracts will be determined using agar disc diffusion method. Bacteria will be cultivate from stock and after a couple of passages they will be grown until mid-log phase in Tryptic Soy Broth (TSB). Following their plating on Mueller-Hinton agar, discs that are impregnated with different concentrations of phenolic extracts will be placed on the agar. After incubation, the inhibition zones around the discs will be measured milimetrically and the results will be evaluated.

KEYWORDS

Antimicrobial, antibacterial, berry, grape, drying, extract, phenolics

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Poster Session 13

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THE CHARACTERISTICS AND USAGE OF MARIGOLD (CALENDULA OFFICINALIS L.) FROM PAST TO FUTURE

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ABSTRACT

Marigold (*Calendula officinalis* L.) is an annual, herbaceous plant that belongs to the Asteraceae family. It was recorded that the origin of Marigold is a plant originating in Central and Southern Europe, Western Asia and America. It has been almost every flora of Turkey. At the same time, this plant cultivated in Turkey is one of medicinal and aromatic plants. Especially in terms of medicinal, the plant contains secondary metabolites such as essential triterpene saponins, flavonoids, carotenoids and essential oils. In addition to its use as food, cosmetics, and paint, flowers of the same plant are also used in the treatment of many diseases. At the same time, the plant is widely used as a medicinal oil in traditional medicine applications in Turkey. It has been determined that studies on marigold have anti-inflammatory, antimicrobial, antiviral, antihypertensive and antilipid properties. In this study, information about the biology, chemical structure, production and evaluation of the plant will be given.

KEYWORDS

Marigold, medicinal oil, triterpene saponin, essential oil, traditional medicine

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CROSS-GENERA TRANSFERABILITY OF CHLOROPLAST MICROSATELLITE MARKERS IN THE GENERA OF LAMIACEAE

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ABSTRACT

Microsatellites, also referred to as simple sequence repeats (SSRs) or simple tandem repeats (STRs), were first described by Litt and Luty in 1989. Microsatellites consist of tandemly repeated mono-, di-, tri-, tetra- or penta- and hexa-nucleotide motif units distributed throughout the genomes of most eukaryotic organisms. The differences in the tandemly repeating motifs are caused by DNA polymerase slippage during replication, or slipped strand mispairing. Repeat differences in microsatellite motifs are powerful DNA markers because they are highly polymorphic even between closely related lines and varieties, reproducible and co-dominant markers exhibiting multiallelic nature and inherited as simple Mendelian fashion. Microsatellites can be found in nuclear and organellar genomes, which are enclosed in chloroplast and mitochondria. These tandemly repeated DNA can be located within transcribed, un-translated and un-transcribed regions of the genomes including the regulatory regions. Microsatellites found on the transcribed and untranslated regions of genes seem to have higher level of cross-transferability within the genetically related organisms. Microsatellites located on the chloroplast genome of higher plants are usually composed of mononucleotide (usually As and Ts) repeats and occasionally di-nucleotide repeats. The utilization of chloroplast microsatellites has been reported by Taberlet et al. in 1991. Later on, several universal primers were reported for amplifying chloroplast regions in various crops. In the present study a total of 10 conserved chloroplast microsatellite primer pairs developed from chloroplast DNA sequences of *Nicotiana tabacum* were used to amplify chloroplast microsatellites of *Sideritis stricta*, *Stachys* spp., *Salvia pisidica* and *Thymus cilicicus*, members of the family Lamiaceae. Two different touch-down polymerase chain reaction profiles differing in the annealing temperatures were used in the amplification studies before high resolution of agarose gel electrophoresis separation. Amongst the 10 conserved chloroplast primer pairs (CCMP), CCMP09 did not amplify DNA templates of the genera while CCMP05 only amplified template of *Thymus cilicicus*. Rest of the CCMP primer pairs could amplify DNA templates of the genera tested. The range of amplified product varied from 80 bp to about 200 bp. Among the CCMP amplicons, CCMP01 markers contained TA dinucleotide repeats while rest of the CCMP markers consisted of A or T mononucleotide microsatellites. Successful amplification of primer pairs obtained from chloroplast of *Nicotiana tabacum* indicated that chloroplast genome sequences are highly conserved due to the low level of mutation rate among the plant species. Because chloroplast genomes are haploid and contain many copies in a cell of higher organisms and most chloroplast genomes have maternal inheritance, cross-genera transferable chloroplast microsatellite markers reported for *Sideritis stricta*, *Stachys* spp., *Salvia pisidica* and *Thymus cilicicus* could be successfully used in genetic, conservation and species identification studies. Maternal inheritance of these markers could be used in determination of hybrid identification of the genera tested.

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KEYWORDS

Chloroplast genome, microsatellites, SSR, Sideritis, Stachys, Salvia, Thymus

Poster Session 13

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APPLICATION OF SINGLE PRIMER AMPLIFICATION REACTION (SPAR) MARKERS IN FINGERPRINTING STUDIES OF AROMATIC PLANTS

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ABSTRACT

The theoretical advantages of using genetic markers, the potential value of genetic marker linkage maps and direct selection in plant breeding were first reported about eighty years ago. However, it was not until the advent of DNA marker technology in the 1980s, that a large enough number of environmentally insensitive genetic markers generated to adequately follow the inheritance of important agronomic traits and since then DNA marker technology has dramatically enhanced the efficiency of plant breeding. The 1980s could be considered as the birth of molecular breeding. The discovery of polymerase chain reaction (PCR) has facilitated the development of new marker systems that have a variety of applications, some of which include: (i) fingerprinting of genotypes or varieties for identification and bar-coding purposes; (ii) mapping of genes and quantitative trait loci for important traits; (iii) positional cloning of desired genes; (iv) identification of chromosome segments carrying desired loci; (v) establishing phylogenetic relationships among different genotypes or species; (vi) selection of suitable parents for hybrid breeding and gender identification; (vii) assessing the basis of somaclonal variation and epigenetic modifications; (viii) identification of pathogen races and biotypes; (ix) prediction of heterotic cross combinations; (x) gene pyramiding; and (xi) management, utilization and preservation of genetic resources. The various PCR-based marker systems are of two types depending on the primers used for in vitro DNA amplification: (i) arbitrary or semi-arbitrary primed PCR marker systems which are developed without prior genomic sequence information of the plant species under the study (AP-PCR, DAF, RAPD, AFLP, ISSR, DAMD etc.), and (ii) site-targeted PCR marker systems which are developed from known genomic DNA sequences of the plant species under the study (CAPS, SSR, SCAR, SRAP). Single primer amplification reaction (SPAR) marker system belongs to the first group; being in the semi-arbitrary primed PCR marker systems. In the present study, we investigated whether SRAP markers are useful in fingerprinting studies of the genera *Thymus* L., *Origanum* L., *Rosmarinus* L. and *Ocimum* L. represented with *Thymus serpyllum*, *Origanum majorana*, *Rosmarinus officinalis* and *Ocimum basilicum*. High genomic DNA samples of above mentioned plant species were extracted. About 60-120 ng genomic DNA templates were amplified by touchdown polymerase chain reactions (PCRs) using a single primer. Amplified products were separated by agarose gel electrophoresis and SPAR markers of the plant samples were visualized with the help of ethidium bromide staining. Analysis revealed that all the six primers could successfully amplify the genomic DNA samples of the aromatic plant species used in the study. In each SPAR marker profiles among the six single primers there were densely amplified products ranging one to three along with some other less dense products. The SPAR marker are produced using a single primer thus these densely amplified products contained primer binding sites at both terminal

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ends while these less dense amplicons contained one primer binding sites at one terminal ends. Present study revealed that SPAR markers could be successfully used in genetic, conservation and species identification studies of genotypes and varieties in the genera *Thymus*, *Origanum*, *Rosmarinus* and *Ocimum*.

KEYWORDS

DNA markers, PCR-based markers, Thymus serpyllum, Origanum majorona, Rosmarinus officinalis, Ocimum basillicum

Poster Session 13

Submission ID: 1687

INVESTIGATION OF CHEMICAL CONTENT OF EREMURUS SPECTABILIS BIEB. EXTRACT USING SUBCRITICAL WATER EXTRACTION

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ABSTRACT

Nowadays, food and pharmaceutical industry pay great attention to Subcritical water extraction method (SWE) attributed to being powerful technique for the extraction of various valuable solid samples [1, 2]. In addition, it has been used in environmental applications to extract hazardous components from various matrixes [3]. Subcritical water is known as water in the temperature range of 100-374 °C and pressurized enough to maintain its liquid form [4]. Solvent power can be adjusted by altering the temperature. Thus, SWE can be used as a non-polar solvent at high temperature [5-8]. Subcritical water extraction is a distingue method when comparing traditional methods due to being time-saving, rapid, green, and selective method [3, 9]. Thus, subcritical water extraction method was performed to determine chemical components of Eremurus Spectabilis Bieb. in this study. A large number of plants have been discovered by mankind since centuries. People use these plants for different purposes. This plant is used in medicinal and glue purposes in food grown in the region [7]. Samples of Eremurus Spectabilis Bieb were dried and crushed for extraction using the experimental set-up as shown in our previous work [2]. Extracts were collected after extraction time under 105 °C and 40 bar. Samples were analyzed by GC-MS according to Wiley7Nist05.L, NIST05a.L, and W9N11.L, to determine extracted compounds. Some of these compounds are as follows: Glycidyl alcohol, Acetic acid, 1,2-Propanediol, 3-Furanmethanol, 1,2,3-Propanetriol, Dimethyl phthalate, D-Erythro-Pentose, Hexadecanoic acid, 9-Octadecenoic acid.

KEYWORDS

Eremurus Spectabilis Bieb, Subcritical water extraction

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Poster Session 13

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RESOLUTIONS OF MINISATELLITE (DAMD-PCR) AND MICROSATELLITE (SSR) MARKERS IN SALVIA L.

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ABSTRACT

Sage (*Salvia L.*) is one of the largest genera in the family Lamiaceae. The genus consisted of about 1000 species and many of which are used in spices, drug and fragrance industries. DNA markers have opened a new era in plant breeding, conservation, management and utilization. However, application of DNA markers in many *Salvia* species lags behind many other plant species including the family Lamiaceae. DNA markers are very useful in those studies involving in the determination of genetic mapping, gene identification, parentage selection, identification of cultivars, marker assisted breeding and selection. Single nucleotide polymorphisms (SNPs) and microsatellites (SSRs) are the two most widely used and most powerful molecular markers. However, utilization of these markers in *Salvia L.* has not reached the optimal level. This study was undertaken to compare resolutions power of minisatellites in terms of direct amplification of minisatellite DNA (DAMD-PCR) and microsatellite in terms of simple sequence repeats (SSRs) within and between some *Salvia* species naturally occurring in Antalya. A minisatellite is a tract of tandemly repetitive DNA motifs repeated many times, ranging in length from 10–60 base pairs. They are usually 0.2–20 kb long and are usually prominent in the heterochromatin regions being the most occurring in the centromeres and telomeres of chromosomes. Minisatellite markers or minisatellite enriched markers can be detected using direct amplification of minisatellite DNA (DAMD-PCR). Amplification of DAMD-PCR markers is obtained when flanking regions of minisatellites have inverted DNA sequences to which minisatellite core primers bind during PCRs. Although they have high level of polymorphism and do not require sequence information for development, DAMD-PCR markers have lower level of reproducibility in comparison to microsatellite markers which are also known as simple sequence repeats (SSRs). Microsatellite is the “DNA marker of choice” and dominated plant molecular research during the last decade of the past century and the first decade of the present century. Microsatellites are tandem repeating mono-, di-, tri-, tetra- or penta- and hexa-nucleotide motif units distributed throughout the genomes of every eukaryotic organism sequenced so far. Microsatellites are highly polymorphic and usually co-dominant DNA markers. Development of microsatellite markers requires low amount of DNA, and can be easily automated for high throughput screening, transferable between laboratories. Polymorphisms in microsatellites and minisatellites of genetically related organisms are due to recombination (i.e. unequal crossing-over) and replication (DNA polymerase slippage) errors. In the present study 3 *Salvia* species (European sage, meadow sage and balsamic sage) and 12 genotypes four of which representing each species were studied. DNA markers obtained using 8 SSR primer pairs and 8 DAMD-PCR primers were separated in 3% (for SSRs) and 2% (for DAMD-PCR) high resolution agarose gel electrophoresis after touch-down polymerase chain reactions. Results clearly indicated that the level of polymorphisms were greater in SSR markers than that of the DAMD-PCR markers. The DAMD-PCR provided a moderate level of polymorphism between the species studied.

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However, the levels of polymorphic DAMD-PCR markers were low within the species. The levels of transferability of DAMD-PCR markers between the species were higher than SSR markers. In conclusion the present study indicated SSR markers provide greater resolution for intra-species while the DAMD-PCR markers are more suitable for inter-species genetic studies.

KEYWORDS

DAMD-PCR, Microsatellites, Minisatellites, Simple sequence Repeats, Polymorphisms

THE DETERMINATION OF MINERAL AND HEAVY METAL CONTENTS OF ECHINACEA SPECIES CULTIVATED IN TURKEY

SADIYE AYŞE ÇELİK¹, YÜKSEL KAN¹

ABSTRACT

This study was carried out in five different echinacea species in the Medicinal and Aromatic Plants Application Farm of the Faculty of Agriculture of Selçuk University in 2013 and 2014 in the ecological conditions of Konya. B, Ca, K, Na, P and S minerals and Al, Cd, Co, Cr, Cu, Fe, Mn, Pb, Mo, Ni and Zn heavy metals were investigated in the herb and root samples taken during the full flowering period of five different echinacea species (*Echinacea purpurea* var. *purpurea*, *Echinacea pallida* var. *pallida*, *Echinacea paradoxa* var. *paradoxa*, *Echinacea purpurea* var. *baby white swan* ve *Echinacea purpurea* var. *double decker* species). NMKL 161 method and ICP-AES instrument were used for determining mineral substances. The highest B, Ca, K, Na, P and S contents of the herbs of *Echinacea* species were respectively, *Echinacea purpurea* var. *double decker* 135,029 ppm, *Echinacea purpurea* var. *double decker* 31185,018 ppm, *Echinacea purpurea* var. *baby white swan* 21968,858 ppm, *Echinacea pallida* var. *pallida* 104,742 ppm, *Echinacea purpurea* var. *purpurea* 2490,672 ppm and *Echinacea paradoxa* var. *paradoxa* 1754,594 ppm. The highest Al, Cd, Co, Cr, Cu, Fe, Mn, Pb, Mo, Ni and Zn contents of the herbs of *Echinacea* species were respectively, *Echinacea purpurea* var. *baby white swan* 432.195 ppm, *Echinacea purpurea* var. *purpurea* 0.111 ppm, *Echinacea paradoxa* var. *paradoxa* 0,395 ppm, *Echinacea paradoxa* var. *paradoxa* 2,615 ppm, *Echinacea purpurea* var. *purpurea* 22,535 ppm, *Echinacea purpurea* var. *baby white swan* 451.350 ppm, *Echinacea paradoxa* var. *paradoxa* 46.217 ppm, *Echinacea paradoxa* var. *paradoxa* 21.366 ppm, *Echinacea purpurea* var. *purpurea* 3.364 ppm, *Echinacea paradoxa* var. *paradoxa* 2.936 ppm ve *Echinacea paradoxa* var. *paradoxa* 22.218 ppm. The highest B, Ca, K, Na, P and S contents of the roots of *Echinacea* species were respectively, *Echinacea purpurea* var. *double decker* 102,620 ppm, *Echinacea purpurea* var. *purpurea* 38805,7 ppm, *Echinacea paradoxa* var. *paradoxa* 20656,313 ppm, *Echinacea pallida* var. *pallida* 2062,226 ppm, *Echinacea paradoxa* var. *paradoxa* 2262,165 ppm and *Echinacea paradoxa* var. *paradoxa* 2181,838 ppm.

KEYWORDS

Echinacea, minerals, heavy metals, herb, root.

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THE DETERMINATION OF MEDICAL PLANTS USED IN THE TREATMENT OF DISEASES IN ERZURUM

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ABSTRACT

In daily life, medicinal and aromatic plants are used as a traditional method for the protection and improvement of health, and for the treatment of diseases in Turkey. It is known by people living in the city of Erzurum located in Eastern Anatolia region of Turkey that, in here, the use of plants for the health field is widespread. The aim of our study is to determine which medicinal plants are used for which illness by the people living in Erzurum city. The research was carried out on 73 volunteers, were selected randomly, living in Erzurum. The data were collected through a questionnaire, also including open-ended questions, prepared by the researchers. Descriptive statistics, chi-square and Fisher's exact tests were used for the analysis of data. The mean age of the participants was 41.34 ± 15.23 (mean \pm standard deviation). 46.6% of the participants were women and 53.4% were men; 30% are high school graduates and 42.5% are university graduates. It was seen that participants had obtained knowledges about the use of plants from family (28.8%), friends (20.5%), relatives (17.8%) and health workers (15.1%). 51 plants used by the participants for the treatment of diseases were identified in this study. The most commonly used plants were linden (*Tilia Cordata*) (19.2%), ginger (*Zingiber officinale*) (11%) and sage (*Salvia Officinalis*) (8.2%). Linden was used for respiratory diseases (85.71%) and lumber hernia (7.14%), and in order to strengthen the immune system (7.14%), whereas ginger was used in the treatment of respiratory tract diseases. Sage-using participants consumed this plant for the treatment of respiratory (66.6%) and gastrointestinal diseases (16.6%), and as a sedative during menopause. The number of plants used by participants was compared with the economic situation, sex, occupation and social security, and a difference was found between the economic situation and the number of plants ($p=0.023$). Participants with moderate economic status used 1-3 plants. Participants' preferences were asked about plants and medicines in order to use in the treatment of diseases. All of the participants who did not have social security preferred to use the plant. In addition, there was no significant difference between the number of plants and the preference, but it was found that the people preferring to use plants used 4-10 plants. It was found that the medicinal plants were widely used in the treatment of respiratory tract diseases by people participating in the research, which may be due to the high prevalence of respiratory illnesses in cold climatic conditions of Erzurum city. The use of medical plants by the peoples is of great importance for reducing acute and chronic health problems and improving the quality of life.

KEYWORDS

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Health, Medicinal plants, Erzurum

LUPINUS ALBUS' FUNCTIONAL CHARACTERISTICS AND EFFECTS ON HEALTH

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ABSTRACT

Lupinus albus, a plant belonging to the family Fabaceae, is a herbaceous plant whose leaves are split, cluster-like flowers and can grow up to 120 centimeters in length. There are about 200 kinds of lupinus albus that grow wild in Europe, the Balkans and the Aegean and Mediterranean Regions in our country. Lupinus albus, lupinus anatolicus and lupinus angustifolius are the species that grow in our country and are also called "delicebakla", "kurt baklası", "termiye", "yahudi baklası" and "gavur baklası". The lupinus albus that matures in the autumn months is widely consumed especially in the Mediterranean Region and Konya. Due to the alkaloids in its composition, the taste of the pellets is bitter and its bitterness is eliminated with traditional methods (water retention and boiling) before consumption. The lupinus albus that is consumed as a snack (tirmis) in winter usually has more protein content than milled grains. Its content is high with regard to zinc, calcium, iron, potassium and manganese which are considered micronutrient items. Although studies on the functional effects of lupinus albus, which have very beneficial effects on health, have been limited, it has been reported that it lowers blood glucose of diabetic rats in some clinical studies. The famous physician of the 11th century, Ibn Sina, tried to treat diabetic patients with curcuma, lupinus albus and fenugreek. In diabetic rats, it was observed that the lupinus albus added to their feeds decreased the malondialdehyde (MDA) levels and increased the antioxidant enzyme levels. In hypercholesterolemic subjects, it has been reported that the daily diet supplemented with lupinus albus reduced LDL cholesterol levels. There are also data showing that it lowers blood pressure of hypertensive individuals. More clinical studies are needed to address the functional effects of lupinus albus, which have a protective role in certain types of cancer and kidney diseases, particularly colon cancer. Preventative health policies are important in obesity and type 2 whose prevalence is rapidly increasing in the world and our country and which takes role in the etiology of many diseases, and these policies may include functional foods such as lupinus albus. Considering the emergence of policies for the development of healthy eating behaviors in health policies to prevent obesity and the prevalence of type 2 diabetes, it may be helpful that individuals having interchangeable risk factors for type 2 diabetes (overweight and obesity, sedentary lifestyle, impaired fasting glucose and impaired glucose tolerance, hypertension, low HDL cholesterol level, increased triglyceride level) consume foods such as lupinus albus. Although some studies in the literature have shown that lupinus albus have hypolipidemic and hypoglycemic effects, more studies are needed to determine the level of reliable intake and other possible functional effects on health.

KEYWORDS

lupine, lupinus albus, hypolipidemic, hypoglycemic

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DEVELOPMENT OF MICROSATELLITE MARKERS FOR THE WORLD'S MOST EXPENSIVE SPICE SAFFRON

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ABSTRACT

Saffron, *Crocus sativus* Linn in the family Iridaceae, is a fall flowering perennial domestic plant and its closed relative *C. cartwrightianus*, which originated in Crete, or in Central Asia. Saffron is a sterile triploid plant and its stigmas are mainly used as a colorant for foodstuffs. Found in the stigmas are apocarotenoid compounds responsible for the production of the yellow-orange color in food. Stigmas also contain picrocrocin and safranal which produce a bitter taste and a hay-like fragrance. These traits make saffron a much-sought ingredient in many foods worldwide. Saffron is traditionally used against cancer, depressive mood, menstruation disorders, liver disease and pain. The taxonomy of *Crocus sativus* is extremely complicated due to the lack of clear distinctive characters, the wide range of habitats and the heterogeneity of the morphological traits and cytological data. Although differences in the size and the number of the flowers produced by corms have been reported previous studies utilizing a large number of markers obtained using 140 primers of random amplified polymorphic DNA (RAPD), 91 primers of inter-simple sequence repeats (ISSRs) and 47 primer pairs of simple sequence repeats (SSRs) could not differentiate among the forty three *C. sativus* from eleven different countries including two from Turkey. Saffron, as a sterile plant, fails to produce viable seeds and is thus dependent on vegetative reproduction. The existence of differences at the phenotypic level such as size of the flowers, the shape of the tepals (combined sepals and petals), differences of color and intensity in the tepals of saffron belonging to different regions of world may indicate genetic differences. However artificial selection in the past may drastically reduce the genetic diversity. Expressed sequence tag (EST) sequences are valuable resources for development of microsatellite markers. The use microsatellite markers found transcribed and un-translated regions of the nuclear and chloroplast genome of *Crocus sativus* could differentiate saffron varieties. These markers could be also used in marker assisted selection studies for saffron breeding. In this study, a total of 6750 EST sequences of *Crocus sativus* derived from publicly available databases of National Center for Biotechnology Information (NCBI) were mined to obtain ESTs with microsatellites using Tandem Repeats Analyzer 1.5 (TRA 1.5) program. Microsatellites in the present study were considered to contain motifs that were between two and six nucleotides in length. The minimum motif length criteria were defined as being 9 repeats for di-nucleotides, 7 repeats for tri-nucleotides, 6 repeats for tetra-nucleotides and 5 repeats for penta-nucleotides and 4 repeats for hexa-nucleotides. Microsatellite primer pairs flanking the microsatellite domains were designed using PRIMER3 software. Microsatellite primer pairs were designed with several criteria such minimum/maximum as length of expected product, GC content, melting temperature etc. A total of 30 EST-SSR primer pairs were designed. Annealing temperatures of the primer pairs are set to 55 C (T_m 59 C) and expected to amplify markers ranging from 209 bp to 334 bp in size. Thirty EST primers consisted of 5 di-nucleotides, 7 tri-nucleotides, 6 tetra-nucleotides, 4 penta-nucleotides and 8 hexa-nucleotides. These

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microsatellite primer pairs along with the conserved chloroplast microsatellite primer pairs could be useful in genetic characterization and breeding studies of saffron.

KEYWORDS

Crocus sativus, EST-SSRs, genic microsatellites, primer development, SSRs

Poster Session 13

Submission ID: 1698

**PLANTS USED IN THE FOLK MEDICINE OF SORKUN TOWN
(BOZKIR / KONYA / TURKEY)**

OSMAN TUGAY¹, DENİZ ULUKUŞ¹

ABSTRACT

Ethnobotanical studies which aim to shed light on local human-plant interactions in the Sorkun Town (Bozkır / Konya), realized between 2016-2017 years. Into two years interviews were made with about 11 informants and 30 medicinal uses were recorded. Some plants used as medicinal; *Abies cilicia* (Ant.& Kotschy) Carr. subsp. *isaurica* Coode & Cullen, *Achillea biebersteinii* Afan., *Alcea pallida* Waldst. & Kit., *Allium cepa* L., *Allium sativum* L., *Anthemis cretica* L. subsp. *albida* (Boiss.) Grierson, *Anthemis pestalozzae* Boiss., *Anthemis tinctoria* L. var. *tinctoria*, *Cedrus libani* A.Rich., *Cerasus avium* (L.) Moench, *Elaeagnus angustifolia* L., *Malva neglecta* Wallr., *Mentha longifolia* (L.) Huds. subsp. *typhoides* (Briq.) Harley var. *typhoides*, *Pelargonium endlicherianum* Fenzl, *Plantago lanceolata* L., *Plantago major* L. subsp. *major*, *Rosa canina* L., *Salvia adenocaulon* P.H.Davis, *Sambucus ebulus* L., *Sesamum indicum* L., *Sideritis hispida* P.H.Davis, *Stachys cretica* L. subsp. *anatolica* Rech.fil., *Stachys lavandulifolia* Vahl var. *lavandulifolia*, *Teucrium chamaedrys* L. subsp. *sypirensis* (C.Koch) Rech.fil., *Teucrium polium* L., *Thymus sipyleus* Boiss. subsp. *sipyleus* var. *sipyleus*, *Urtica dioica* L.

KEYWORDS

Medicinal plants, Sorkun, Bozkır, Konya

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THE ROLE OF BIOTECHNOLOGY IN AMARILLADIACECA FAMILY

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ABSTRACT

The Amaryllidaceae family comprises more than 75 genera and 1100 species of herbaceous, perennial and bulbous flowering plants. In this family there are important ornamental plants such as Leucojum, Pancratium, Narcissus, Sternbergia and Galanthus. Some plants in this family also have pharmacological value due to the important alkaloids they contain. Today, the use of biotechnological tools is important for the sustainable production of these alkaloids. The need for these alkaloids used in the treatment of some important diseases is increasing day by day and access to plant resources is limited. For this reason, in vitro studies are considered as an alternative approach for alkaloids production. In this study, in vitro studies on pharmacologically valuable plants in Amaryllidaceae family were investigated.

KEYWORDS

Amaryllidaceae, alkaloids, in vitro

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Poster Session 13

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POISONOUS BOTANICALS OF VAN PROVINCE (TURKEY)

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ABSTRACT

Plants have been used as ethnobotanically by human for their medicinal, food, ornamental, fuel, recreational and also poisonous properties since ancient times. The most ancient poisons also come from plants such as *Atropa* sp., *Nerium* sp., *Datura* sp., *Aconitum* sp. and *Hyoscyamus* sp. Many members of the plant kingdom have toxic compounds that can be highly poisonous, even lethal, if ingested. At present, despite the enormous development of toxicology surveillance systems, poisoning by plant samples continues to be one reason of morbidity and mortality. Within this presentation poisonous plant samples grown in Van province including *Anthriscus* sp., *Ferula* sp., *Vincetoxicum* sp., *Euphorbia* sp., *Papaver* sp., *Aconitum* sp., with their ethnobotanical data will be presented.

KEYWORDS

Poisonous, Van, Ethnobotany

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ANTIOXIDANT ACTIVITY OF ANTHEMIS AUSTRIACA JACQ. AND A. PSEUDOCOTULA BOISS. EXTRACTS AND THEIR TOTAL PHENOLIC AND FLAVONOID CONTENTS

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ABSTRACT

The genus *Anthemis* L. (Asteraceae) is represented by 81 taxa belonging to 51 species in the Flora of Turkey^{1,2}. Several species of *Anthemis* genus have been used as folk medicine in the treatment of various health problems such as cold, fever, cough, bronchitis, stomachache, menstrual problem and gastrointestinal disorders³⁻⁶. In this study, *Anthemis austriaca* Jacq. and *A. pseudocotula* Boiss. used as folk medicines were investigated for their potential antioxidant activity. For this purpose, methanol and aqueous extracts of the aerial parts of these plants were tested with three complementary methods, namely 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging capacity, 2,2'-azinobis (3-ethylbenzothiazolin-6-sulphonic acid) (ABTS) radical cation scavenging capacity and cupric ion reducing antioxidant capacity (CUPRAC). Moreover, total phenolic contents of plant extracts were determined by Folin-Ciocalteu's reagent and their flavonoid contents were determined by aluminum chloride colorimetric method. The results of present study revealed that, all plant extracts exhibited antioxidant activity with various potencies. In the DPPH assay, both methanol and aqueous extracts of *A. pseudocotula* (IC₅₀=140.44 and 120.14 µg/mL, respectively) showed higher scavenging activity than methanol and aqueous extracts of *A. austriaca* (IC₅₀=119.72 and 116.73 µg/mL, respectively). Contrary to DPPH assay, both methanol and aqueous extracts of *A. austriaca* showed higher scavenging activity against ABTS radical cation (153.53 and 181.09 mg Trolox equivalents/g extract, respectively) compared with *A. pseudocotula* extracts (128.77 and 117.76 mg Trolox equivalents/g extract, respectively). In the CUPRAC assay, the aqueous extracts of *A. austriaca* and *A. pseudocotula* exhibited higher antioxidant activity (100.50 and 67.00 gallic acid equivalents/g extract, respectively) than methanol extracts. In addition, the highest phenolic content was detected in *A. austriaca* aqueous extract as 138.40 mg gallic acid equivalents/g extract, while the highest flavonoid content was detected in *A. pseudocotula* methanol extract as 31.17 mg quercetin equivalents/g extract. References: 1. Davis P.H. 1975. Flora of Turkey and the East Aegean Islands, Vol.5, University Press, Edinburgh. 2. Güner A., Ozhatay N., Ekim T., Baser K.H.C. 2000. Flora of Turkey and the East Aegean Islands, Vol. 11, University Press, Edinburgh. 3. Gürdal B., Kültür S. 2013. An ethnobotanical study of medicinal plants in Marmaris (Muđla, Turkey). Journal of Ethnopharmacology, 146, 113-126. 4. Altundag E., Ozturk M. 2011. Ethnomedicinal studies on the plant resources of east Anatolia, Turkey. Procedia Social and Behavioral Sciences, 19, 756-777. 5. Bulut G., Tuzlaci E. 2013. An ethnobotanical study of medicinal plants in Turgutlu (Manisa-Turkey). Journal of Ethnopharmacology, 149, 633-647. 6. Tetik F., Civelek S., Cakilcioglu U. 2013. Traditional uses of some medicinal plants in Malatya (Turkey). Journal of Ethnopharmacology, 146, 331-346.

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KEYWORDS

Anthemis, antioxidant, total phenolic content, total flavonoid content

PRODUCTION AND FOREIGN TRADE OF POPPY SEED IN TURKEY

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ABSTRACT

PRODUCTION and FOREIGN TRADE OF HAŞHAŞ in TURKEY A poppy is the source of the crude drug opium which contains powerful medicinal alkaloids such as morphine and has been used since ancient times as an analgesic and narcotic medicinal and recreational drugs. The sugared, milled mature seeds are eaten with pasta, or they are boiled with milk and used as filling or topping on various kinds of sweet pastry. The planting of opium poppy is supervised by the UN all over the world. The UN designated Turkey, India, Australia, France, Spain, Hungary, Czech Republic and China as the legal producers of opium poppy. Turkey and India are regarded as the traditional opium poppy producer countries by the UN. Cultivation, production and trade of opium were free until 1933 in Turkey. In 1933, controlled poppy cultivation and production was launched and late on, in 1938 with the (ne demek) establishment of the Turkish Grain Board (TGB) and monopoly authority of narcotic drugs was given to TGB. It was established as an Economic State Enterprise in order to stabilize the grain market and operate the monopoly of opium and narcotic substances in Turkey. For this purpose, being organized throughout the country and within the framework of the relating legislation as it has been defined TGB as traditional poppy producer. So, it has been responsible for the cultivation, processing and marketing of poppy to be used for medical and scientific purposes in order to meet the need both domestic and foreign market. The city of Afyonkarahisar in Turkey (afyon "poppy, opium", kara "black", hisar "fortress") was a traditional center of poppy cultivation . Afyonkarahisar is produce about 31 % Turkey production of poppy seeds in 2016 .World production of poppy seeds is around 102.331 t and major producers are Turkey and Czechia Republic. These two countries meet rough 52 % of the World demand. Turkey currently only produces about 26 % of the world total. According to ten years ago poppy production was increased in Turkey and World. Approximately 95 % of our products are exported. This study aims at searching the production and foreign trade and manifesting the marketing structure and studying the role of TGB in the market structure of the poppy seeds.. Keywords: Poppy seed, foreign trade, TGB, production

KEYWORDS

Poppy seed, foreign trade, TGB, production

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COMPOSITIONS OF AMINO ACIDS IN DIFFERENT VARIETIES OF SALEP TUBERS.

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AYŞE KEVSER BILGIN¹**

ABSTRACT

Salep is not cultivated on a commercial scale and is obtained by collecting tubers of the Orchidaceae plants from the wild. Amino acid contents of this plant can be important in the area of medicinal and healthcare sectors. In the study, amino acid compositions of six different varieties of salep tubers (*Himantoglossum robertianum*, *Orchis italica*, *Ophrys ferrum-equinum*, *Serapias vomeracea*, *Orchissancta*, *Anacamptis pyramidalis*), which were collected from different regions of Turkey, were determined. Salep tubers were collected from their natural habitat. The tubers were boiled in hot water, dried in sunlight and grinded by a laboratory type mill. Individual amino acids (arginine, aspartic acid, cysteine, glutamic acid, histidine, isoleucine, leucine, lysine, methionine, phenylalanine, proline, serine, threonine, tyrosine and valine) were analyzed by liquid chromatography tandem mass spectrometry (LC MSMS) without derivatization. The method was found to be selective, linear ($r^2 > 0.99$) and precise for all of interested amino acids. The limits of the quantifications (LOQ) were found to be in the range from 0.53 to 1.20 mg/kg. The content of 15 amino acids quantified by LC MSMS ranged between $>LOQ$ -14419.91 mg/kg. The total amino acid was found to be 10129.29 mg/kg, 20029.61 mg/kg, 10483.00 mg/kg, 9510.92 mg/kg, 10921.48 mg/kg and 9825.68 mg/kg for *Orchissancta*, *Serapias vomeracea*, *Ophrys ferrum-equinum*, *Orchis italica*, *Himantoglossum robertianum* and *Anacamptis pyramidalis*, respectively. None of the analyzed samples was contained cysteine. Lysine (2036.58 mg/kg), arginine (14419.91 mg/kg), histidine (458.41 mg/kg), serine (551.25 mg/kg), proline (144.24 mg/kg), valine (261.07 mg/kg), methionine (26.37 mg/kg), tyrosine (425.50 mg/kg) and phenylalanine (537.21 mg/kg) amino acids were detected in *Serapias vomeracea* samples. The highest concentration of aspartic acid and glutamic acid, *Ophrys ferrum-equinum*. The content of leucine + isoleucine (168.40 mg/kg) was the highest in *Orchis italica*. In conclusion, *Serapias vomeracea* has the most valuable salep variety in tested samples due to its high content of amino acids. Therefore, it can be preferred in medicinal and healthcare treatment which amino acid compositions is accepted as important.

KEYWORDS

Amino acids, Composition, Salep tubers

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ANTIOXIDANT ACTIVITY, TOTAL PHENOLIC AND FLAVONOID CONTENTS OF TWO ENDEMIC SIDERITIS L. TAXA FROM TURKEY

NEZIHA YAđMUR KUMSER DİKER¹, ZEKIYE CEREN ARITULUK¹, İFFET İREM TATLI ÇANKAYA¹

ABSTRACT

The genus *Sideritis* L. belonging to Lamiaceae family comprises more than 150 species worldwide, most of which are mainly found in the Mediterranean area. In Turkey, *Sideritis* genus is represented by 53 taxa and 39 of those are endemic¹. Several species of *Sideritis* genus have been used as tea because of their pleasant aroma and special taste as well as their healing effects. The members of this genus are rich in essential oil, flavonoids and diterpenes which are responsible for their biological activities such as antiinflammatory, antimicrobial, antiulcerogenic, antioxidant, analgesic etc.² In this study, methanol and aqueous extracts of the aerial parts of *Sideritis libanotica* Labill. ssp. *linearis* (Benth.) Bornm. and *S. phrygia* Bornm. were investigated for their potential antioxidant activity by three complementary methods, namely 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging capacity, 2,2'-azino-bis (3-ethylbenzothiazolin-6-sulphonic acid) (ABTS) radical cation scavenging capacity and cupric ion reducing antioxidant capacity (CUPRAC). Moreover, total phenolic contents of plant extracts were determined by Folin-Ciocalteu's reagent and their flavonoid contents were determined by aluminum chloride colorimetric method. The results of present study revealed that, all plant extracts exhibited antioxidant activity with various potencies. The methanol extracts of *S. libanotica* ssp. *linearis* and *S. phrygia* showed higher scavenging activity against DPPH radical (IC₅₀=149.23 µg/mL and 131.78 µg/mL, respectively) and against ABTS radical cation (185.91 and 149.84 mg Trolox equivalents/g extract, respectively) while the aqueous extracts showed higher activity on CUPRAC assay (58.71 and 57.28 gallic acid equivalents/g extract, respectively). Total phenolic contents of extracts were in range between 92.47 and 138.09 mg gallic acid equivalents/g extract and the total flavonoid contents were in range between 17.60 and 29.50 mg quercetin equivalents/g extract. References: 1. Güvenç A., Houghton P.J., Duman H., Coşkun M., Şahin P. 2005. Antioxidant activity studies on selected *Sideritis* species native to Turkey. *Pharmaceutical Biology*, 43(2), 173-177. 2. González-Burgos E., Carretero M.E., Gómez-Serranillos M.P. 2011. *Sideritis* spp.: Uses, chemical composition and pharmacological activities-A review. *Journal of Ethnopharmacology*, 135, 209-225.

KEYWORDS

Sideritis, antioxidant, total phenolic content, total flavonoid content

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Poster Session 13

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NATURAL PLANTS USED AS MEDICINAL IN KOZLUCA (ACIGÖL / NEVŞEHİR) VILLAGE

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ABSTRACT

This study was carried out to determine the natural plants used as medicines in Kozluca Village (Acıgöl / Nevşehir). Field visits were organized between March and August months in 2015-2016. A total of 28 plant samples were taken from interviews with 20 source people in the field surveys conducted and information on how these plants were used as medicines were noted. In the field studies conducted, pictures of the plants in the field were taken. According to the common herbarium techniques, plants were pressed and dried. To determine the scientific names of plants were used Flora of Turkey as main source. In addition, local names are written by using the local people. As a result of evaluation of plant samples collected from Kozluca Village, it was determined that total 28 natural plants belonging to 13 families and 25 genera were used as medicines. Some of these plants; *Capsella bursa-pastoris* (L.) Medik., *Gundelia tournefortii* L., *Lactuca sativa* L., *Malva neglecta* Wallr., *Scorzonera cinerea* Boiss., *Tragopogon dubius* Scop., *Tribulus terrestris* L., *Papaver rhoeas* L., *Plantago major* L., *Urtica dioica* L., *Portulaca oleracea* L.

KEYWORDS

Ethnobotanic, medicinal plants, Kozluca, Nevşehir.

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THE DETERMINATION OF SOME PHYTOCHEMICAL CONTENTS AND ANTIOXIDANT ACTIVITIES OF ECHINACEA PURPUREA VARIETIES CULTIVATED IN TURKEY

SADIYE AYŞE ÇELİK¹, YÜKSEL KAN¹

ABSTRACT

In this study, three different Echinacea purpurea varieties were cultivated and carried out in the Ecological Conditions of Konya in 2013 and 2014 in Selçuk University Faculty of Agriculture Agricultural and Aromatic Herb Farms. These varieties are Echinacea purpurea var. purpurea, Echinacea purpurea var. baby white swan and Echinacea purpurea var. double decker. These varieties are named according to flower arrangements as Echinacea purpurea var. purpurea pink coneflower, Echinacea purpurea var. baby white swan white coneflower and Echinacea purpurea var. double decker double coneflower. These varieties are harvested in 2013 and 2014 after the start of flowering period, full flowering period and seed binding period, then they are separated in to leaves, stemmed flowers, herbs and roots and dried to a certain moisture content. At the same time, samples were taken from the roots during the period of root harvest (October-November) except for other three period. The contents of ash, caffeic acid derivatives (caftaric and chicoric acid), antioxidant activity (DPPH method), total phenol content, total flavonoid content were determined in the all plant parts of each varieties taken at three different harvesting periods. In addition, volatile oil content and volatile oil components were also detected in herbs taken during the full flowering period. The highest essential oil is obtained from Echinacea purpurea var. baby white swan (0.3%). When looked at the essential oil components of three different Echinacea varieties, the components found in all of them are caryophyllene oxide and germacrene D. The highest ratio of Germacrene D was determined in Echinacea purpurea var. purpurea herb (% 21.563). According to the average of all values the highest amount of caffeic acid was obtained from E. purpurea var. purpurea (% 0.995) and leaf (% 0.696). The highest amount of chicoric acid was obtained from E. purpurea var. purpurea root (% 2.589). According to different harvesting times, Echinacea species should be harvested in full flowering period for the highest amount of chicoric acid. Total flavonoid content was determined highest in leaves (at the leaves of Echinacea purpurea var. double decker 25,0844 mg/g extract in 2014 leaf samples). The total phenol content was determined highest in leaves (at the leaves of Echinacea purpurea var. double decker 29,4378 mg/g extract in 2013 leaf samples). Antioxidant activity values were found to be in all varieties.

KEYWORDS

Echinacea purpurea, Caffeic acid derivatives, Essential oil, Antioxidant activity.

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Poster Session 13

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MEDICINAL HERBS PREVENTING OXIDATION OF BUTTER*

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ABSTRACT

In terms of food technology, probability of the fats and the products rich in fat to be oxidized is very high. Characteristic features such as flavor, color, tissue, odor and nutritional value of these oxidized products deteriorate. Antioxidants are known to prevent these deteriorations which occur as a result of oxidative rancidity and oxipolymerization. The chemicals used in foods as antioxidant have many harmful effects to health. The use of natural antioxidants will be more meaningful in both preventing these harmful effects and oxidations. For this purpose, some plants were obtained and their aqueous and water-saturated ethyl acetate extracts were prepared. The selected plant extracts were added to the butter at 200 ppm concentration. In addition, the reference samples were prepared by adding BHT and Trolox standards to butter samples at 200 ppm concentration. In order to follow the oxidation in the butter samples prepared, TBA (thiobarbituric acid assay), PV (peroxide value) and FFA (free fatty acid) analyses were applied. The results obtained by the TBA test is shown in figure 1. All the plant extracts and standards successfully prevented oxidation in butter when compared to the control. Especially performance of UKS18 and UKE20 coded samples in protection against oxidation of butter is pretty good compared to the synthetic antioxidants. The results of the analyses of the three methods revealed that many of the plant extracts and especially UKS18 and UKE20 can be used as a natural antioxidant in order to prevent oxidation of butter. *This study is supported by 2210-C Priority Areas Domestic Master Scholarship Programme of TUBITAK-BİDEB.

KEYWORDS

butter, oxidation, natural antioxidant

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DETERMINATION OF FIXED FAT COMPONENTS OF THE NATURALLY GROWING COCKLEBUR (*XANTHIUM SP. L.*) PLANT IN KAHRAMANMARAŞ

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ABSTRACT

Xanthium L. is a plant belonging to the Asteracea family and it is grown almost in every region of the world. It is found mostly in tropical and subtropical regions (Weaver and Lechowich 1982). It is common in America, Canada, Mexico, Malaysia, Indonesia and India (Alam et al., 2011). To date, many taxonomic studies have been carried out on this plant. Caius (1986) reported 25 species of *Xanthium* genus, and Weaver and Lechowich (1982) reported 20 species (Alam et al., 2011). It is represented in Turkey by 6 taxa including 3 species and 3 subspecies (Güner et al., 2012, Cesur and Şenkal, 2015). According to Cesur and Şenkal (2015), *Xanthium sp.* plants are accepted as weeds in Turkey today. Again, according to the same researchers, the plant is a plant that grows in anhydrous areas, with approximately 25% crude oil in its seed, which represents an important potential for exploring the possibility of obtaining oil. In this research, a number of studies have been done within the scope of the mentioned evaluations above. First, seed samples belonging to cocklebur plant (*Xanthium sp.*) were collected from around Kahramanmaraş Menzelet Dam Lake. Then fixed fatty acid components were examined in collected seed samples. It has been determined that there are totally twenty two different fixed fatty acid components in cocklebur. The main fixed fatty acid components and ratios are; Linoleic acid (75.23%), oleic acid (13.59%), palmitic acid (5.93%), stearic acid (3.57%), behenic acid (0.68%) and myristic acid (0.02%).

KEYWORDS

Cocklebur, Xanthium sp., Fixed oil, Fatty acid components, Kahramanmaraş

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Poster Session 13

Submission ID: 1712

WATER-SATURATED ETHYL ACETATE EXTRACTS OF SOME HERBS PROMOTE BUTTER OXIDATION*

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ABSTRACT

Lipid oxidation of fats and fat containing foods deteriorate their characteristic properties such as flavor, color, texture, odor and nutritional value during manufacturing and storage. Therefore, various synthetic antioxidants are used for a long time as food additives to increase the oxidation stability of fats. Reliability of synthetic antioxidants has created a dispute. Therefore consumers, owing to their positive effects on health such as high antioxidant activity, desire the use of natural additives in the food industry instead of synthetic ones. Recently, many plant extracts have been investigated in terms of antioxidant and antimicrobial activity and the results have been compared to controls and standard antioxidants. In this study, plant extracts obtained with ethyl acetate saturated with water having high antioxidant activity were investigated to determine their suppressive effect on oxidation of butter. Concentrations of the selected plant extracts added to the butter were 200 ppm. Control sample (containing no antioxidants) was also used. In order to monitor the oxidation of the sample determination of peroxide value (PV) was utilized during a 180 days storage at 25 °C (Figure). In contrary to our expectation, the extracts promoted the oxidation of butter leading to higher peroxide values as compared to that of control. The results provide an important fact about the food preparations of fatty nature that the plants to be used in such preparations should be closely monitored for their possible oxidation promoting properties besides the beneficial ones. *This study is supported by 2210-C Priority Areas Domestic Master Scholarship Programme of TUBITAK-BİDEB.

KEYWORDS

butter, oxidation, natural antioxidant

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ANTIOXIDANT AND ANTIMICROBIOLOGICAL ACTIVITY OF HIBISCUS SABDARIFFA

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ABSTRACT

ANTIOXIDANT AND ANTIMICROBIOLOGICAL ACTIVITY OF Hibiscus sabdariffa Elif ÇELİK, Özlem TURGAY University of Kahramanmaraş Sütçü İmam, Faculty of Engineering and Architecture Department of Food Engineering ozlem@ksu.edu.tr Hibiscus sabdariffa, Malvaceae, commonly known as roselle, red sorrel or karkade, is an annual herbaceous. These calyces are a good source of natural food colorants because of their high pigment content and the dried calyces are consumed worldwide in hot infusions and in cold drinks. In this study, total phenolic content, gallo-catechin content and antibacterial activity of the water extracts of Hibiscus sabdariffa were researched. Total phenolic content of water extracts of dry calyces was determined by the Folin-Ciocalteu method. The absorbance was measured at 1, 2, 5, 10, 20, 30, 60, 90 min and performed extraction kinetics. Gallo-catechin content was detected by HPLC-DAD. Antimicrobial activity of volatile fatty acid of Hibiscus sabdariffa was determined by agar gel diffusion method against Escherichia coli and Staphylococcus aureus. The total phenolic contents were ranged between 771-2056 mg gallic acid equivalents (GAE)/100 ml hibiscus tea and gallo catechin contents were ranged between 0- 4.6 ppm. Tobramycin(10 µg), cefuroxime(30 µg), tetracycline (30 µg), cephazolin (30 µg), bacitracin (0,04 unit), nalidixic acid (30 µg), nitrofurantoin (300 µg) were used as positive control. Water extracts of Hibiscus sabdariffa showed 7 mm inhibition zone against Escherichia coli and 10 mm inhibition zone against Staphylococcus aureus.

KEYWORDS

Hibiscus sabdariffa, volatile fatty acid, extraction kinetics

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¹KAHRAMANMARAŞ SÜTÇÜ İMAM ÜNİVERSİTESİ

DETERMINATION OF BIOLOGICAL ACTIVITY OF SOME EXTRACT'S AUBRIETA DELTOİDEA

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ABSTRACT

Since ages, literature has revealed plants to be the most important source of medicines for human health . According to the findings of the World Health Organization, up to 80% of the world's population relies on plants for their primary health care.. The Brassicaceae family is used as a landscape plant of the genus Aubrieta. There are a few taxonomic, morphological, anatomical and ecological studies carried out with species belonging to the genus Aubrieta in our country.The majority of the work done is in the economic and landscape areas. In the study, Aubrieta deltoidea belonging to genus Aubrieta which is distributed in Denizli belonging to Brassicaceae family was used. Diagnosis of the plant was made according to Davis (1978). Plant samples were collected in July 2015, dried and ready for analysis. Plant samples were stored at +4°C until analysis runs. In this study, some biological activities of ethanol and acetone solvent extracts of Aubrieta deltoidea, which are naturally distributed in our country, have been investigated. Biological activity of species; B-carotene-linoleic acid method and the DPPH method. The highest antioxidant activity (83.33%) was seen in ethanol extract of A. deltoidea strain. The highest free radical scavenging activity (81.24%) was seen in the A. deltoidea strain extract prepared with the acetone solvent. The results obtained in this study have shown that plants can be used as a readily available natural antioxidant source. A more detailed and versatile survey of these plants will be of great benefit to my country in terms of public health.

KEYWORDS

A. deltoidea , biological activity, DPPH, β -carotene-Linoleic acid method

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Poster Session 13

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COMPOSITION OF HELICHRYSUM ITALICUM (ROTH) G. DON ESSENTIAL OIL FROM CYPRUS

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ABSTRACT

The genus *Helichrysum* Mill. (Asteraceae) comprises nearly 185 genera and 1240 species worldwide (Europe, Asia, Africa and Madagascar) (Bayer et al., 2007). It is represented by 24 species and 30 taxa of which 17 are endemic in the flora of Turkey (Guner et al., 2012). *Helichrysum* species are commonly known as ‘ölmez çiçek’, ‘altınotu’, ‘yayla çiçeđi’ and are generally used as herbal tea in Turkey (Baytop, 1997). *Helichrysum* species are used in folk medicine for removing kidney stones (Suzgec et al., 2005). Essential oil of *Helichrysum italicum* has antibacterial and anti-fungal activity (Mastelic et al., 2005). The study material was collected from Cyprus in May 2015. Aerial parts of *Helichrysum italicum* were subjected to hydrodistillation for 3 hours using a Clevenger apparatus. Chemical composition of the oil was investigated with GC-FID and GC/MS techniques. In total, 75 compounds (88.4%) were identified. The main components were β -caryophyllene (12.1%), tetradecanoic acid (10.9%), hexadecanoic acid (10.1%), α -humulene (7.9%), pentacosane (7.0%), dodecanoic acid (4.5%), rosofoliol (3.3%) and heptacosane (3.2%). Key words: *Helichrysum italicum*, essential oil, GC/MS, GC-FID.

KEYWORDS

Helichrysum italicum, essential oil, GC/MS, GC-FID.

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Poster Session 13

Submission ID: 1718

PRODUCING DISEASE-FREE GINGER IN GREENHOUSE CULTURE IN ANTALYA

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ABSTRACT

Culinary ginger (*Zingiber officinale* Rosco) belongs to the family Zingiberaceae. Rhizomes of ginger are valuable not only as a spice but also as herbal medicine in the world. The production of culinary ginger is constrained due to: (i) it has a low proliferation rate; (ii) it is easily infected by soil-borne pathogens such as bacterial wilt, soft rot and nematodes, which cause heavy losses in yield in open-field production; (iii) it has poor flowering and seed sets. Culinary ginger is a tropical plant and needs plenty of heat and humidity. Climate of Antalya is not suitable for culinary ginger. In this study, fresh culinary ginger rhizomes purchased from a grocery store in Antalya were used as starting plant material to investigate the possibility of producing disease-free ginger in greenhouse culture in Antalya. In the second year, a total of 12 rhizomes were used as planting materials. Rhizomes (the seed-pieces) had 2-4 well developed growth buds ("eyes"). Rhizomes were surface-sterilized in a 10% solution of household bleach (1 part bleach in 9 parts water) for 10 minutes, washed with ddH₂O and then cured in a clean, disease-free area for three days before planting. Rhizomes were planted just below the soil surface in 12 pots filled with 1/4 peatmoss, 1/4 vermiculite, 1/4 perlite and 1/4 garden soil. Pots were watered sparingly until top growth developed. Once established, seedlings were watered heavily, fertilized monthly, and kept in a partially shaded location in a greenhouse. Harvesting of the rhizomes was performed when the greenhouse temperature started to drop below 10°C. Provided with adequate space, ginger plants could reach a height of 60-120 cm in the pots. Rhizome yield per pot ranged from 400 g to 1200 g with a mean of about 600 g. Extension of growth period would increase the yield since during the harvesting time most of the ginger plants were in green. Our yield values were obtained in 8 months started in late March and ended in early November. Greenhouse production of ginger provided a secured and protected environment from weather throughout the growing season, reducing the potential for accidental introduction of diseases. Ginger production was "unitized," in each pot, allowing for quick removal from the area of a plant suspected of being contaminated. Grow-bags instead of pots could also be used for ginger production which could reduce the cost. Production in the pots filled with light-weight medium as the plants grow to simulate the hilling cultivation done in the field, eliminating the potential for root injury as an entry point for diseases. We noted that watering, fertilization and hilling of ginger production are very important. Use of pots provides for easy watering, fertilization and hilling, harvesting, and cleaning. In some hot days the temperature of the greenhouse exceeds 50°C and in these days plenty of water was supplied to the floor of the greenhouse to reduce the heat stress. Pots were placed on benches which were clean and at least 40 cm off the ground. Each pot was watered at least one time a day but in very hot days watering times increased. Triple superphosphate, gypsum (CaSO₄.2H₂O), NPK fertilizer and minor elements were provided. Based on 3 year-experiments the following conclusions were drawn: (i) ginger seed-pieces should be planted during March and harvested as late as possible for best production; (ii) rhizomes with at least three eyes should be planted about 5 cm deep in each bag or pot

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containing about 30 L of growing medium; (iii) hilling should be performed at least 4 times per growing seasons; (iv) irrigation emitters should be placed on top of the growing medium and around the planted seed-piece; (v) as the ginger plant grows, more medium should be added (hilling), and the irrigation emitters should be moved to the top of the growing medium. We also noted that hilling was an important process in ginger production to ensure development of rhizome size and mass. In the main text further information and discussions are provided for producing disease-free ginger in greenhouse culture in Antalya.

KEYWORDS

Culinary ginger, disease-free growth, greenhouse production, Zingiber officinale

TRANSFER OF MICROSATELLITES TO CARNATION USING INTER-GENERA EST CONTIGS APPROACH

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ABSTRACT

Dianthus L. is one of the highly valued plant genera in the family Caryophyllaceae. The genus contains both annual and perennial plant species most of which are valued for their ornamental, volatile, aromatic, and medicinal properties. Compared with other ornamental, medicinal and aromatic plant species, application of DNA-based molecular marker system is limited in carnation (*Dianthus caryophyllus* L.). Amongst DNA markers, microsatellites; also known simple sequence repeats (SSRs) or simple tandem repeats (STRs), are markers of the choice in many plant species. Microsatellites are important for research in both basic and applied sciences. The development of microsatellite markers require: (i) microsatellite library construction from genomic DNA of target species; (ii) identification of unique microsatellite loci screening with single or mixed simple sequence oligonucleotide probes; (iii) identifying a suitable DNA sequences flanking the microsatellite regions for primer design by sequencing studies; (iv) identification of PCR products representing desired microsatellite alleles; (v) evaluation and interpretation of microsatellite patterns, removing redundant and/or chimeric sequences, and (vi) assessing PCR products for polymorphism. Alternatively expressed sequence tags (EST) sequences are used in microsatellite markers development. However some species do not have enough EST resources including *Dianthus* L. At the time of EST mining of the present study there were just 630 ESTs for *Dianthus* L in NCBI databases. These are very low numbers of ESTs for mining microsatellites. Thus this study used a new approach, called inter-genera EST contigs approach to use the ESTs of related genera for microsatellite markers development. In this study, a total of 4618 EST sequences, 630 of which were for *Dianthus caryophyllus* L., 139 of which were *Gypsophylla arrostii* Guss., and 3849 of which were *Sileneae latifolia* Poir. derived from publicly available databases of National Center for Biotechnology Information (NCBI) were mined to obtain ESTs with microsatellites using TRA 1.5 software program. Microsatellites in the present study were considered to contain motifs that were between two and six nucleotides in length. The minimum motif length criteria were defined as being 9 repeats for di-nucleotides, 7 repeats for tri-nucleotides, 6 repeats for tetra-nucleotides and 5 repeats for penta-nucleotides and 4 repeats for hexa-nucleotides. In order to obtain inter-genera contigs, ESTs containing microsatellites were assembled into contiguous sequences (contigs) using the Sequencher software. Contigs assembly parameters were set to a minimum overlap of 50 bases, 95% identity match, and the large gap option was implemented. A total of 14 contigs consisting of microsatellite-ESTs from *D. caryophyllus*, *G. arrostii*, *S. latifolia* and 25 singletons (those ESTs that were not found in any contigs) were further analyzed to design microsatellite primer pairs using the Primer 3 program. A total of 39 primer pairs were identified and commercially synthesized. Genomic DNA samples of several commercial carnation cultivars were extracted and amplified using the developed primer pairs. Results indicated that majority of the primer pairs could be successfully used in production of microsatellite markers in carnation genetic studies.

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KEYWORDS

Dianthus caryophyllus L., ESTs, Gypsophylla spp., Sileneae spp., SSR

MEDICINAL PLANTS ARE USED BY MOTHERS TO COPE WITH THE COMMON SYMPTOMS IN CHILDHOOD

SEVİNÇ POLAT¹, AYŞE GÜROL², AYŞE ŞENER TAPLAK¹

ABSTRACT

Introduction: In recent years, there has been an increasing interest in the use of complementary and alternative medicine all over the world. It is reported that about 40% of the health services is composed of traditional medicine in China and 71% of the population in Chile and 40% of the population in Colombia use similar medicine methods. Today, the interest towards the herbal methods has gradually increased due to the increase of resistant strains of microorganisms against drugs, the adverse effects of drugs, and their high cost. However, failure to know exactly the side effects of the plants consumed unconsciously has also brought the concerns about the harms of these methods. The use of herbal methods widely by the parents in symptom management in their children with the opinion that it is less harmful than drugs is an extremely sensitive situation in terms of the fact that it can cause serious conditions that may result in death. This descriptive study was conducted to determine the medicinal plants are used by mothers to cope with some problems frequently encountered in their children. **Material and Method:** The sample of the study consisted of 202 mothers who applied to Family Health Centers located in a city center in Central Anatolia between January and March 2017 and agreed to participate in the study. A questionnaire prepared by the researchers in accordance with the literature was used to collect the data. The obtained data were evaluated by using descriptive statistical methods in IBM SPSS Statistics 21 packaged software in the computer environment. **Results:** It was determined that average age of the mothers participating in the study was 38.40±10.03, 35.1% of them were high school graduate and 64.9% of them were housewives. It was determined that 41.5% of the mothers used herbal methods for sore throat induced by influenza and cold, 37.1% for nausea-vomiting, 28.2% for gas pain and indigestion, 26.7% for constipation, 17.8% for cough, 12.3% for coping with sleeping problems and calming the child down. It was found that almost all mothers preferred mint and lemon tea for coping with the sore throat induced by influenza and cold in children, the mostly used herbal method to relieve the gas pain in children was the fennel tea, half of mothers used linden and ginger tea and majority of the mothers preferred fennel tea for their children with constipation problems. 43.0% of the mothers were determined to obtain the herbal teas from sellers of medicinal herbs. 70.3% of the mothers considered that using herbal methods in symptom management in children is useful and 62.4% also recommended the method they used to the others. **Conclusion:** It was determined in the study that herbal teas were randomly used by the mothers for their children without medical advice, more than half of the mothers preferred herbal methods in symptom management and one third of the mothers recommended these methods to others. In accordance with the results obtained from the study, it is recommended to raise awareness of mothers about this matter by healthcare professionals and inform them about the appropriate dose and usage of

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the herbal teas suggested by the physician in order to protect children from the detrimental effects of the herbal methods.

KEYWORDS

Alternative therapy, Child, Symptom, Medicinal plants

Poster Session 13

Submission ID: 1721

A NEW CONCEPT: NUTRACEUTICALS AND THEIR CONTENT

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ABSTRACT

Throughout life, people aim to maintain a healthy and high quality life. For maintaining a healthy lifestyle, feeding with quality foods is essential. The purpose of this study is to examine the nutraceutical conception that emerged as a result of combining of the words: nutrition and pharmaceutical. In this review study, the secondary data from the primary researches in the same subject were used, these data were obtained as a result of scanning in electronic scientific databases as well as written sources. Nutraceutical term, which provides a protective or physiological benefit to a chronic disease as an extract or food was used for the first time in 1989 by Dr. Stephen De Felice. While nutraceutical concept express any food extract support that enhances quality of life, maintains and improves physiological well-being by protecting health, protective against chronic diseases, does not develop toxic effects, functional foods refer to nutrients that reduce disease risk and have a beneficial effect on health. Nutraceuticals and functional food terms are used to describe food or food compounds that provide health benefits on the basic nutrition. While nutraceutical refers to both traditional and diverse (tablet, capsule, etc.) food and food compounds, functional food refers to traditional food forms. Functional food is called nutraceutical, when it helps the prevention and/or treatment of other diseases and/or disorders except anemia. For daily life and health, nutrition; for treatment of diseases, drugs; and for preventing diseases, nutraceuticals are required. Commonly used nutraceuticals include carotenoids, antioxidant vitamins, phenolic compounds, terpenoids, steroids, indoles, glycomine, controitin and fibers. Products that are used as nutraceuticals may be present in different dosage forms such as tablets, capsules, soft gels, and are not considered drugs. It is expected that the nutraceutical products that constitute a new field of interest in the science of pharmacognosy will make frequent use, contribute to food and health care.

KEYWORDS

Nutraceutical, food, extract, nutrition

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THE EFFECTS OF LYCOPENE APPLICATION ON SODIUM FLUORIDE (NaF) APPLIED RENAL CELL LINE

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ABSTRACT

The present study was planned to investigate the potential protective effect of lycopene, an antioxidant carotenoid, on NaF applied renal cell line. NRK-52 cells were cultured under standard in vitro conditions with regular passages. 10.000 cells were planted in each culture platelet well for NRK-52E cells. Cells were incubated for 24 hours at 37°C in an incubator that contained CO₂. After the incubation, the medium on the cells was removed and the prepared NaF and lycopene solutions were added. At least 4 wells were used for each dose. Culture vessels were incubated at 37°C in a CO₂ incubator for 6, 12, and 24 hours so that MTT stain could transform non-soluble formazan crystals and MTT assay was conducted. Findings: In conclusion, it was found that low lycopene doses reduced the toxic effect of NaF by 10-20%, whereas in the high dose lycopene treated groups, lycopene increased the toxic effect of NaF synergistically. As a result, it was concluded that administration of lycopene on NaF applied renal cell line exhibited different effects based on the dose and time. Keywords: NaF, Lycopene, Cell Culture, MTT, Kidney.

KEYWORDS

NaF, Lycopene, Cell Culture, MTT, Kidney

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Poster Session 13

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SOME PROPERTIES OF ESSENTIAL OIL ADDED TURKISH TRADITIONAL BEVERAGE BOZA

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ABSTRACT

Aromatic essential oils are used as a natural preservative due to their antibacterial properties, taste, flavor as well as increasing their awareness on health benefits. For this purpose, we aim to bring new flavors and functional properties to boza without changing the original appearance of this traditional beverage. Raw boza was produced by using 1: 1 ratio of bulgur and rice. Boza was fermented by adding 2% traditionally fermented boza purchased from a local producer. At the end of the first fermentation period, ginger (*Zingiber officinale*), sage (*Salvia officinalis* L.), fennel (*Foeniculum vulgare*) essential oils obtained by hydrodistillation method from Clavenger were added. Ginger essential oil is used 500 ppm due to its sharp smell, fennel sage essential oils are used 600 ppm based on initial sensory tests. Physicochemical, microbiological and sensory characteristics of the study were investigated. Boza samples were stored 4 C for 5 days. The pH values during store of standard (control) boza was found to be 3.64- 3.50; boza with sage essential oil was 3.55-3.48; boza with fennel essential oil was 3.53-3.49; boza with ginger essential oil was 3.54-3.48. Standard (control) boza has been seen greatest decrease. Titratable acidity (TTA) were at standard boza 0.3%-0.47%; boza with sage essential oil 0.3%-0.37% ; boza with fennel essential oil 0.32%-0.38% while boza with ginger essential oil was found between 0.34%-0.39%. Alcohol content was found to be in standard boza (0.7% -0.9%); boza with sage essential oil (0.62% -0.66%); boza with fennel essential oil (0.66% -0.70%) and boza with ginger essential oil (0.63% -0.67%), respectively. The highest alcohol content was found in standard boza. Brix values in bozas (14.8% -13.7%) were not significantly different. At the same time, there was no significant difference between the color of standard boza and boza with essential oils in color parameters. According to microbiological analysis, total number of mesophyllaerob bacteria (MAB) were found in standard boza (7,84-8,74 log CFU/g), boza with fennel essential oil (7,91-8,08 log CFU/g), boza with sage essential oil (7,82-7,9 log CFU/g) and boza with ginger essential oil (7,77-7,72 log CFU/g), a higher number of bacteria were found in standard (control) boza and boza with fennel essential oil. During storage (5 days), number of lactic acid bacteria were reduced in all samples and the highest rate was found in boza with ginger essential oil (7,81-7,55 log CFU/ g). Total yeast was only increased in standard boza (6,5-6,6 log CFU/g), but was reduced in boza with fennel essential oil (5,9-5,67 log CFU/g), boza with sage essential oil (6,4-6,02 log CFU/g) and boza with ginger essential oil. In addition, antimicrobial activities of these essential oils added boza samples were determined on 8 pathogenic bacteria and 2 yeasts. The antibacterial effects (inhibition zone diameter) of sage essential oil, fennel essential oil, ginger essential oil were fixed on *Candida albicans* ATCC 10251 (15,5 mm) and *Escherichia coli* ATCC 25922 (17,8 mm); *Staphylococcus aureus* ATCC 25923 (11,3 mm) and *Listeria monocytogenes* ATCC 13932 (11,8 mm); *Listeria monocytogenes* ATCC 13932 (12,3 mm) and *Bacillus subtilis* (14,5 mm), respectively. Total antioxidant capacities of bozas with essential oils were similar to each other. Only the sage essential

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oil added boza was found to be higher(37.58%) than the others. As for sensory analysis, there was no difference on appearance and consistency among boza samples. Interms of taste, standard boza and boza with ginger essential oil were the best. As a result, boza with ginger essential oil is considered as an alternative and healthier option for boza.

KEYWORDS

boza,essential oil ,sage,ginger,fenel

UTILIZATION OF EST RESOURCES OF PERILLA FRUTESCENS L. FOR SSR MARKERS DEVELOPMENT

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ABSTRACT

Perilla also known as beefsteak mint (*Perilla frutescens* (L.)) is a self-compatible annual herb in the family Lamiaceae. The beefsteak mint plant has a long history of use in traditional folk medicine and is an economical crop in the medicinal herb plant. Perilla has several important pharmaceutical, anti-allergic, and antioxidant functions. Perilla leaf composes of a number of chemical variants of the volatile essential oils such as perillaldehyde, elsholtziaketone, perilla ketone, perillene, phenylpropanoids, and piperitenone. Its seeds can be processed into foods and nutritional edible oils. The use of DNA markers in perilla breeding for development of promising cultivar and conservation studies is very limited. DNA markers are the best method for the selection of plants with desirable characteristics. DNA markers have been extensively used in plant improvement studies. Polymerase chain reaction (PCR) based genotyping of molecular markers such as random amplified polymorphic DNA (RAPD) markers, amplified fragment length polymorphisms (AFLPs), and simple sequence repeats (SSRs, also known as microsatellites) have provided useful information regarding genetic diversity and genetic relationships in many crops. SSRs are considered the marker of choice in many applications because; (i) they are easy to develop since they are based on polymerase chain reaction (PCR); (ii) development of SSR markers does not require a high amount and high quality of genomic DNA; (iii) SSR markers can differentiate homozygote samples from heterozygote ones since they are co-dominant markers, and (iv) SSRs are highly polymorphic since they are often multiallelic and hypervariable. However, there is no report on the use of SSR markers for perilla due to a scarcity of primer pair. Expressed sequence tags (ESTs) are fragments of expressed genes occurring from single-pass sequencing of cDNA libraries. ESTs have been utilized for many purposes including the development of SSR markers. In the study, a total of 5349 *Perilla frutescens* (L.) expressed sequence tags (ESTs) from National Center for Biotechnology Information (NCBI) were downloaded and EST-SSRs were identified using the Tandem Repeats Analyzer 1.5 (TRA 1.5) program. SSRs were searched using the following criteria: 9 repeats for di-nucleotides, 7 repeats for tri-nucleotides, 6 repeats for tetra-nucleotides and 5 repeats for penta-nucleotides and 4 repeats for hexa-nucleotides. Mining analyses indicated that the most common SSRs were di-nucleotide repeats (6.65%) followed with tri-nucleotide repeats (3.01%). Among the tetra- (0.2%), penta- (0.3%) and hexa-nucleotide (1.2%) repeats, di-nucleotide repeats were abundant in SSRs of perilla. EST-SSR primer pairs flanking the microsatellite domains were designed using PRIMER3 software. SSR primer pairs were designed with several criteria such minimum/maximum as length of expected product, GC content, melting temperature etc. Although results revealed that a total of 500 EST-SSR primer pairs could be designed, for the preliminary studies 17 EST-SSR primer pairs were designed. Annealing temperatures of the primer pairs are set to 55-56 C (T_m 59-60 C) and expected to amplify markers ranging from 211

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bp to 300 bp in size. These SSR primer pairs could be useful in genetic characterization and breeding studies of beefsteak mint.

KEYWORDS

Beefsteak mint, DNA markers, ESTs, microsatellites, perilla, SSR

Poster Session 13

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AN INSIGHT INTO MICROPROPAGATION OF WATER HYSSOP (BACOPA MONNIERI L.)-AN IMPORTANT MEDICINAL AQUATIC PLANT

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ABSTRACT

Bacopa monnieri L. (Water hyssop or brahmi) is one of the important medicinal aquatic/semi-aquatic plant of traditional Indian medicinal system. It contains important bio-active compounds like Bacosides that are used as commercial memory enhancer tonic. Number of Brahmi based registered drugs available are used for curing chronic diseases and disorders like cancer, asthma, mental illness, Alzheimer's disease, anxiety, respiratory ailments, and stomach ulcers. Due to its high demand, it is collected from wild which make this plant threatened to extinction. Propagation through seed is limited due to low seed viability and availability. Propagation through tissue culture techniques provides alternative way of production and conservation of this important aquatic plant. In recent years, large number of studies has been conducted to develop efficient and reproduce-able in vitro regeneration with objective to conserve and produce plants for continuous availability of secondary metabolites it contain. This study present an overview of in vitro regeneration of water hyssop through axillary or adventitious shoot proliferation using different explants, plant growth regulators and culture conditions like light followed by rooting and adaptation techniques.

KEYWORDS

Aquatic, In vitro, medicinal micropropagation, Water Hyssop

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THE IMPORTANCE OF OLIVE AND OLIVE INDUSTRY BY-PRODUCTS IN ANIMAL FEEDING

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ABSTRACT

In recent years, the importance of natural products and the trend towards nature and the importance of medical and aromatic plants are increasing day by day. Our country, which has rich flora due to its geographical location, is also diversified in terms of medical and aromatic plants. Olive tree (*Olea europaea*) leaves have been widely used in traditional remedies in European and Mediterranean countries. Olive leaves, branches, olive cake and waste water are main olive by-products during the progress of harvesting to olive oil production. The use of agricultural by-products in animal nutrition is as old as the domestication of animals. Among the main advantages of using by-products in animal feeding are the reduced dependence of animals on cereals consumed by humans and the reduction of administration costs of waste products. Olive and olive by-product contain many potentially bioactive compounds that may have antioxidant, antimicrobial, antihypertensive, antiatherogenic, anti-inflammatory, hypoglycemic, and hypocholesterolemic properties. The most important of these bioactive compounds are oleuropein and hydroxytyrosol. In this review, it will be addressed to the possibilities of using by-products from olive and olive oil production in animal feeding as an alternative and to the results of several related studies.

KEYWORDS

Olive, Animal feeding, Olive by-product, Oleuropein

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Poster Session 13

Submission ID: 1732

EVALUATION OF THE FATTY ACID COMPOSITIONS OF 14 PISTACIA VERA FRUITS WITH CHEMOMETRIC APPROACH

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ABSTRACT

Pistacia genus which is a member of Anacardiaceae has a shelled edible fruit. This fruit is called as "Şam fıstığı" in some regions. Pistacia genus could be raised easily such places like barren and limed land where other plants can not be cultivated. This genus is widely distributed from the Middle Asia to Anatolia. Iran, Turkey and U.S.A. shared first 3 position in the production of Pistacia. According to some anonymous data %33 of the production is made in Urfa. Pistacia consist more than %50 of oil and more than %20 of protein. Omega-3, omega-6 and highly unsaturated fatty acids are the major components of pistachio oil along with B-3, B-12, vitamine-A, provitamine-B5 (Panthenol) and B-1 (thio-vitamine) (1). In this study fatty acids of 14 pistacia vera from the different locations in Urfa were analyzed by GC-MS. In consideration of the fatty acid concentrations Principle Component Analysis (PCA) and Hierarchical Clustering Analysis (HCA) were applied using Minitab software. Relations between the samples according to their locations and other properties were revealed. Referanslar (1) Satil, F.; Azcan, N.; Baser, K. H. C. Fatty acid composition of pistachio nuts in Turkey. Chem. Nat. Compd.2003, 39 (4), 322–324.

KEYWORDS

Pistacia vera, GC-MS, PCA, HCA, chemometry

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DIETARY USAGE OF FERULA ELEAOCHYTRIS POWDER IN ANIMAL NUTRITION

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ABSTRACT

Ferula is a genus of about 170 species of flowering plants in the family Apiaceae, native to the Mediterranean region to East to Central Asia, mostly growing in arid climates. They are herbaceous perennial plants and present dominantly Keldağ of Yağlıdağı District of Hatay Province, as called "Çakşır" in Turkey. Animals, especially pastured goats, consume its leaves, enhancing reproductive performance in those animals, as known in folk literature. The root powder of this plant was used in small ruminant and poultry experiments. According to findings obtained from those studies the following outcomes; (1) having no harmful effect on animal health, (2) showing hypoglycemic and hypocholesteromic effects in layer hens (3) improving carcass parameters in broiler chicks, (4) changing secondarily sex characteristics in broiler chicks and quails, (5) and having estrogenic effect in small ruminants. To conclude, ferula root powder has been needed be studied in detailed manner to produce new feed additives in animal nutrition.

KEYWORDS

Ferula eleaocytris, feeding, farm animals, feed additive

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Poster Session 13

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A HEALING PLANT "MENENGIC"

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ABSTRACT

Terebinth tree (*Pistacia terebinthus*) is a member of Anacardiaceae family, native to Mediterranean, evergreen and grows ecologically without plantation in the mountainous and rural areas of Mediterranean, South East and Central Anatolian regions of Turkey. It is also known as çitlembik, çıtlık, çitemik and bıtım; named differently in different regions. Terebinth fruit is consumed as fresh or dried, as a coffee and used in traditional bread making in South East and southern regions of Turkey. In the same regions, terebinth paste is mixed with different spices and seasonings in order to prepare the mixture known as (kahvaltılık zahter) "breakfast zahter". Due to rich tannin and resin content of terebinth; it is considered as a medicinal plant since ancient times. Ripe terebinth fruit is rich in protein, oil, dietary fiber, unsaturated fatty acid and mineral content. Terebinth's fatty acid composition determined with gas chromatography is %52.3 oleic acid, %21.3 palmitic acid ve %19.7 linoleic acid. Sodium and phsophorus content is higher than the olive and banana fruits. Also it has been determined that terebinth has a higher potassium, phosphorus, calcium and iron content than potato. Due to high protein, oleic acid and linoleic acid content, terebinth is a healthy dietary element. In this study, Terebinth plant which has a strong potential as a functional food in terms of it's components has been examined in the context of it's all features.

KEYWORDS

Menengic, Citlembik, Menengic fruit, Pistacia terebinthus

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ANTIOXIDANT ACTIVITY OF POLYSACCAHARIDE EXTRACTS OF TRICHOLOMA ANATOLICUM

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ABSTRACT

Because having important nutrients (high protein content, rich fatty acid constituents) along with phenolics, terpenes, steroids and polysaccharides of medicinal mushrooms have been studied very frequently. Polysaccharide containing mushrooms show anti-inflammatory, cytotoxic and anti-viral properties and immunomodulatory activities¹. *Tricholoma anatolicum* which is naturally growing in Fethiye-Muđla. It is the commercial importance because of the similarity to that of *Tricholoma matsutake*, and was selected for this study. Mushroom samples collected from Fethiye-Mugla and brought to laboratory. All samples were air-dried under shadow. After grinding the dried mushrooms organic solvent extraction were applied with the increasing polarity (petroleum ether, acetone, methanol, successively). After taking the methanol extract the residue was used for hot water extraction. Ethanol was added to supernatant part (1:3 v/v) to precipitate the polysaccharides², this part was coded HWEP and the remaining part was coded HWES. Antioxidant activities of these extracts were determined according to DPPH, ABTS+, β -carotene-linoleic acid, metal chelating and CUPRAC assays. HWES showed 81.9% lipid-peroxidation inhibitory activity at a concentration of 0.8 mg/mL while HWEP showed 78.0%. Both extracts were inactive against DPPH radical but HWES showed 82.8% ABTS+ radical scavenging activity. HWES had more ability for metal-chelating activity when compared with that of HWEP. However, in CUPRAC assay HWEP exhibited better activity Acknowledgements: This study is supported by TUBITAK-SBAG with the Project number of 113R012. References (1) Zhu, H.; Sheng, K.; Yan, E.; Qiao, J.; Lv, F. Extraction, purification and antibacterial activities of a polysaccharide from spent mushroom substrate. *Int. J. Biol. Macromol.* 2012, 50 (3), 840–843. (2) Villares, A.; Garcıa-Lafuente, A.; Guillamón, E.; Mateo-Vivaracho, L. Separation and characterization of the structural features of macromolecular carbohydrates from wild edible mushrooms. *Bioact. Carbohydrates Diet. Fibre* 2013, 2 (1), 15–21.

KEYWORDS

Tricholoma anatolicum, polisakkarides, antioxidant activity

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HEALING EFFECTS OF BALNEOTHERAPY ON CLINICAL SYMPTOMS IN DIFFERENT PATIENTS: SURVEY-BASED STUDY

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ABSTRACT

Aims. The aim of this survey-based study was investigated in the clinically healing effects of traditional balneotherapy methods in human (in future also in animals) suffered from different diseases in thermal areas Afyonkarahisar and Gazlıgol-Yaylabagi. **Materials and Methods.** The people had always flocked to the sources of natural mineral spring water for healing (balneotherapy). In the present study, people with different diseases had received balneo- therapy as mud bath, hot water bath, drinking and bathing especially by themselves and according to their own knowledge. **Results.** The results obtained from this study show that balne therapy (drinking and bathing) was provided some clinical healing in most patient, but some unwilling effects of therapy had occurred due to their unciously use the therapy. **Discussion.** Although some unwilling effects of traditional balneotherapy use were seen in some patient, the results of study shown that received balneotherapy methods (drinking and bathing especially) were effective on clinical healing of some diseases in human beings. In future, our other aim will be using in animal diseases.

KEYWORDS

Afyonkarahisar, balneotherapy, SPA, traditional methods

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Poster Session 13

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DETERMINATION OF THE ANTIOXIDANT ACTIVITY OF HAPLOPHYLLUM BUXBAUMII PLANT IN DIFFERENT SOLVENTS

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ABSTRACT

Most of the potential damage from oxygen is occurred by the formation of reactive oxygen species (ROS). Uncontrolled produced ROS and unbalanced antioxidant mechanisms is the cause of many diseases [1]. Natural antioxidants are very important in the regulation of unbalanced antioxidant mechanism. The antioxidant effect of the phenolic compounds contained in the plants protects the cells from potential damage [2]. This study was designed to determine the phenolic and flavonoid species and the antioxidant activity of methanol, butanol, hexane, dichloromethane and water extracts in haplophyllum buxbaumii plant. The total phenolic and flavonoid compounds in the plant were determined using Folin-Ciocalteu reactivity. The antioxidant activity of plant extracts was determined using the DPPH and ABTS which method of free radical scavenging activity test and the FRAP and CUPRAC which metal reduction capacity tests. BTH, Trolox, Ascorbic acid and Gallic acid were used as standard for antioxidant activity comparison. In this study, antioxidant activity of butanol extract was found to be more effective than the other extracts in FRAP and CUPRAC methods. It was observed that all extracts showed free radical scavenging activity in similar proportions in the DPPH test, the butanol extract in the ABTS test showed more activity than the other extracts and standards.

KEYWORDS

Haplophyllum buxbaumii, Antioxidant, Reactive oxygen species

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A SYSTEMATIC REVIEW OF FIBER FOODS USED FOR CONSTIPATION REMOVAL

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ABSTRACT

Introduction: Constipation is a health problem affecting 20% of the world population. This condition is discomfort that affects the quality of life of the individual, causes colon cancer, and increases in severity with time. Constipation is an important preventable health problem that is common in women, children and the elderly. There are some risk factors for constipation, such as physical inactivity, gender, age, low level of education, socio-economic status, sexual abuse, presence of depressive symptoms, nonsteroidal antiinflammatory drugs, some diseases. According to the studies done, in women, in children, there is more frequent constipation in the elderly. There are many different treatment methods in constipation. As first-line treatment, lifestyle changes, fluid intake or exercise are recommended. However, the efficacy of these applications is limited. Laxatives are commonly used in constipation therapy. However, the use of these drugs often causes some adverse effects. Fibrous nutrients are recommended for the prevention and treatment of constipation. Taking fibrous foods in the diet is a positive approach to healthy eating. Increased dietary fiber intake in children and adults is recommended for the prevention and treatment of insomnia. It is stated that Ayaz and Hisar (2014), "Efficiency in the elimination of constipation of education and counseling services given to women", prevented the constipation with the intake of fiber foods in the diet. Studies in the form of a systematic review of the relationship between intake of fibrous nutrients and constipation in diets are not sufficient. For this reason this work is planned. Purpose of the study: This study aims to examine the systematic compilation of plant materials applied to eliminate constipation in the world and in our country. Method: The survey was conducted between 15-20 March 2017. Using electronic search engines, we obtained 360 articles and reached 49 articles by using the fibrous nutritional statement in Wiley-blackwell, Web of Science, Scopus, Science Direct Journals, Pubmed, Medline, and Cinahl plus full text databases. In the Constitution statement, 87 articles were reached, 64 articles have been reached with the expression and 2 articles have been reached with systematic compilation statement. In addition, 2 articles have been reached with the expression of herbal applications. The other side also scanned the google search engine (45 English, 8 Turkish articles reached). A total of 249 articles have been reached. It has been suggested to use fibrous nutrients applied to remove constipation in 11 articles. Conclusions: It has been found that 92% of the studies investigating the use of fibrous nutrients for removal of constipation are inadequate for fibrous nutrient uptake. It is stated that the number of feces and the amount of fiber increases with the consumption of fiber foods.

KEYWORDS

fibrous nutrients, constipation, herbal applications, public health, systematic review

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Poster Session 13

Submission ID: 1741

GINSENG AND ITS HEALTH DEVELOPER FUNCTIONS

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ABSTRACT

Ginseng is one of the plants used for treatment of many diseases for many years. Its use has spread all over the world from East Asian countries like China, Korea and Japan. Ginseng has been shown in many studies to have positive effects in many cases such as neurological diseases, immun system disorders, diabetes, cancer, cardiovascular diseases. Panax ginseng is the most valuable and important among the ginseng species. It has been used in East Asian medicine for centuries. The habit of using plants for medical purposes and healthy nutrition in Asia has also been adopted by western societies in recent years. Thus, P.ginseng has become available all over the world. Ginsenosides are main bioactive compounds of P.ginseng. More than 50 ginsenosides have been isolated from P. Ginseng. Ginsenosides are a class of saponins with dammarane triterpenoid structure. Many human and animal studies have been conducted to investigate the effects of ginseng on health. Based on the results of these studies, it has been shown that ginsenosides and its different fractions have positive effects on the regulation of the immune response. It is also concluded that ginsenosides have important roles in tumor cell cytotoxicity against cancer development, differentiation of tumor cells, development of inflammation suppressor cells, prevention of metastasis, prevention of angiogenesis. Positive effects of ginsenosides on regulation of blood glucose level and treatment of diabetes as well as immune response and anticarcinogenic effects have been observed. It affects energy homeostasis by regulating insulin secretion and glucose transport as well as affecting peroxisome proliferator-activated receptor (PPAR- γ) and AMPK function, these are two important proteins that are effective in adipocyte differentiation. One of the known effects of ginseng is the positive effects on the central nervous system. The neurotrophic effect on memory and learning is protective against neuronal damage. Ginseng has recently been a highly studied plant and different effects of ginsenosides on health are being explored further.

KEYWORDS

Ginseng, ginsenosides, functional foods, P. ginseng

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Poster Session 13

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THYMOL ATTENUATES INDOMETHACIN-INDUCED MACROMOLECULAR DAMAGES IN SMALL INTESTINE

FATIME GEYIKOĞLU¹, NİHAL SİMSEK ÖZEK², FERHUNDE AYSIN², KUBRA KOC¹, SALİM CERİG¹

ABSTRACT

THYMOL ATTENUATES INDOMETHACIN-INDUCED MACROMOLECULAR DAMAGES IN SMALL INTESTINE Fatime Geyikoglu¹, Nihal Simsek Ozek^{1,2}, Ferhunde Aysin^{1,2}, Kubra Koc¹, Salim Cerig¹ *Corresponding author: Nihal Simsek Ozek, e-mail: nihal.ozek@atauni.edu.tr phone number: + 90 0 442 231 1649 ¹Department of Biology, Faculty of Science, Ataturk University, Erzurum, TURKEY ²East Anatolian High Technology Research and Application Center (DAYTAM), Atatürk University, Erzurum, TURKEY Indometacin, a nonsteroidal anti-inflammatory drug (NSAID), is commonly and efficiently used to reduce fever, pain and swelling from inflammation. In spite of its therapeutic potentials, it has adverse effects on the gastrointestinal system and the occurrence of these effects are associated with oxidative stress. It has been known that this stress causes macromolecular damages in biological systems and these effects can be decreased by the use of bioactive components of plants such as thymol etc. Although, the healing roles of several plant based products such as curcumin in the indomethacin induced damages of small intestine have been indicated, the attenuating role of thymol in these damages in terms of the structure and function of intestine macromolecules has not been demonstrated yet. The current study was established to elucidate these effects by Attenuated Total Reflectance Fourier Transform Infrared (ATR-FTIR) Spectroscopy together with chemometric analysis approach. Rats received distilled water (control), indomethacin (25 mg/kg), indomethacin+ rantidine (50 mg/kg ran) and indomethacin+thymol combinations (100, 250 and 500 mg/kg Thymol) orally by intragastric gavage. Firstly, the spectra of small intestine samples were collected and then detailed spectral analyses including frequency, band area and bandwidth of spectral bands were performed to determine the structural and functional alterations in the tissue macromolecules. To discriminate the studied groups based on these alterations, hierarchical cluster (HCA) and principal component analysis (PCA) were applied to their spectra. The spectral results demonstrated that indomethacin caused significant damages in the unsaturated, saturated lipid, protein, nucleic acid amounts and also membrane fluidity with respect to the control and these damages may be related with the indomethacin-induced oxidative stress. On the other hand, especially 250 mg/kg dose of thymol administration ameliorated these damages with regards to the indomethacin group. The chemometric analysis indicated that the thymol treated groups were successfully discriminated from indomethacin group. The results of the current study suggest that thymol has the curative potential of the adverse effects of indomethacin in small intestine. Keywords: Indomethacin, Small intestine injury, Thymol, FTIR spectroscopy, Chemometric analysis.

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KEYWORDS

Indomethacin, Small intestine injury, Thymol, FTIR spectroscopy, Chemometric analysis.

EFFECTS OF INFRARED RADIATION DRYING PROCESS ON ASCORBIC ACID CONTENT AND ANTIOXIDANT ACTIVITY OF DILL LEAVES

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ABSTRACT

Dill (*Anethum graveolens* L.), is a biennial or annual herb of the parsley family (Apiaceae or Umbelliferae). Because of its rich antioxidant activity, ascorbic acid and total carotenoid content, dill is utilized as pharmaceutic plant. However, storage of fresh dill is very problematic due to its high moisture content, thus drying of it is one of the common preservation methods. In case of conventional air circulation drying systems heat is transferred to product from air by convection, therefore drying process takes long times and results in undesired changes in the product. In recent years, novel drying methods shortening process time have been studied. Infrared drying, which is one of these novel methods, is suitable for drying of the materials having high surface area and drying in the form of thin layer. In infrared drying, drying time is shortened and loss of the desired components is reduced due to its high heat transfer rate. In present study, dill leaves in the form of thin layer were dried in infrared drier at two different radiation power (85 and 102 W) from initial moisture content of 82±2 % to the final moisture content of %8±1 moisture content. Changes of drying times, antioxidant activity and ascorbic acid values depending on infrared power were determined. Drying times for low and high power levels were determined as 840 s and 620 s, respectively. It was determined that antioxidant activity values increased as the radiation power increased. The loss in ascorbic acid contents of dried samples were determined as 12% and 75% for low and high power, respectively. It was concluded that the loss of ascorbic acid content during infrared drying was more affected from radiation power than drying time. It was determined that as the radiation power increased by 20% for infrared drying of dill leaves having medical and aromatic value, its drying time was shortened by 27% and its antioxidant capacity increased while the degradation of ascorbic acid content increased. It was recommended that the optimum process parameters for infrared radiation drying of dill leaves should be determined by optimization studies taking into account of changes in quality attributes in addition to drying times and performance characteristics.

KEYWORDS

dehydration, quality, power, medical, aromatic, seasoning

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EVALUATION OF CYTOTOXIC EFFECTS OF RHEUM RIBES (ROOT AND STEM) EXTRACTS ON HCT 116 COLORECTAL CANCER CELLS

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ABSTRACT

Colorectal cancer (CRC) is one of the most frequent type of cancer that has rapidly increasing incidence, and shorter duration of survival. Due to serious side effects and chemo resistance of most chemotherapeutic drugs used in the treatment of CRC, it becomes necessary to develop new cytotoxic agents. It is thought that, secure extracts of edible plants which contain structurally different molecules may prevent the development of multi-factorial diseases as CRC; new efficient strategies are comprehensively being investigated, including the development of phytopharmaceuticals. Our aim in this study is to evaluate the cytotoxic effects of n-hexane, ethyl acetate, methanol extracts from stem and root of *Rheum ribes*, by applying them to the HCT 116 colorectal cancer cells. The samples of the stem and root of *Rheum ribes* were dried and powdered, and then extracted with n-hexane, ethyl acetate and methanol solvents respectively. A total of 6 fractions of this plant were obtained. The cytotoxic effects of *Rheum ribes* extracts on HCT-116 cells were assessed using the XTT test. In order to determine the IC₅₀ dose, plant extracts were applied to the cells at time (24 h, 48 h, 72 h) and dose-dependent at 50-2000 µM. According to the results obtained, the best cytotoxic effect in all fractions was observed at 48th hour. The IC₅₀ doses according to the fractions were determined as follows: root n-hexane: 672 µM, root ethylacetate: 96.32 µM, root methanol: 29.65 µM, stem n-hexane: 298.9 µM, stem ethylacetate: 226.6 µM, stem methanol: 182.9 µM. Among all extracts, root methanol was found to be the most effective fraction on cytotoxicity.

KEYWORDS

Rheum ribes, cytotoxicity, cancer

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EFFECTS OF TIMOKINONE APPLICATION IN THE RENAL CELL LINE

VEYSEL YÜKSEK¹, SEMİHA DEDE¹

ABSTRACT

EFFECTS OF TIMOKINONE APPLICATION IN THE RENAL CELL LINE This study was planned to investigate the cytotoxic effects of thymokinon (TQ) which is a major component of *Nigella sativa* plant, which is widely used in various forms and reasons, in NRK-52E rat kidney cell line at various doses and durations. NRK-52E rat kidney cells were grown by regular passages in vitro conditions. TQ solutions prepared at different doses were added per well and MTT viability test was performed at 6, 12 and 24 hours. As a result, it was revealed that TQ administration NRK-52E is dependent on different dosages and duration; Low doses have permanently increased cell proliferation and cytotoxic activity has been consistently elevated as TQ doses are increased. Based on these results, it was concluded that the reliability of TQ administration in relation to dose and time on the kidneys should be evaluated in further studies.

KEYWORDS

Thymokinon, Cell culture, MTT, Cytotoxicity, Kidney

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Poster Session 13

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AMELIORATIVE EFFECTS OF CARVACROL ON EXPERIMENTAL ACUTE PANCREATITIS

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ABSTRACT

AMELIORATIVE EFFECTS OF CARVACROL ON EXPERIMENTAL ACUTE PANCREATITIS Nihal Simsek Ozek^{1,2} Fatime Geyikoglu¹, Mirkhalil Hosseinigouzdagani¹, Kubra Koc¹, Salim Cerig¹, Gülsah Yıldız Deniz³ 1 Department of Biology, Faculty of Science, Ataturk University, Erzurum, TURKEY 2 East Anatolian High Technology Research and Application Center (DAYTAM), Atatürk University, Erzurum, TURKEY 3 Health Services, Vocational High School, Ataturk University, Erzurum, TURKEY Carvacrol, the main compound of thyme, possess antibacterial, antifungal, antiviral, antitumor anti-oxidant, and anti-inflammatory properties. The aim of this study was to investigate the curative efficacy of carvacrol on acute pancreatitis-induced kidney injury. With this aim, rats were randomized into control, acute pancreatitis and acute pancreatitis + carvacrol groups. The animals were given 50, 100 and 200 mg/kg Carvacrol by intraperitoneally injections after 50 µg/kg cerulein injection. After experimental procedures, renal tissues were removed for histological and biochemical investigations. Kidney weight, malondialdehyde (MDA) level, total antioxidant status (TAS), the blood urea nitrogen (BUN), uric acid (UA) and creatinine (CRE) levels were measured. Histology of kidney was examined by using three different staining methods: Periodic acid Schiff, Masson trichrome and Amyloid. According to obtained results, the cerulein treatment caused significant alterations in the weights of kidneys. However, a significant decrease in the kidney weights with carvacrol treatment was obtained with respect to the acute pancreatitis group. Moreover, TAS level was found to be higher in the acute pancreatitis+carvacrol compared to the acute pancreatitis group. Depending on the increased dose of the carvacrol, the significant decrease in MDA level was obtained. Also, the BUN, CRE and UA levels of acute pancreatitis and carvacrol groups were significantly from each other. The marked amelioration of the renal histopathology induced by carvacrol treatment was observed. Taken together these data showed that 200 mg/kg carvacrol is an effective therapy against acute pancreatitis-induced renal damages and dysfunction. As conclusion, the ameliorative effect of carvacrol was associated with its antioxidant properties. Thus, carvacrol was suggested as natural pharmaceutical agent against pancreatitis-induced multiple organ damages.

KEYWORDS

Acute pancreatitis, Carvacrol, Histopathology, Kidney, TAS.

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SEPARATION OF ODOR COMPONENTS FROM HYACINTH (HYACINTHUS ORIENTALIS) IN DIFFERENT COLORS FOR USE IN PERFUME CONSTRUCTION AND COMPATIBILITY WITH SYNTHETIC HYACINTH

SEDEF AŞIK¹, NAZAN DEMİR¹

ABSTRACT

In this study, it is aimed to look at some bioactivity of *Hyacinthus orientalis* species attracted to people naturally grown in Muđla and its surroundings in February and April, as well as to obtain the essential oil of the flower and to combine it with the essential oil of other flowers based on the notion concept. And new perfume combinations were selected as the target. The right combination is considered to be the next step when it becomes a commercial product after patent and trademark work. Hyacinth is a flower that embellishes nature with its pleasant smell, appearance and colors which are common in Anatolia. It is known that about 30 subspecies of the hyacinth, an endemic flower species. Uncultivated onions, local species are still found in Anatolia and are a very popular flower as a part of our culture. Perfume is a generic name for cosmetic products, derived from fragrant oils, aromatic mixtures and various chemical substances, which are used to impart fragrance to the human body, various objects and environments. Briefly a perfume; It is an intuitive and artistic combination that Chemistry Science has developed from the way of good smell. The white, purple and pink hyacinths used in this study were selected from the Muđla villages and uncastrated local species. They were diagnosed and worked the day they were collected. The remaining parts were kept at -80 ° C for other work. Content analysis by HPLC was performed and the enzyme activities were examined to investigate the availability of phenolic compounds as well as other cosmetic products in flowers. The hyacinth flowers are subjected to different processes in order to obtain the essential oils separately. Extraction with organic solvents, water vapor distillation methods are used in this frame. IR spectra of different hyacinth flowers were compared with the hyacinth essences on the market and different perfume combinations were studied. The efforts to optimize the successes of different perfume combinations have been continuing. As a result, the contents of some of the enzyme activities, essential oil components and phenolic components of hyacinth flowers were determined in this frame. Cinnamic alcohol, Ethyl 2-methoxybenzoate, 3,7-dimethyl-1, (E) -5 (E) -octatriene-7, (E) -cinnamic alcohol and ethyl 2-methoxybenzoate. This study also increased the recognition of hyacinth flowers and provided them as a prestige product. References : [1] Demir N., Aşık S., 2017 "Investigation of Some Bioactivity and Odor Components of White Jasmine (*Jasminum Officinale*) and Its Use in Perfume Design", Master Thesis. [2] Lehninger, A. L. (2013) Principles of biochemistry, Worth Publishers Inc., New York, 1152s. [3] Demir N., Demir Y., Kaya E. and Aydın B., "Cysteine Protease from Primrose (*Primula vulgaris*)", Asian Journal of Chemistry, 24 (4), 1479-1482 - 2012. [4] Demir N., Uçkaya F., 2015 "Citrus Sinensis (L.) Osbeck (Orange) and Citrus limon

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KEYWORDS

Hyacinthus (Hyacinthus orientalis), Odor components, Essential oil components, Phenolic compounds

Poster Session 14

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SHERBET AS A FUNCTIONAL TRADITIONAL DRINK

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ABSTRACT

Sherbet is a traditional drink in Turkey which is made from a mixture of a variety of fruits (tamarind, date, pomegranate, cranberry, red grape, rosehip, locust bean, etc.), spices (black cumin, cinnamon, ginger, cardamom, clove, etc.), and flowers (rose leaves, carnation, etc.), and further sweetened with the addition of honey or sugar. Before the appearance of its modern alternatives, sherbet was a popular drink in the past with its refreshing taste; and it was also used as a curing agent in medicine due to its health benefits. The main ingredients of sherbet, specifically fruits and spices, are well-known to be rich sources of antioxidant components that may provide protection against oxidative damage, and thereby prevent the incidence of several degenerative diseases, such as cancer. Therefore, sherbet could certainly be considered as a promising functional drink which could regain its popularity among health-conscious consumers. In this study, we aimed to determine the antioxidant potentials of three different sherbets, including tamarind, grape, and cranberry sherbets as among the most preferred sherbet drinks in Turkey. Total phenolic contents (TPC) and total antioxidant capacities (TAC) of sherbet samples were measured, in triplicates, using the methods of Folin Ciocalteu and Cupric Reducing Antioxidant Capacity (CUPRAC), respectively. Grape sherbet was found to have the highest TPC (53 mg gallic acid equivalents (GAE)/ 100 g fresh weight) and TAC (184 mg trolox equivalent (TE)/ 100 g fresh weight) values among the tested sherbet samples, which was followed by cranberry sherbet -that had TPC and TAC values of 34 mg GAE/ 100 g fresh weight and 130 mg TE/ 100 g fresh weight, respectively- and tamarind sherbet – that had TPC and TAC values of 24 mg GAE/ 100 g fresh weight and 58 mg TE/ 100 g fresh weight, respectively. Current study indicate black grape, cranberry, and tamarind, which are the main fruit components of the namesake sherbet drinks, as potent fruit ingredients that could improve the functional properties of these traditional beverages with their substantial antioxidant potentials. This study is still on progress to reveal the bioactive properties of other sherbet types by characterizing their major phenolic compounds as well, which will enable us to highlight the health-related importance of sherbet consumption.

KEYWORDS

sherbet, functional drink, antioxidant capacity, total phenolic content

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Poster Session 14

Submission ID: 602

VİTİS VINİFERA L. AND AROMATHERAPY

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ABSTRACT

Aromatherapy is a natural treatment way based on the use of the oils obtained from plants. The concentrated vegetable energy in these essential oils obtained from plants is used in massage, steam, or bath. Aromatic oils are the ones, which are healable and curable. These oils are obtained from flowers, roots, trees, fruit, seeds, crust, and leaves, and have all of the properties that refresh and odorize plants. Humanity explored the benefit of these oils considered as the heart of plants thousands years ago. Aromatherapy based on the fact that essential oils obtained from plants influence the organism with olfactory receptors has a six-thousand-year-old history. Stress experienced intensively today is known to have a negative effect on every part of human body. The studies on the after-treatment ways against several psychological and physiological illnesses go on. Grape seeds as waste produced by the different uses of grapes need to be made usable. Especially the rich content of grape seeds has started to be used as an alternative in the cosmetic industry, the food industry, and the health sector. Grape seeds, which include carbohydrate, oil, and protein, have the rich vitamin, mineral, antioxidant, and phenolic compound content. The amount of the oil in the seeds is between %10 and % 27. This potential, which has a light and absorbable property, should be evaluated. It has been found out by the studies made that grape seeds have such effects as decreasing the level of cholesterol, protecting against the harmful influences of medicine and chemicals, reducing the impact of UV lights on the skin, having antimicrobial, anti-carcinogenic, antioxidant, and cardiovascular influences, improving eyesight, protecting against oedema after the operations, and renewing cells. Grape seed oil is used as essential oil and for treatment purposes because it is fluid, rich in fatty acids (omega 3, omega 6, omega 9), and has a high amount of vitamin E which can penetrate into the human skin easily and moisturizes. It is also used as bath and massage oil. The areas and amount of usage of grape seed oil in aromatherapy should be increased.

KEYWORDS

V. vinifera L.; aromatherapy, grape seed oil

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Poster Session 14

Submission ID: 605

IMPORTANT TO HUMAN HEALTH, SOME BUSH FRUITS' INVESTMENT POTENTIALS IN TUNCELI

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ABSTRACT

With the growing population on earth, the current resources are gradually decreasing and the destruction of nature is consequently increasing. However, our bush fruits, so valuable in terms of health, together with the endemic species are among the most affected ones from this destruction. Our country is quite fertile for the potential species with regard to bush fruits. There are many bush fruits, some of which have been unexplored or ignored though they have been used for some specific purposes. These fruits, particularly important to human health, are facing the danger of extinction because of the decrease in number, not being taken under protection, or the inadequate growth. Restoring of already extinct species is too difficult or even impossible. Tunceli, a city in the east of Turkey, is quite rich in bush fruits. Rich in nutrition, important to human health, these fruits are quite suitable for the processing industry. Bush fruits, easily grown in the infertile lands and under harsh climate conditions, have been known for having protective effects against many diseases and have been traditionally used against illnesses for years. Bush fruits and its rich potential in Tunceli wait to be explored. The richness of the district, the conditions of which are adaptable to the farming of Bullace (kara mamuk), rosehip (kuş burnu), blackberry (böğürtlen), raspberry (ahududu) highbush cranberry (gilaburu), thorn apple (alıç), should be realized and taken into consideration.

KEYWORDS

Bush fruits; New investment plants; Tunceli; Human health

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Poster Session 14

Submission ID: 639

HEALING TREE: COMMON WITCH HAZEL (HAMAMELIS VIRGINIANA)

İMGE İHSANE ÖZCAN¹, ŞÜHEDA BASİRE AKÇA¹

ABSTRACT

HEALING TREE: COMMON WITCH HAZEL (*Hamamelis virginiana*) There are approximately 100 species of *Hamamelis* in the world. Due to fallen leaves in the autumn and it started to bloom in the winter, they are called "Witch hazel," "Magic nut", "Magic walnut" and "Magic bush". Generally their species are grown in North America (*H. mexicana*, *H. ovalis*, *H. virginiana* and *H. vernalis*), Japan (*H. japonica*) and China (*H. mollis*). Of these, only as healing *Hamamelis virginiana* is used for medical purposes. One of the American species, the common witch hazel (*Hamamelis virginiana*) plant has been spread from South Florida to eastern Texas, western Nova Scotia to Minnesota. This plant is a tree that grows in forestland endemic to North America. It is also grown in Europe and semi-tropical forests. This plant, which is English Witch Hazel is also known as Bitter Hazel and Pigeon Tree in Turkey. The leaves and shells of *Hamamelis* is used for making tea, bandages, suppository, tincture and natural medicines. The most important effect of *Hamamelis* has a natural astringent namely firming feature. This is one of the most preferred plants in the cosmetic industry with this feature. In this study, have been given general characteristics of the common witch hazel, their usage areas, information obtained from various references about the studies.

KEYWORDS

Common witch hazel, Usage areas, Hamamelis virginiana

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Poster Session 14

Submission ID: 994

HONEY PLANTS OF ORUMCEK FOREST : EVALUATING MEDICINAL AND AROMATIC PLANTS FOR CULTIVATION

GÜLŞAH YILMAZ¹, GÜLSÜM YALDIZ²

ABSTRACT

Flora has a significant effect on characterization of honey in beekeeping. Örümcek Forest or Spider Forest is known possess highly rich plant diversity that including many medicinal and aromatic honey plants. Nearly 620 plants taxa were identified totally over 38 thousand hectares which of 263 hectares are protected in the Forest. In recent years, some regional projects are being implemented the medicinal and aromatic plants and to develop beekeeping by the local people and increasing employment in the Black Sea Region. Some medicinal and aromatic plants which are grown in the Örümcek Forest have been cultivated as part of a project and they have been growing in the Kürtün district of Gümüşhane Province since 2012. In this study, information is provided about the medicinal and aromatic plants that can be cultivated as a honey plant by flora trips in the Örümcek Forest.

KEYWORDS

Flora, honey plant, cultivation, medicinal and aromatic plants, Örümcek Forest

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Poster Session 14

Submission ID: 1029

IMPORTANTANCE OF GINGER (ZINGIBER OFFICINALE ROSCOE) FOR HEALTH

HÜLYA VATANSEVER¹, DUYGU ERCAN ORUÇ¹, ABDULLAH ÇAĞLAR¹

ABSTRACT

Ginger (*Zingiber officinale* Roscoe), a member of the family Zingiberaceae, has been used as a spice and medicinal plant in many parts of the world for centuries. Many civilizations have been used ginger in various forms in the treatment of respiratory and urinary tract infections, stomach and intestinal disorders, nervous disorders, diabetes, infertility, headache, toothache and rheumatism. Carbohydrates, amino acids, vitamins (A, B3, B6) and minerals (Ca, Fe, Mg, Mn, P, K, Na, Zn) constitute the nutrient content of ginger. In addition, ginger has shogaol and gingerol polyphenolic substances with high antioxidant properties. Researches have shown that ginger has numerous therapeutic properties including antioxidant, anti-inflammatory, antiplatelet, antimicrobial, antiemetic, radioprotective, gastrokinetic, cologne effects. It has been determined that ginger is effective against various gastrointestinal cancers such as stomach, liver, pancreas and colonic carcinoma and cholangiocarcinoma. Modern clinical trials have shown that ginger helps to relieve nausea and vomiting to reduce muscle pain and discomfort and respiratory tract infections, and protects the digestive system and brain health. It also reduces LDL cholesterol and increases HDL cholesterol, regulating insulin levels. The results obtained from scientific data reveal that ginger supports most of the purposes of uses for various reasons among the people. The fact that ginger has a rich nutritional content and too many health benefits to mention increases the importance of spreading consumption of ginger.

KEYWORDS

Medicinal plant, ginger, antioxidant, anti-inflammatory, health

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THE DPPH FREE RADICAL SCAVENGING ACTIVITY AND ABTS CATION RADICAL DECOLORISATION ACTIVITIES OF ETHANOL EXTRACTS OF SEEDED RAISINS

DİLEK DEĞİRMENÇİ KARATAŞ¹, VEYSİ ÖZ¹, MEHMET AKDENİZ², IŞIL AYDIN², ABDÜSELAM ERTAŞ³

ABSTRACT

The DPPH Free Radical Scavenging Activity And ABTS Cation Radical Decolorisation Activities Of Ethanol Extracts of Grape Raisin Seeds Dilek Değirmenci KARATAŞ¹ Veyisi ÖZ¹ Mehmet AKDENİZ² Işıl AYDIN² Abdulsalam ERTAŞ³ 1 Dicle University, Faculty of Agriculture, Department of Horticulture, Diyarbakır, TURKEY 2Dicle University, Faculty of Pharmacy, Department of Analytical Chemistry, Diyarbakır, TURKEY 3Dicle University, Faculty of Pharmacy, Department of Pharmacognosy, Diyarbakır, TURKEY SUMMARY Considering the changes in nutrition recommendations and models in the world, the seeded raisins should be considered as one of the products with significant potential for foreign trade. In recent years, the demand for core black raisins, which are constantly on the agenda in terms of healthy nutrition due to their blood-building and high antioxidant content, has increased considerably. Anthocyanins are the most common phenolic compounds in red grapes and flavonols are most commonly present in white grapes. The health benefits associated with fresh grape consumption are broadly known and linked to the richness of phenolic compounds. These compounds have been demonstrated to have a wide range of biochemical and pharmacological effects, including anticarcinogenic, and antiatherogenic, antiinflammatory, antimicrobial, and antioxidant activities. In this study, seeds of variety of grape varieties of Besni, Dımışkı, Rumi, Banazı siyahı, Horoz Karası, Kerküş grapes collected from Southeastern Anatolia Region of our country were studied. The material (4-8 g) was dried and powdered, and they were macerated with ethanol (25 mL × 3) for 24 h at 25 °C. After filtration, the solvents were evaporated to obtain crude extracts. The ethanol extracts of seeds were tested for antioxidant (DPPH free radical scavenging activity and ABTS cation radical decolorization) activities in this study. Studied six extracts were found to be quite active on both antioxidant activity methods. In particular, the ethanol extract of Banazı Black (BBS) showed 86.34% inhibition in 50 µg / ml concentration and 87.79% in ABTS method in DPPH method. In both methods, it was found that the Dımışkı grape seed samples (DS) showed lower activity than the others. In our study, it was determined that antioxidant potentials of different grape varieties were quite different. We are continuing our efforts to determine the chemical components that cause this. Acknowledgements: The research was funded by grant : DUBAP from Dicle University Keywords: *Vitis vinifera* ssp. sativa, seeded raisins, seeds, DPPH, ABTS

KEYWORDS

Vitis vinifera ssp. sativa, çekirdekli kurutmalık üzüm, üzüm çekirdeği, DPPH, ABTS

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THE BIOLOGICAL ACTIVITIES OF LAVANDULA STOECHAS L. AGAINST FOOD PATHOGENS

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ABSTRACT

Foodborne pathogens are microorganisms as well as a number of parasites, which are capable of infecting humans via contaminated food or water. In recent years, diseases caused by foodborne pathogens have become an important public health problem in the world, producing a significant rate of morbidity and mortality. In traditional medicine, numerous plants and their extracts have used for thousands of years to treat health disorders. Although many studies were made on natural herbs, those involving the antimicrobial, antioxidant and antimutagenic activity of the herb species are rather rare. This study researches the biological activities of ethanol and methanol extracts of *Lavandula stoechas* L., which are prevalent in Turkey. In this study, 8 food pathogens were used for antimicrobial activity studies. Antimicrobial activity studies were done by disk diffusion assay and MIC (minimum inhibitory concentration). DPPH method was used for non-enzymatic antioxidant activity. The *Lavandula* extracts were screened for their antimutagenic activity against sodium azide by Ames test in absence of rat microsomal liver enzyme (-S9). The ethanol and methanol extracts of *Lavandula stoechas* showed antibacterial activity (7 mm) against most of bacteria. The antifungal activity of *L. stoechas* was not determined against *C. albicans* RSKK02029. The lowest MIC value was determined as 3250 µg/mL. The highest radical inhibition was determined as 79 % by *Lavandula stoechas* flower methanol extract. The flower extract of *L. stoechas* (12500 µg/plate) was found to have its highest antimutagenic activity for *Salmonella Typhimurium* TA98. This inhibition value is 42 %. *L. stoechas* leaves extracts (6250 and 3125 µg/plate) showed a moderate positive inhibitory effect for *Salmonella Typhimurium* TA98, and TA100. *L. stoechas* flower extracts (12500 and 6250 µg/plate) showed a moderate positive inhibitory effect (respectively 31 and 30 %) for *Salmonella Typhimurium* TA100. The extracts of *L. stoechas* have antimicrobial, antioxidant and antimutagenic activities.

KEYWORDS

Lavandula, Antimicrobial Activity, Antioxidant Activity, Antimutagenic Activity

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EFFECT OF INFUSION TIME AND CONCENTRATION ON ANTIMICROBIAL AND ANTIOXIDANT POTENTIAL OF LAVANDULA STOECHAS L. TEAS

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ABSTRACT

Lavandula stoechas L. that belongs to Lamiaceae family is one of the medicinal and aromatic plants, especially grown in the Mediterranean Region. The antiseptic effect of this plant with emphasis on treatment of several diseases were reported. Recently, the great concern on natural products and the plants like this has increased. Studies on Lavandula stoechas L. were mostly performed on antibacterial properties of volatile oils of this plant. However, there was no study on optimization of infusion process that were related with antimicrobial and antioxidant potential of Lavandula stoechas L. teas. In this study, the effects of different infusion times and concentrations on antimicrobial and antioxidant potential of teas were investigated. For this purpose, teas were infused at 10% and 20% (w/v) concentrations for 5, 10 and 20 minutes. Antimicrobial activity test was conducted with Kirby-Bauer disc diffusion assay by using Staphylococcus aureus and Escherichia coli as test organisms and zones of inhibition of teas were determined. Antioxidant potential of teas was performed with DPPH radical scavenging activity assay. According to the results, antimicrobial activities of teas infused for 10 to 20 minutes were found to be similar and higher than infusion time of 5 minutes. When the effect of infusion concentrations were compared, antimicrobial activity teas with 20% (w/v) was higher than 10% (w/v) concentration. Antimicrobial potential of Lavandula stoechas L. teas was more effective on E. coli rather than S. aureus. Antioxidant potentials of the teas were comparable with antimicrobial activities and teas with higher infusion concentration and 10 minutes infusion time had better antioxidant potential when compared to other infusion conditions. The results revealed that optimization of infusion conditions of teas were important for remarkable inhibition against pathogens and antioxidant potential.

KEYWORDS

Lavandula stoechas L., infusion, antimicrobial, antioxidant

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THE BIOLOGICAL ACTIVITIES OF SILYBUM MARIANUM L. GAERTN. AGAINST FOOD SPOILAGE MICROORGANISMS

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ABSTRACT

Food safety and foodborne pathogenic microorganisms are one of the major public health problems in the globalizing world. In the world, numerous plants and their extracts are used for thousands of years to treat health disorders. This study researches the biological activities of extracts of *Silybum marianum*, which is prevalent in Turkey. In this study, 7 bacteria and 1 yeast were used for antimicrobial activity studies. Antimicrobial activities studies were done by disk diffusion assay and MIC (minimum inhibitory concentration). Antioxidant activities were studied by DPPH method. The plant extracts were screened for their antimutagenic activity against sodium azide by Ames test in absence of rat microsomal liver enzyme (-S9). The extracts of *Silybum marianum* showed strong antibacterial activity (10 mm) against *Bacillus subtilis* RSKK245 and *Staphylococcus aureus* RSKK2392. The highest antifungal activity was obtained methanol extract of *Silybum marianum* flowers against *Candida albicans* RSKK02029 (9 mm). The lowest MIC value was found as 3250 µg/mL. The highest radical inhibition was determined as 72 % by *Silybum marianum* flower methanol extract. *Silybum marianum* flower extracts (12500 and 6250 µg/plate) showed a mutagen effect for *Salmonella Typhimurium* TA98. However, these extracts showed low antimutagenic activity for *Salmonella Typhimurium* TA100. *Silybum marianum* leaves extracts (6250 and 3125 µg/plate) showed a moderate positive inhibitory effect for *Salmonella Typhimurium* TA98, and TA100 (respectively 38 and 28 %). The leaves and flowers extracts of *Silybum marianum* have antimicrobial, antioxidant and antimutagenic potential.

KEYWORDS

Silybum, Antimicrobial Activity, Antioxidant Activity, Antimutagenic Activity

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ESSENTIAL OIL COMPOSITION AND ANTIFUNGAL AND ANTIBACTERIAL ACTIVITY OF *ACHILLEA CAPPADOCICA*

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ABSTRACT

Achillea species is perennial herbs belongs to Asteraceae family and has a characteristic odor. The genus *Achillea* is represented 41 species and 7 subspecies 24 of which are endemic to Turkey according to Flora of Turkey. *Achillea cappadocica* is one of the endemic species and its essential oil compositions has not been reported previously. *Achillea* species are known as "civan perçemi" in Turkish and used as a folk medicine. A large number of *Achillea* species are on the "generally recognized as safe plants list (GRASS)" in Turkey and marketed for treatment of various diseases. This study focused on the determination of essential oil composition of *A. cappadocica*. Plant materials were collected from Refahiye, Erzincan at June 2016. Essential oils were obtained using clevenger type apparatus during 30 min and analyzed with GC-MS instrument. 27 compounds were identified representing %97.4 of total oil. The major components were found as ascaridiol (%55.5) isoascaridiol (%10.3), p-cymene (%11.17) and eucalyptol (%6,56). Ascaridiol is a naturally occurring endoperoxide monoterpene found in essential oil of *Chenopodium ambrosioides* (Mexican tea). Ascaridiol and isoascaridiol have unknown toxicity. It was reported the occurrence of ascaridiol in *Achillea millefolium* growing northern Greece as major component by % 47 [1]. When compared other *Achillea* species growing in Turkey, the being large amount of ascaridiol in *Achillea cappadocica* is remarkable. To ensure identifying ascaridiol, ¹H and ¹³C-NMR spectrums of crude essential oil were recorded in CDCl₃ due to suspicious MS library hits. Two olefinic methine (136.3 C2 and 133.0 C3), one aliphatic methine (32.1 C8), two oxygenated quaternary (79.7 C4 and 74.3 C1), three methyl (21.3 C7, 17.2 C9, 17.1 C10), two aliphatic methylene (29.5 C6, 25.6 C5) signals were observed at ¹³C-NMR spectrum with fully agreement with literature data[2]. The antifungal and antibacterial activity of crude essential oil were determined using disc diffusion method. Essential oil exhibited great activity against *P. aeruginosa*, *E. faecalis* and *S. aureus* and moderate activity against *E. coli* and *C. albicans* when compared commercially available some antibiotics such as tetracycline, gentamycin and streptomycin. 1. Chatzopoulou, P., S.T. Katsiotis, and A.B. Svendsen, An ascaridole containing essential oil of the *Achillea millefolium* L. complex growing wild in northern Greece. *Journal of Essential Oil Research*, 1992. 4(5): p. 457-459. 2. Cavalli, J.F., et al., Combined analysis of the essential oil of *Chenopodium ambrosioides* by GC, GC- MS and ¹³C- NMR spectroscopy: quantitative determination of ascaridole, a heat- sensitive compound. *Phytochemical Analysis*, 2004. 15(5): p. 275-279.

KEYWORDS

Achillea cappadocica, Antifungal Activity, Antibacterial Activity, Essential Oil

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Poster Session 14

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ISOLATION BIOLOGICAL COMPOUNDS FROM TRICHOLOMA FOCALE

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ABSTRACT

Tricholoma species are generally favorable in most of the Asian countries among the others because of their marvelous tastes. Anatolia has diversity of Tricholoma species. Tricholoma anaticum is considered as a new matsutake belonging to Anatolia peninsula. Tricholoma focale is another mushroom which is widely found in conifer forests of Anatolia. Having the diverse biological activity and being an important source of food, these mushrooms have very broad investigation field (Zaidman, Yassin, Mahajna, & Wasser, 2005). The aim of this study is to isolate biologically active compounds from Tricholoma focale. For this purpose the mushroom was extracted using methanol. Silica gel column chromatography, thin layer chromatography and Recycling prep. HPLC were employed for isolation studies. As a result, 1 new steroid along with 3 known compounds (2-4) isolated. 1 2 3 4 Acknowledgements: This study is supported by TUBITAK-SBAG with the Project number of 113R012. References: Zaidman, B.-Z., Yassin, M., Mahajna, J., & Wasser, S. P. (2005). Medicinal mushroom modulators of molecular targets as cancer therapeutics. Applied Microbiology and Biotechnology, 67(4), 453–68. <http://doi.org/10.1007/s00253-004-1787-z>

KEYWORDS

Tricholoma focale, biological compounds, isolation, NMR spectroscopy

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EFFECTS OF POLYPHENOLS ON DIGESTIBILITY OF MACRONUTRIENTS

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ABSTRACT

Polyphenols are dietary constituents of plants associated with health-promoting effects which are generally consumed with macronutrients in the human diet. Some polyphenols found in foods include catechins, condensed tannins, anthocyanidins and some phenolic acids such as caffeic acid, ferulic acid, phytic acid, gallic acid, etc. The effect of interactions between food macronutrients and plant phenols is a very important topic because of their bioavailability that effect on human health. Polyphenolic compounds have capacity to bind and precipitate proteins. Low-molecular-weight phenols are unable to precipitate protein, and oligomers must contain at least three flavonol subunits to effectively precipitate protein. The protein–polyphenol complexes do not affect the absorption of polyphenols but can significantly change the plasma kinetics profile. Moreover, tannins can bind and inhibit other endogenous proteins in the intestinal tract, such as digestive enzymes. This leads reduction not only to the digestibility of the protein but also to other macronutrients such as starch and lipids. Likewise, polyphenols also can form complexes with polysaccharides other than those that form the plant cell wall (i.e., starch) and also affect the glycemic and insulinemic responses. Carbohydrates can increase absorption and prolong the time required to reach the maximum polyphenol concentration. Interaction of phenolic acid with starch significantly contributes to the inhibitory effect of starch hydrolysis. Increased fermentation of oligosaccharides in the large intestine increases polyphenol bioavailability. Furthermore, the fermentation of oligosaccharides enlarges the intestinal mucosa, suppresses the bacterial degradation of the polyphenols in caecum, and also influences the mucosal blood flow by stimulating mucosal blood flow, thus contributing to polyphenol absorption in the intestine. In addition to its effect on absorption, it has been observed that carbohydrates alter the plasma kinetic profile of polyphenols. A positive correlation was observed between fat concentration and bioavailability of polyphenols after in vitro gastropancreatic digestion. Oils can change the absorption kinetics of polyphenols and increase their absorption. Hydrophobic interactions between oils and polyphenols promote the stability of polyphenols during digestion and therefore high fat content in the food have a protective effect. Bioavailability of phenolic compounds has been determined to increase after medium-chain fatty acid and long-chain fatty acid diets compared to standard diets. In addition, the degree of saturation of the oils can affect the bioavailability of the polyphenols. Furthermore, not only a food ingredient but also certain synergies between food macro nutrients have an important effect on the bioavailability and bioactivity of polyphenols.

KEYWORDS

Polyphenols, macronutrients, digestibility

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Poster Session 14

Submission ID: 1762

EFFECT OF GROUNDING PROCESS ON ANTIOXIDANT AND ANTIMICROBIAL POTENTIAL OF CARDAMOM EXTRACTS

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ABSTRACT

Cardamom, dried fruits of *Elettaria cardamomum* belongs to Zingiberaceae family. Cardamom is mostly harvested in southern India, Sri Lanka, Tanzania and Guatemala. It is traditionally used in various gastrointestinal, cardiovascular and neuronal disorders. The dried fruit of cardamom is used either whole or ground form as a food additive and flavouring agent. Cardamom has unique aromatic and sharp flavour. The cardamom flavour used in processed foods, is mainly provided by the cardamom essential oil. In this study, cardamom as whole and ground form was extracted with boiled water at 20% (w/v) concentration for 10 minutes. Antimicrobial activities of extracts were assessed with Kirby-Bauer disc diffusion assay by using *Staphylococcus aureus*, *Escherichia coli* and *Pseudomonas aeruginosa* as test organisms and zones of inhibition of extracts were determined. Antioxidant potential of extracts was performed with DPPH radical scavenging activity assay. According to the results, ground cardamom extracts had possessed better antioxidant potential than whole cardamom extracts. Antimicrobial activity studies revealed that all extracts had no antimicrobial potential against tested microorganisms.

KEYWORDS

Cardamom, grounding, extraction, antimicrobial, antioxidant

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Poster Session 14

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THE EFFECTIVENESS OF HERBAL TEAS ON GLYCEMIC CONTROL

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ABSTRACT

Diabetes is a chronic disease which is related with impaired insulin secretion or utilization. Type 2 diabetes, is a serious global health problem and its prevalence is rapidly increasing. According to the Turkish Epidemiology Survey of Diabetes, Hypertension, Obesity and Endocrine Disease II (TURDEP-II) study, diabetes prevalence was reached to 13.7% in adults. Due to the chronic nature of diabetes and its effects on quality of life, people are interested in herbal medicine to reduce symptoms of disease. According to the ethnobotanical studies, approximately 200 taxa have been used to control blood glucose level in Turkey. Additionally, many plants such as cinnamon and ginger is popular among diabetes patients in Turkey although they are not native to our flora. Plants are mostly prepared by infusion or decoction methods in traditional medicine, which are commonly called as tea. Besides its therapeutic purpose, herbal teas are used as a part of daily nutrition and they increase the quality of with their polyphenolic content. Due to the high patient compliance and easy preparation and use, herbal teas can be consumed as a practical complementary therapy in daily nutrition. However, suggesting these products in clinics for glycemic control requires detailed information about their effectiveness and safety. In line with this objective, in this study, some plants commonly used for glycemic control such as *Camellia sinensis* (L) Kuntze, *Cinnamomum zeylanicum* Blume, *Matricaria chamomilla* L., *Morus alba* L., *Morus nigra* L., *Rosa canina* L, *Salvia fruticosa* Mill., *Urtica dioica* L. and *Zingiber officinalis* Roscoe are reviewed regarding the scientific literature.

KEYWORDS

Diabetes, herbal teas, glycemic control

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TRADITIONAL USE, PHARMACOLOGY AND TOXICOLOGY OF FERULA L. SPECIES: A REVIEW

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ABSTRACT

Ferula L. is the third largest species of the Apiaceae family and consists of 180-185 varieties of flowering plants that grow in central and southern western Asia, the Far East, North India and the Mediterranean Basin. A total of 27 Ferula species (23 species and 4 subspecies), of which 9 are endemic, grow in the mountainous region of Eastern Anatolia, Central Anatolia, Southeast Anatolia and Eastern Mediterranean in Turkey. Some of species of genus Ferula are used as spices, while others are used in the preparation of local drugs to treatment of circulatory system disorders, strengthening nerves and muscles, muscle pain, bone erosion and infertility. Also, in recent years, it has been found that some species of Ferula genus exhibit antidiabetic, antimicrobial, anti-tumor and antiangiogenic activities according to the in vitro and in vivo studies. However, it has been found that some Ferula species, such as F.communis, have two different types of chemotypes that are toxic and non-toxic. The toxic chemotype shows anticoagulant and cytotoxic effects with sesquiterpene coumarins as main components while the main component of non-toxic chemotype is the daucane sesquiterpene esters and has an estrogenic effects. In this study, the available information about the traditional use, pharmacology and toxicology of Ferula L. species is summarized and its potential therapeutic effect, medical and economic importance has been mentioned.

KEYWORDS

Ferula L., pharmacology, toxicology

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Poster Session 14

Submission ID: 1765

EFFECTS OF VARIOUS DRIED POLLEN SAMPLES ON BIOFILM FORMATION IN *P. AERUGINOSA*

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ABSTRACT

Pseudomonas aeruginosa is an opportunistic human pathogen which forms biofilm through quorum sensing system. Repressing biofilm formation will be a treatment approach that looks promising especially for the immunocompromised patients. Hence, a variety of pollen samples that are known to be beneficial for human health and have been used for this purpose for a long time were tested. The effects of the five pollen samples that were exposed to different drying processes on biofilm formation in *P. aeruginosa* were investigated. In conclusion, it was observed that the frozen pollen sample (DP) inhibited biofilm formation by %62 with maximum rates. At the end of this research, it was showed that pollens can be a significant anti-virulent agent by suppressing biofilm formation.

KEYWORDS

Pollen, biofilm, P. aeruginosa.

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Poster Session 14

Submission ID: 1767

ANTIOXIDANT ACTIVITY IN VARIOUS EXTRACTS OF HAPLOPHYLLUM PTILOSTYLUM AND ALCEA ACAULIS

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MAHMUT PADAK⁶

ABSTRACT

Many pathological disorders such as arthrosclerosis, diabetes and cancer are associated with reactive oxygen species. Antioxidants protect the cells from harmful effects of free radicals and reactive oxygen species. Therefore, the detection of antioxidant rich plants is important for preventing and treating the oxidation of cells. The present study was conducted to determine the total phenolic/flavonoid content, antioxidant activity of methanol, buthanol, dichlorometane, water and hexane extracts prepared from *Haplophyllum ptilostylum* and *Alcea acaulis*. Antioxidant activity of the sample was comparable to commercial antioxidant standards (BHT, askorbik asit and trolox). The results showed that extracts prepared with different solvents has moderate free radical scavenging and reducing capacity.

KEYWORDS

Alcea acaulis, Antioxidant, *Haplophyllum ptilostylum*, reactive oxygen species

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Poster Session 14

Submission ID: 1769

FUNCTIONAL ACTIVITY OF ISPARTA ROSE (ROSA DAMASCENA MILL.) AND HEALTH EFFECTS

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ABSTRACT

It has been reported that mutations are an important cause in the pathogenesis and progression of many diseases such as atherosclerosis, heart disorders and cancer. For this reason, anti-mutagens from natural dietary sources that can resist the promutogenic and carcinogenic effects of mutagens have a great deal of precaution. Several phytochemicals have been reported to provide health protective effects through their anti-microbial, antioxidant, anti-mutagenic, anti-carcinogenic and anti-inflammatory activities. It is known that a large part of these health effects are carried out through phenolics and flavonoids in phytochemicals. The benefits derived from the use of natural products rich in bioactive substances have increased the growing interest of pharmaceutical, food and cosmetic industries. Roses are also used in perfumes, pharmaceuticals and food industries as well as being used as an ornamental plant in parks, gardens and houses, with over 150 species and more than 20,000 cultivars. The Rosa genus is composed of many species and different regions have their own endemic species. Rosa Damascena Mill. (Damask rose, Oil-bearing rose, Pink rose) is the most important species, producing a high-value aromatic oil, which is used in the pharmaceutical and fragrance industries. Turkey is one of the most important country growing Rosa damascena in the world. Several components were isolated from the flowers, leaves and seeds of R. damascena including terpenes, glycosides, flavonoids and anthocyanins. It also contains carboxylic acid, vitamin C, kaempferol and quercetin and organic acids. It has attracted attention in recent years as a medical food ingredient due to anti-inflammatory, antioxidant and cyclooxygenase inhibition activities as well as essential oil and pharmaceutical effects produced. The rose seed extract has been shown to have antioxidant and anti-microbial activities. Generally, the extent of the antioxidant and antibacterial effects of the extracts could be attributed to their phenolic compounds and essential oil contents. According to the results, the extracts obtained from fresh Rosa damascena flowers have higher antioxidant and anti-bacterial activity than the dried ones. It is reported that roses may be one of the important functional foods with the positive effects on health. For this reason, rose extracts may have potency to be used as a natural antioxidant source in healthy products for the prevention of oxidative damage and for the inhibition of the progression of certain diseases (heart diseases, cancer, diabetes). However, the food sources that currently contain roses on the market are products of high sugar content, such as Turkish delight, jam. Consumption can be supported by developing healthy foods.

KEYWORDS

Rosa damascena, phenolics, health effects

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EFFECTS OF CURCUMIN ON BREAST CANCER

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ABSTRACT

Curcumin (diferuloylmethane) is a polyphenol obtained from the *Curcuma longa* plant, commonly known as turmeric. Approximately 2.0-5.0% of curcumin is curcuminoid and it is responsible for the the yellow color of the spice and its therapeutic effects. Curcumin has various biological and pharmacological effects such as antioxidant, antiinflammatory, antiviral, antiischemic, antibacterial, antifungal, immunomodulator, antiproliferative and anticancer. Curcumin is helpful in reducing post-operative inflammation and in preventing atherosclerosis. In addition, curcumin also prevents the development of *Helicobacter pylori*, which causes gastric ulcer and is associated with gastric cancer. Curcumin can bind to heavy metals such as cadmium and lead, and thus reduce the toxicity of these heavy metals. Studies showed that curcumin does not have toxic effects on humans. Despite its strong biological and pharmacological properties, low bioavailability is the most important problem in the clinical use of curcumin. The anticancerogenic effects of curcumin are directly due to antioxidant and free radical scavenging effects. The underlying mechanism is still unclear, as it is estimated that the indirect effect is due to increased levels of glutathione due to hepatic detoxification of mutagens and carcinogens and the prevention of the formation of nitrosamine. Breast cancer is the most common type of cancer seen in women and the prevalence in developed countries accounts for about 25.0% of the types of cancer seen in women. Breast cancer in the world is the second most important cause of cancer-related deaths in women. Surgical treatment, radiation, chemotherapy, immunotherapy, hormone therapy and stem cell transplantation are used in breast cancer treatment. These treatments have a significant impact on the quality of life of the patient with the cost of having expensive and serious side effects. Breast cancer is resistant to chemotherapy and alternative therapies are needed because the side effects of treatment are high. In vivo and in vitro studies showed that curcumin inhibited proliferation of the breast cancer cell line (MCF-7), increased apoptosis and reduced reactive oxygen species and nitric oxide levels. Curcumin was also shown to inhibit tumor growth and angiogenesis, leading to antiproliferative activity, decreased tumor volume and weight. High levels of fatty acid synthase (FAS) expression were found in many tumors, including prostate, breast and over-cancer, and inhibition of FAS was shown to inhibit tumor growth. Curcumin was determined to inhibit intracellular FAS and induce apoptosis in human breast cancer. In addition to all of these, curcumin was found to reduce the toxic effects of drugs used in breast cancer treatment. As a result of the studies performed, curcumin appears to be an alternative way to prevent and treat breast cancer. However, in order to be able to use curcumin in breast cancer treatment, it is necessary to use it together with more complex technologies as well as to conduct more studies.

KEYWORDS

curcumin; cancer; breast cancer

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STUDIES ON PHYSICAL/CHEMICAL COMPATIBILITY BETWEEN HERBAL EXCIPIENTS AND CARVEDILOL USING SPECTROSCOPIC AND THERMAL TECHNIQUES

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ABSTRACT

Studies of drug active compound-excipient suitability represent an important phase in the preformulation stage of the development of all dosage forms. The possible physical and chemical interactions between drugs and excipients can affect the chemical nature, the stability and bioavailability of drugs and, consequently, their therapeutic efficacy and safety [1]. Drug – excipients compatibility studies lays a foundation in careful selection of most appropriate excipients and helps in designing a chemically stable and effective dosage form [2,3]. Hypertension is one of the important threat for kidney, stroke and various cardiovascular diseases. Hypertension is treated by regulating blood pressure and electrolyte balance [4,5]. The purpose of the present investigation was to evaluate the compatibility of Carvedilol with various herbal excipients (cellulose, sucrose, mannitol, starch) to be used in the nanoparticle formulations utilizing the different spectroscopic and thermal techniques such as Differential Scanning Calorimetry (DSC), Thermo-Gravimetric/Differential Thermal Analyzer (TG/DTA) and Fourier Transform Infrared Spectroscopy (FTIR). The thermograms of the drug and excipient were obtained using DSC (PE DSC 400). All the samples were placed in a pre-weighed stainless steel pan and sealed carefully with a sealer supplied by the manufacturer. The sealed pan was weighed to obtain the sample mass. Another sealed empty stainless steel pan was used as the reference. The sample was equilibrated heated from - 20 °C to 400 °C at a rate of 10 °C/min Thermogravimetric analysis, derivative thermogravimetry and differential thermal analysis measurements were made by using simultaneous TG/DTA thermal analyzer apparatus (Seiko TG/DTA 7200). The drug and drug-excipients mixtures were carefully weighted and transferred to a platinum pan, sample mass of \square 10.0 mg. Measurements were carried out from ambient to 600 °C in dynamic nitrogen atmosphere heating rate of 10 °C/min. ZnSe-ATR equipment was used as well as KBr pellet technique. The FTIR measurements were formed on a PE Frontier spectrometer. Table 1 Peak temperature and enthalpy values of Carvedilol – herbal excipient mixtures Sample Ratio (drug-excipient) T_{peak} (°C) Enthalpy(Jg⁻¹) Carvedilol - 120.74 - 104.83 Carvedilol-Cellulose 1:1 119.31 - 52.63 Carvedilol-Sucrose 1:1 120.02 - 49.11 Carvedilol-Mannitol 1:1 119.31 - 49.50 Carvedilol-Starch 1:1 119.41 - 65.51 There was no interaction between Carvedilol-Cellulose, Carvedilol-Sucrose, Carvedilol-Mannitol and Carvedilol-Starch. Keywords: Drug, herbal excipient, DSC, TG/DTA, FTIR References: 1- S. Sonali, B.S. Bharate, A.N. Bharate, J. Bajaj. Excipients and Food Chem (2010) 1 3-26. 2- P. Pandian, K . Kannan, M. Manikandan, R. Manavalan. Int J Pharm Pharm Sci (2012) 4 342-347. 3. ME. Aulton. (2002). Pharmaceutics The scientific principles of dosage form design. Churchill Livingstone. 4. G. Mancia, G. De Backer, A. Dominiczak, et al. Journal of Hypertension (2007) 25 1751 1762. 5. N.F. Bras, P.A. Fernandes, M.J. Ramos. ACS Catalysis (2014) 4 2587–2597. 6. D.

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KEYWORDS

Drug, herbal excipient, DSC, TG/DTA, FTIR

THE EFFECT OF PHITOTHERAPY ON POSTPARTUM DEPRESSION

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ABSTRACT

Objective: Postpartum depression is a serious psychological problem that weakens the link between the mother and the baby in the postpartum period. Despite the fact that there is no clear data on the incidence of mental illness due to fear of stigmatization, it is thought that it affects 13% of mothers. For this reason, many mothers refuse psychological assistance because postpartum depression is normal or has a psychiatric history. However, many drugs are also contraindicated in the lactation process. At this point, phytotherapy may be an alternative in the management of postpartum depression. For this reason, this study aims to determine the effect of phytotherapy on postpartum depression. **Methods:** This is a review study which is studies through Pubmed, EBSCO Host, Ulakbim Medical Database, Turkish Medline databases. During the scanning, the words "postpartum depression" and "phytotherapy" and the Turkish equivalents of these words were used. A total of 25 articles were obtained (Pubmed n = 14, EBSCO Host n = 11, Ulakbim Medical Database n = 0, Turkish Medline n = 0). 18 of these articles were review studies and two of these articles were about aromatherapy treatments. So in total 20 of these articles were not examined. Since 2 articles out of 5 articles were the same studies, in total 3 articles were examined. One of the studies was carried out in the United States, one in Iran and one in Taiwan. We did not find any study related to the subject in our country. **Results:** Phytotherapy; It was the most prescribed method by nurses and midwives in North Carolina. Nurses and midwives also stated that they also use phytotherapy for postpartum depressed mothers. The results of two other experimental studies show that saffron is a safe complementary method to improve the depressive symptoms of postpartum depression, and chamomile tea is an additional approach to alleviate depression and sleep quality problems in postpartum period. **Conclusion:** The results of this review have showed the numerical insufficiency of the studies taken into consideration and a limited number of herbal products were examined. The methods used were found to be effective on postpartum depression. In this context, it is suggested that planning of descriptive studies in which the opinions of health workers and postpartum mothers on phytotherapy are determined and the current situation is also determined, randomized controlled trials evaluating the effect of different plants on postpartum depression.

KEYWORDS

postpartum depression, phytotherapy, nurse

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Poster Session 14

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INVESTIGATION OF AROMA PROFILES OF CRAB APPLE (*MALUS TRILOBATA* V *ERIOLOBUS TRILOBATUS*) AT DIFFERENT TEMPERATURES AND DRYERS

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ABSTRACT

The crab apple is a wild fruit which rarely grows in our country. There is a limited number of studies about crab apple in the literature. It is generally known to the region where it grows and it is used against cholesterol, shortness of breath, diabetes and blood pressure. In this study, crab apple was dried in two different temperatures, 40°C and 60°C, in the oven and vacuum dryer, and by using GC-MS, effect of temperatures and dryers on the aroma compounds of dried crab apple were compared. According to the results, carvacrol, anethole and kuminaldehyde which have antioxidant effects were found as dominant aromas in crab apple. Compared to the oven and vacuum dryer, the components were found to be lower in oven drying, and the components of 60°C were found to higher than of 40°C at oven drying. When compared 40°C vacuum drying with 40 °C oven drying, carvacrol was found to about 10 times more, anethole was found about 3 times more and kuminaldehyde was found about 4 times more in in the vacuum dryer. The highest value of the all components was obtained at 40°C in the vacuum dryer. According to results; it was determined that drying temperature and type of dryer have effect on antioxidant content of crab apple.

KEYWORDS

Crab apple, GC-MS, Aroma profile, Drying

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ESSENTIAL OIL COMPOSITION, ANTIOXIDANT ACTIVITY AND ANTI-PROLIFERATIVE EFFECT OF A NEW SPECIES: PARACARYUM BINGOELIANUM

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ABSTRACT

The plants have been used for a long time in the treatment of many diseases. Dietary and medicinal herbs contain many natural phytochemicals such as phenolics and flavonoids, and they have antioxidant, anti-inflammatory, anti-proliferative and apoptotic effects. There is a huge interest to uncover the valuable compounds and medicinal characteristic of herbs. The genus *Paracaryum* (DC) Boiss. belongs to Boraginaceae family. In this study, the essential oil composition, antioxidant, anti-proliferative and apoptotic effects of *Paracaryum bingoelianum* were investigated. *Paracaryum bingoelianum* was collected in 2014, in Bingöl, Turkey. The essential oil of *P. bingoelianum* was obtained by hydrodistillation method and chemical composition of plant was analyzed by HS-SPME/GC-MS. The antioxidant capacity of essential oil from *P. bingoelianum* was determined by different in vitro assays (DPPH radical scavenging activity, reducing power and ferric thiocyanate methods). BHA, BHT, vit.E and vit. C were used to compare the antioxidant assay results. Anti-proliferative activity was examined by MTT (3-[4,5-dimethylthiazol-2-yl]-2,5 diphenyl tetrazolium bromide) assay on human colorectal adenocarcinoma cell line (HT-29). Cell death detection Elisa assay was used to detect the apoptotic effect. Thirty six compounds were totally identified, which representing 93.38% of the oil. Among them 6,10,14-trimethyl-2-pentadecanone (17.2%), eucalyptol (9.53%) and trans-2-hexanal (8.94%) were the major compounds. At highest concentration the DPPH radical scavenging activity of essential oil (EO) was close to vit. C (vit. E > vit. C > EO). Essential oil showed lower reducing power than BHT and BHA. Ferric thiocyanate assays result was following order; BHT ≥ BHA > EO. Essential oil of *P. bingoelianum* reduced HT-29 cell proliferation and induced apoptosis. The inhibition of viability of HT-29 colorectal adenocarcinoma cell line treated with 600 µg/ml EO was 56.7%. IC50 value was determined as 473.2 µg/ml. When HT-29 cells treated with IC50 value of EO, apoptosis rate was higher 4.1 fold than untreated cells (p<0.05) The findings clearly indicate that *P. bingoelianum* has a lot of chemical compounds and present antioxidant, anti-proliferative and apoptotic activities in different experiment systems. Further in vivo explorations are needed to illuminate this plants medicinal usage.

KEYWORDS

Essential oil, antioxidant activity, Paracaryum, cell culture, apoptosis

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EFFECT OF BRASSINOSTEROID APPLICATIONS ON SOME PLANT PARAMETERS OF JAPANESE MINT (*MENTHA ARVENSIS* L.)

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ABSTRACT

The Japanese mint (*Mentha arvensis* L.) belonging to the genus *Mentha* of the Lamiaceae family is an important medicinal and aromatic plant. *Mentha*, represented by about 18 species in the world, is spread with 7 species in our country. Menthol in the essential oil obtained from leaves of Japanese mint is economically important. It is produced to obtain menthol for commercial purposes. The aim of the study is to determine the effects of Brassinosteroids, which are defined as the new generation of plant hormones, in the Japanese mint and to obtain yielded plants in terms of desired traits. 24-Epirassinolide (EBL), the active form of brassinosteroids, was used in the study. For this purpose, 5 EBL levels (0, 10⁻⁸, 10⁻⁷, 10⁻⁶ ve 10⁻⁵ M), including the control, were exogenously applied to Japanese mint plants. The study was carried out under the unheated greenhouse condition of Directorate of Atatürk Horticultural Central Research Institute in 2016 according to the completely randomized designs with 4 replications and 10 plants in each replicate. Plant height (cm), wet-dry herb yield (gr/plant), drug leaf yield (gr/plant) and wet-dry root weights (gr / plant) were determined from the harvested plants. There was no significant effect of the applications on the fresh and dry root weights. The highest values were obtained in terms of plant height (cm) from applications of 10⁻⁶ M (59,92 cm) and 10⁻⁷ M (57,45 cm), respectively; (70,86 gr/plant), dry herb (21,79 g/plant) and drug leaf yield (12,34 g/plant) per plant were obtained from 10⁻⁶ M EBL application.

KEYWORDS

Mentha arvensis, brassinosteroid, herb, mint

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Poster Session 14

Submission ID: 1782

ENCAPSULATION OF BIOACTIVE COMPOUNDS

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ABSTRACT

Encapsulation is a process in which a substance is coated by a wall material. Even though encapsulation has been known as a recent method, its first application was reported sixty years ago in the area of biotechnology to make production more efficient. Various encapsulation techniques has been applied in food industry including spray drying, spray chilling or spray cooling, extrusion coating, fluidized bed coating, liposome entrapment, inclusion complexation, centrifugal extrusion and rotational suspension separation. Most critical part in encapsulation is the choice of coating material. These materials include proteins, carbohydrates, natural and modified starches, fats, synthetic polymers, gelatin and pectin. Encapsulation enables easy delivery of bioactive materials including antioxidants, minerals, vitamins, and phytosterols. It also increases the stability of bioactive materials during food processing and storage, prevents oxidation, increases bioactivity of bioactive compounds and controls their interactions with food. Encapsulation increases the shelf life, storage capability, nutrient value and digestion of bioactive compounds. Moreover, encapsulation enables efficient utilization of polyphenols by suppressing unpleasant taste of its free compounds and also increases the aroma quality of essential oils extracted from plant materials. This review focuses on new technologies on encapsulation, comparison of advantages and disadvantages of encapsulation methods, the benefits of encapsulation technology in bioactive compound industry and summarizes the recent research studies on encapsulation of bioactive compounds.

KEYWORDS

encapsulation, spray drying, bioactive compounds

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THE EFFECT OF GARLIC ON TREATMENT OF VAGINAL CANDIDA

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ABSTRACT

Candida vaginosis is one of the most common infections of the female genital tract. At least 75% of women live with candida infection at least once in their life. There is a need to use broad spectrum antifungal drugs in the treatment of fungal infections. However, most of the commonly used antifungal drugs have limited use due to toxicity, dangerous drug interactions and side effects such as liver damage and heart failure. In the past decade, a rare antifungal drug resistance has emerged in the past. This situation, necessitated the use of non-drug methods. One of these methods is garlic. This review, aims to reveal the efficacy of garlic in the treatment of vaginal Candida. The results of the studies carried out in this regard, are listed below. Adejare et al. (2012), collected swab samples from patients with vaginal candidiasis. They tested Garcinia kola, garlic (*Alliums sativum*), fluconazole and miconazole on the isolates. The aqueous and alcoholic extracts' minimum inhibitory concentration for *Candida albicans*, were 200 mg/ml. They reported that the garlic used as herbal product has inhibitory effects such as antifungal agents. But this effect, has been achieved in the case of high concentration used. Elsom et al. (2003), used several commercial preparations of garlic, which included oil macerates, pastes, tablets and powders, to examine for their anticandidal activity on *Candida albicans* laboratory strain. Only the garlic tablet formulation exhibited good anticandidal activity, whereas all the other preparations possessed virtually no anticandidal properties. Iwalokun et al. (2004), selected *Candida* species recovered from vaginal swabs, urine, and blood samples for their study. They investigated the antifungal activities of an aqueous garlic extract. Minimum fungicidal concentration was found to be 14.9 at 24 hours. Study, supports the use of garlic in health products. Ekanola et al. (2014), tested eighteen antifungal drugs, crude extracts of garlic and some plants/ chemicals, for in vitro inhibitory potentials on *Candida* strains obtained from human oral, high vaginal and endocervical swabs. Garlic, were inhibitory against 33.3-54.4% of the *Candida* strains. They also reported significant in vitro inhibitory potentials of garlic on drug susceptible and resistant *Candida* species. Kordi et al. (2005), tested garlic extract vaginal douche and clotrimazol vaginal cream on symptomatic women in their randomized, controlled, clinical trial. Women were treated daily for 7 days and assessed 1-2 week after the end of treatment. They reported statistically non-significant difference between clinical results after treatment in both groups. Mycologic results of garlic extract vaginal douche, were good but there was a significant difference between groups. Watson et al. (2013), in their randomised double-blinded controlled study, used oral garlic tablets for vaginal candida during the second half of the menstrual cycle on asymptomatic women colonised with *Candida* species. They gave three garlic tablets or placebo orally, twice daily, for 14 days. As a result there was no difference between the proportion of cases in the garlic and placebo groups, in the mean colony counts in both groups. Farshbaf-Khalili et al. (2016); used garlic, *Zataria multiflora* boiss and clotrimazole vaginal cream on women with candidal vaginitis, in their randomized, double-blinded clinical trial. The patients used creams daily, for 7 days. In culture results, there were not significant differences between

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groups on days 7 and 30 after treatment. The result of the study shows that the mean scores of candidal symptoms, significantly reduced after treatment in all groups on days 7 and 30. The results of these studies show that the garlic is effective on Candida. However, it is recommended to perform randomized controlled trials in which the effect of garlic is assessed for using on patients.

KEYWORDS

vaginal candida, garlic, herbal treatment

Poster Session 14

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BIOLOGY OF STACHYS KURDICA VAR. KURDICA

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ABSTRACT

Stachys L. (Deliçay) A sub-cosmopolitan broad ciner of the family Ballibagiller (Lamiaceae / Labiatae). It has about 370 species in the world. Stachys is represented in Turkey with 92 species and 116 taxa (subtype and varietal level). Of these taxa, 53 are about 46% endemic. Stachys kurdica Boiss. & Hohen. there is. Kurdica (Kara deliçay) Turkey (Hakkari and Dicle Departments) and in Iraq is a rare plant that grows. There is S. kurdica in this study. The detailed morphological characteristics of kurdica were tried to be determined, the relation between nearby taxa was discussed and the taxonomic condition was observed. Examples of the material of the workshop were collected from the Southeastern Anatolia Region, which was gathered from the land in 2013-2014. In addition, some of the Stachys examples in the G, HAL, JE, K, W, and WU virtual herbariums were exploited. There is S. kurdica. Cystic to basal and glabrous and serrate-crenate, sometimes the entire leaves and verticillas are mostly congested in a terminal head and are distinctly different from other nearby taxa, These morphological features were compared with those of other investigators and the status of the two varieties of S. kurdica grown in Turkey was preserved.

KEYWORDS

Stachys kurdica var, Morphological characteristic, Taxonomic status

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Poster Session 14

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FUNCTIONAL FOOD: DANDELION (*TARAXACUM OFFICINALE L.*)

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ABSTRACT

Dandelion (*Taraxacum officinale L.*) is a family of Asteraceae. It can be found in many places especially in lawns and on roadsides. Dandelion is also considered to be a weed. However it can be used as a medical herb and food. Leaves, flower and root of dandelion can be used. It contains flavonoids including luteolin, apigenin, isoquercitrin, caffeic acid and chlorogenic acid. It also contains terpenoids, triterpenes and sesquiterpenes. It is a rich source of beta carotene, carotenoids, xanthophylls, chlorophyll, vitamin C, vitamin D, many of the B complex vitamins, choline, iron, magnesium, sodium, zinc, manganese, copper, phosphorus, and potassium. Roots contain torexacin, retinol, levulin and inulin. Due to having bioactive compounds dandelion has properties of antioxidant, anti-inflammatory, anticancer, hypoglycemic and hypolipidemic activities. Dandelion inulin is used as prebiotics in medicine. Dandelion reduced the extent of atherosclerosis by reducing oxidative stress and serum total cholesterol, triglycerides, low density lipoprotein cholesterol and raising serum high density lipoprotein cholesterol. It enhanced effectively delayed the lowering of glucose in the blood and prevented the increase in lactate and triglyceride concentrations. β -sitosterol and stigmasterol in dandelion sterols have been identified as good inflammatory inhibitors. Therefore dandelion (*Taraxacum officinale L.*) is considered as an important functional food due to their bioactive compounds.

KEYWORDS

Dandelion, Taraxacum officinale L., Functional food, Bioactive compounds

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ANTIMICROBIAL EFFECTS OF ESSENTIAL OILS EXTRACTED FROM AROMATIC AND MEDICINAL HERBS

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ABSTRACT

Essential oils (EOs), called ethereal or volatile oils, are complex mixtures of low molecular weight compounds extracted from plants by steam distillation and extraction with various solvents. Terpenoid hydrocarbons, oxygenated terpenes and sesquiterpenes are the major constituents that provide characteristic aroma and biological properties to EOs. These aromatic oily liquids obtained from plant flowers, buds, seeds, leaves, twigs, bark, herbs, wood, fruits and roots. Even in old times, traditional systems of medicine prescribed EOs for a variety of health problems and used them for the purpose of food preservation, all over the world. Some EOs have antimicrobial properties such as antibacterial, antifungal and antiviral. Besides these properties, EOs or their components also have antimycotic, antitoxigenic, anticancer, antimutagenic, antidiabetic, antiinflammatory, antiprotozoal, antiparasitic and insecticidal effects. These characteristics (the composition of essential oils and their antimicrobial effects) depend on the function of these compounds in plants, plant species and regional conditions. Antimicrobial activity of several spices and essential oils has demonstrated on *Staphylococcus aureus*, *Vibrio parahaemolyticus*, *Salmonella typhimurium*, *Shigella dysenteria*, *Escherichia coli*, *Escherichia coli* O157:H7, *Listeria monocytogenes*, *Bacillus cereus* at levels between 0.2 and 10 µl ml⁻¹. Gram-negative organisms are slightly less susceptible than gram-positive bacteria. Also clove, pimento, cinnamon, thyme, oregano, garlic and onion were particularly inhibitory for some food-spoilage microorganisms.

KEYWORDS

Essential oil, volatile oil, antimicrobial effect, terpenoid.

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Poster Session 14

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ANTIMICROBIAL ACTIVITY OF SPRAY DRIED SUMAC EXTRACT POWDER ON ESCHERICHIA COLI O157:H7 AND SALMONELLA TYPHIMURIUM

GÜLŞAH ÇALIŞKAN KOÇ¹, GÜLTEN TIRYAKI GÜNDÜZ¹, SAFIYE NUR DIRİM¹

ABSTRACT

Sumac (*Rhus coriaria* L.) is used in Mediterranean and Middle East regions as a spice, sauce, flavoring agent etc. Several studies demonstrate that sumac berries have the biological activities such as antimicrobial, antioxidant, hypoglycemic and antidiabetic activities due to their flavone, tannin, anthocyanin and organic acid contents. The aims of this study is are; to determine the antimicrobial activity of a spray dried sumac extract powders (SDSEP) on *E. coli* O157:H7 and *S. Typhimurium* in vitro conditions and to determine effect of pH and temperature on the antimicrobial activity of selected SDSEP. For this reason, a pilot scale spray dryer (Mobile Minor Miro-Atomizer, Denmark) was used for the production of the sumac extract powder. The inlet/outlet air temperatures were adjusted to 160/80, 180/90, and 200/100°C where the outlet air temperature was controlled by regulating the feed flow rate. The sumac berries were washed, drained, and ground with a blender and then mixed with water (with ratio of 1:4) for 2 h at room temperature. Then the extract was filtered with crude filter paper to obtain the sumac extract (SE). The total soluble solid content of the SE was measured to be as 3.5% and adjusted to 10, 15, 20, and 25% (w/w) with the addition of maltodextrin (MD) with a Dextrose Equivalence (DE) of 10–12. The atomization pressure and the air flow rate were kept constant as 392 kPa and 1.54 m³/min respectively. The obtained powders were analyzed for moisture content, water activity, pH, minimum bactericidal concentration (MBC), and minimum inhibitory concentration (MIC). In order to determine the effect of pH and temperature on the antimicrobial activity of SDSEP, the sumac extract powder (5%) which was produced at 160/80 °C was selected. The pH value of sumac extract powder (3.1) was adjusted to 6.5 – 6.8 with the addition of NaOH and the inoculated samples were incubated at three different temperatures (4 °C for 7 days, 22 °C for 48 hours, and 37 °C for 24 hours). Increasing the amount of MD and inlet/outlet temperatures showed a significant effect on the moisture content and water activity of the sumac extract powders ($P < 0.05$). The moisture content, water activity and pH values of SDSEP were ranged between 1.89-2.94 % (wet basis, wb), 0.157- 0.215, and 3.13–3.23, respectively. Increasing the amount of MD caused a significant increase in both MBCs and MICs of SDSEP ($P < 0.05$). The inlet/outlet temperatures were not found to be significantly important on the MBCs and MICs of SDSEP ($P > 0.05$). The MBCs and MICs of SDSEP ranged between 25.0 – 50.0 and 6.25 - 25.0 (mg/ml) against the *E. coli* O157:H7 and 12.5 – 50.0 and 3.12-12.5 (mg/ml) against the *S. Typhimurium*. *E. coli* O157:H7 was found to be more resistant compared to *S. Typhimurium*. The increase of pH value of SDSEP resulted in a significant decrease in the antimicrobial activity of SDSEP ($P < 0.05$). Results obtained in this study suggest that the addition of spray dried sumac powder have the potential to improve the safety of foods such as salads and meat products which could be a source of tested pathogens.

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KEYWORDS

Sumac Extract, Sumac Extract Powder, Spray Drying, Antimicrobial Activity

INFANTS OF PARENTS OF INFANTS WITH COLIC DISORDER AND THEIR OWN HERBAL PRODUCTS

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ABSTRACT

Colic during babyhood is defined to be the uneasiness and crying jags that last more than three weeks, more than three days a week and more than three hours a day. The studies indicate that the frequency of babyhood colic varies between 5%-25%. Usually, colic tends to start in the second or third weeks after birth, peak in the sixth or eighth weeks and end in the third or fourth months. The crying jags usually start in the afternoon or in the evening and last for several hours with continuous and loud crying. Sometimes babies also cry at night. The baby colic may arise from nutrition mistakes, food allergy, lactose intolerance and gastrointestinal causes including reflux. On the other hand, baby colic may arise from extra intestinal causes including neurodevelopmental or psychological factors. Whatever the cause, baby colic is a condition that causes babies to cry and creates physiological and psychological problems in babies and parents. Parents adopt various methods to silence colicky babies including holding, shaking, car riding, giving a bath, warm and hot applications to stomach, massaging, rhythmic voices or use of the vacuum cleaner voice etc. Other than these methods, parents of colicky babies use various herbal products to reduce the colic of their babies. The herbal products used to reduce the baby colic are generally consumed orally by the baby and the mother. There are also various oils applied on the stomach or perianal area by the parents. Herbal Products Given Orally to Colic Babies It is reported that the herbal teas used for babies relax the bowel smooth muscles and palliate the baby colic (Zengin, Çınar, Altınkaynak 2016). The studies made with fennel, melissa, licorice root, camomile tea and common vervain revealed that these teas were more effective than placebo (Akçam, 2004; Karabayır and Oğuz 2009; Zengin, Çınar, Altınkaynak 2016; Arıkan, Alp, Gözüm, Orbak, Karaca Çiftçi, 2008). Herbal Products Given Orally or Prohibited to the Mother of the Colic Baby Breastfeeding mothers are recommended to consume a diet without egg, hazelnut, peanut, cracked wheat, legume, cabbage, radish and spicy food (Zengin, Çınar, Altınkaynak 2016). Examples of herbal products recommended to mothers include herbs like aniseed and dill which include volatile oils and anethol. Mothers are recommended to use three to four drops three times a day from the mixture of herbal and natural oils such as fennel oil, sunflower oil, sweet almond oil, aniseed oil, sesame oil, cumin and dill. Herbal Products That Are Externally Applied to Colicky Baby Massaging to stomach area with fennel oil was found to be effective in eliminating the gas pains. Giving baby a bath with the water added with lavender or lemon essential oil and massage with catmint tincture are recommended to eliminate the colic (Akçam, 2004).

KEYWORDS

Colic, baby, medicinal plant

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Poster Session 14

Submission ID: 1792

A RAPID METHOD FOR THE DETERMINATION OF CURCUMIN IN FOOD SAMPLES

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ABSTRACT

Curcumin which has a wide area of usage, a yellow colored pigment and the major component of Turmeric plant. Beside of being a strong anticancer agent, it has been reported to possess important biological activities like anti-inflammatory.1,2. It becomes essential to find a rapid method for the determination of curcumin because it has a great importance for human health as well as for the food industry. In this study, curcumin was extracted from turmeric plant via soxhlet with extraction yield of 5.9%. Later we tried to create a metal complex of curcumin to make it easier to analyze curcumin in a food matrix. After selecting appropriate metals to give a stable complex with curcumin, UV spectrums were recorded while metal concentration was kept at 0.1 M with varying curcumin concentrations. According to results, it was observed that Zr²⁺-curcumin complex red-shifted the maximum absorption wavelength. Validation and recovery studies were also performed. The performance of the method was measured for yogurt sample and 97.9% recovery was yielded. Acknowledgements: This study is supported by the Mugla Sıtkı Koçman University Research Fund with the project number 15/213. Kaynaklar (1) Péret-Almeida, L.; Cherubino, A. P. F.; Alves, R. J.; Dufossé, L.; Glória, M. B. A. Separation and determination of the physico-chemical characteristics of curcumin, demethoxycurcumin and bisdemethoxycurcumin. Food Res. Int. 2005, 38 (8–9), 1039–1044. (2) Zhang, J.; Jinnai, S.; Ikeda, R.; Wada, M.; Hayashida, S.; Nakashima, K. A simple HPLC-fluorescence method for quantitation of curcuminoids and its application to turmeric products. Anal. Sci. 2009, 25 (3), 385–388.

KEYWORDS

Turmeric (Curcuma longa), Curcumin, metod validation

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Poster Session 14

Submission ID: 1794

EFFECTS OF AROMATHERAPY ON DYSMENORRHEA

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ABSTRACT

Dysmenorrhea is excessive pain experienced during menstruation. Classically there are two types: primary dysmenorrhea and secondary dysmenorrhea. The main symptom of dysmenorrhea is pain concentrated in the lower abdomen or pelvis. It may radiate to the thighs and lower back. Symptoms often co-occurring with menstrual pain include nausea and vomiting, diarrhea or constipation, headache, disorientation, hypersensitivity to sound, light, smell and touch, fainting and fatigue. Dysmenorrhoea is the most common gynecological complaint that occurs in women and daily life activities, business efficiency. For this reason, treatment is important. Therapy on dysmenorrhea is multifaceted and depends on the severity of the pain and the response the patient gives to the pain. It is possible to use pharmacologic and nonpharmacologic methods in treatment. Non-steroidal anti-inflammatory drugs and hormonal birth control can be used in pharmacologic treatment. In nonpharmacologic methods, local hot application, good nutrition, regular exercise, regular and adequate sleep, acupuncture, acupressure, herbal therapies and aromatherapy can be used. Aromatherapy is the use of high concentrations of essential oils and odors distilled from plants to use their therapeutic properties. Aromatic essential oils are used by way of inhalation, compression, and massage. Studies have shown that aromatherapy is applied more by massage in the treatment of dysmenorrhea. At the same time, there are studies on inhalation. Massage is mostly applied to the lower abdomen and most of the lavender and rose oil are used. Apart from these, essential oils used in massage are cinnamon, clove, rose, and lavender, clary sage, marjoram, ginger, and geranium. Lavender and rose oil alone are used in base oils, while other essential oils are often used as a mixture. The most preferred base oils are sesame and almond oil. In a study with 80 primary dysmenorrhea student, Bakhtshirin et al. (2015) a significant decrease in VAS score after lavender massage was detected in comparison with placebo massage. A randomized controlled trial Shahr et. al. (2015), subjects were randomly divided into three groups: massage group with rose oil, who applied self-massage with Rose damascene; a placebo group who performed self-massage with unscented almond oil and a no treatment control group who applied just self-massage. In the second cycle, the menstrual pain was significantly lower in the rose oil group than in the other two groups after intervention. Hur et. al. (2011) investigated the alleviating effects of aromatherapy massage and acetaminophen on menstrual pain in Korean high school girls. The cases were divided into two groups: the aromatherapy massage group and the acetaminophen group. The abdomen was massaged once using clary sage, marjoram, cinnamon, ginger, and geranium in a base of almond oil. The reduction of menstrual pain was significantly higher in the aromatherapy group than in the acetaminophen group. In the use of aromatherapy by inhalation, rose oil and lavender are found. Uysal et all (2016) evaluate the effects of rose essential oil on primary dysmenorrhea. One hundred patients were randomly divided into two groups; Group D received diclofenac sodium (75 mg/im) and Group A administered diclofenac sodium with aromatherapy (2% rose essential oil). The 30th min mean VAS value in Group D was

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higher than in Group A. A randomized clinical trial Raisi Dehkordi et.al. (2014) subjects were randomized into two groups: experimental who inhaled lavender based on sesame oil, and placebo who inhaled sesame oil only. The symptoms of dysmenorrhea were significantly lowered in the lavender group compared to the placebo group. Studies have shown that aromatherapy was effective in alleviating dysmenorrhea symptoms. Aromatherapy can be provided as a nonpharmacological pain relief measure and as a part of nursing care given to girls suffering from dysmenorrhea.

KEYWORDS

Dysmenorrhea, aromatherapy, aromatic essential oil

Poster Session 14

Submission ID: 1795

PEST SPECIES DETERMINED ON ANATOLIAN SAGE, *SALVIA FRUTICOSA* MILL. (LAMIACEAE)

N. ZÜLAL ELEKÇİOĞLU¹

ABSTRACT

Among the sage species that grow in Turkey, the most commonly collected one which is used both for domestic consumption and exportation is the Anatolian sage, *Salvia fruticosa* Mill, (Lamiaceae), This study was carried out in order to determine the pest species in *S. fruticosa* cultivated in the research and application parcel of Ç.Ü. Karaisalı Vocational School (Karaisalı / Adana), Plant and Animal Production Department in 2015-2016. As a result, pest species belonging to 3 classes (Gastropoda, Insecta, Arachnida), 8 orders and 16 families were determined. It has been determined that species belonging to the family Cicadellidae (Hemiptera) are the most common species and cause staining, curling and deformation by damaging the leaves. Since this situation will lead to loss of yield, and because it is thought that they have adverse effects on the active compounds in the parts used as drugs, it was concluded that they were the important species to focus on.

KEYWORDS

Medicinal plant, aromatic plant, Salvia fruticosa, Cicadellidae

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Poster Session 14

Submission ID: 1796

DETERMINATION OF ANTIPROLIFERATIVE ACTIVITIES OF SATUREJA BOISSIERI EXTRACTS AGAINST PC3 (HUMAN PROSTATE CANCER) CELLS

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ABSTRACT

Cancer is one of the major diseases in today's world. According to the World Health Organization, if no precautions are taken against cancer, 26 million people worldwide will have cancer until 2030. Plants synthesize many primary and secondary metabolites called organic compounds. Primary metabolites take part in important events such as photosynthesis, respiration, growth and development. Secondary metabolites are chemotaxonomically important natural products studied widely in last decades. *Satureja boissieri* Hausskn. ex Boiss. (Lamiaceae) is known as Catli/Kekik in Turkey. The aim of this study is to extract the active components from the of *Satureja boissieri* and to investigate the anticancer effects of these components against PC3 (human prostate cancer cell) cell lines.

KEYWORDS

Satureja boissieri, anticancer activity, PC3, extraction

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SUPERCRTICAL CO₂ EXTRACTION OF CARDAMOM OIL AND DETERMINATION OF VOLATILE COMPOUNDS OF CARDAMOM OIL BY USING GC-MS SYSYTEM

ÜMIT ALTUNTAŞ¹, CEREN DAŞKAYA DIKMEN², EVREN DEMİRCAN¹, KADRIYE NUR KASAPOĞLU¹, BERAAT ÖZÇELİK¹

ABSTRACT

Cardamom is the dried fruit of the tall perennial herbaceous plant, *Elettaria Cardamomum* Maton and it is also known as 'Kakule' in Turkey. It is a member of the ginger family, and features a spicy, refreshing aroma that can be uplifting. The cardamom seeds have a warm, slightly pungent and highly aromatic flavor. Therefore, it is used as a spice in some meat products. In Turkey, consumption of coffee containing cardamom seed is common in southeast regions. The basic cardamom aroma produced by a combination of the major components, 1,8-cineole and α -terpinyl acetate. Cardamom is also popular because of its profound effects on the respiratory system due to its high 1, 8-cineole content, which promotes clear breathing and respiratory health. The chemical composition of cardamom varies considerably with variety, region and age of the product. Cardamom essential oil conventionally produced by steam distillation from the seeds after they have undergone a long drying process to get the best levels of chemical constituents possible. The content of volatile oil in the seeds is strongly depending on storage conditions, but may be as high as 8%. This study was carried out to extract Cardamom volatile oil and determine its volatile compounds by using GC-MS system. Cardamom seeds were extracted with supercritical carbon dioxide extraction method. Then GCMS analysis was performed for determination of volatile compounds of Cardamom oil. According to data obtained from GC-MS, the major volatile compounds of Cardamom oil were 1.8 cineole, sabinene, α -pinene and α -terpynenil-acetate. The volatile oil contains about 1.52% α -thujene, 10.27% α -pinene, 1.65% β -pinene, 18.86% sabinene, 4.22% β -myrcene, 1.11% p-cymene, 46.8% 1,8-cineole, 2.96% linalool, 0.48% terpinen-4-ol, 0.73% α -terpineol, 2.98% linalyl acetate, 7.31% α -terpinenyl acetate, 0.55% trans-sabinene hydrate and 0.63% trans-sabinene hydrate acetate.

KEYWORDS

cardamom oil, volatile compounds, supercritic CO₂ extraction

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RESEARCH ON THE POSSIBILITY OF LAVANDER CULTIVATION IN THE CITY OF DİYARBAKIR

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ABSTRACT

The city of Diyarbakır lies in the Southeast Anatolia region. It is divided into different subclimatic regions by its climate, topographic structure and soil structure. This situation causes differences in flora and fauna structure in the city and helps it to have a richer structure. Lavender, which can grow up within the city border in our city Diyarbakır, is a plant of perfumery, cosmetics and medicine that is cultivated around the world because of its high ratio and high quality evaporating oil. The aim of our research is to identify this endemic plant that exists or can exist in the flora and to put forth the medical and aromatic properties of different kinds of this plant that is grown up. The highly growing interest in lavender farming in recent years increased the importance of scientific research done on advanced cultivation methods of this plant and many improvements have been performed. Especially, in the species that have a problem in replication with seeding, research in micro replications with tissue cultures has gained a lot of value. If the types of dry farming plant lavender, which has adapted extremely well to Diyarbakır region's nonirrigated, arid and inclined fields, producing evaporating oil that can be marketed worldwide can be identified and after that if these identified types' seedlings could be quickly replicated and distributed to producers, lavender will be a huge gain for both Diyarbakır and Turkish economy. In Turkey, lavender cultivation has been done traditionally for 40 years in a few cities to produce evaporating oil. Research since the end of March 2017 has been performed with the aim of bringing forth new types of lavender and lavandin that possesses high flower efficiency and evaporating oil quality for the region and that have high adaptation abilities; researching possibilities of replication with steel in in vivo conditions; realizing numerous healthy seedling production by in vitro micro replication using tissue culture techniques. In the research, 'Raya', 'Munsted', 'Silver' and 'Vera' types belonging to *Lavandula Angustifolia* species are being planned as a material to be replicated with rooting in farm and greenhouse trials. We will be working towards the replication of the seeds of types that will naturally be raised in our city's flora by taking them into culture for intense production and towards the identification of medical and aromatic properties (fenolics and flavonoids), contents of evaporating and nonevaporating fatty acids and terpenoids. In this respect, trial productions of lavender cultivation will be performed. As a result of the aim of this research; since lavender farming is done economically in only a few cities, bringing forth lavender and lavandin types that have high flower efficiency and high evaporating oil quality (having high ratios of acetate and low ratios of camphor) for the region and that have high adaptation ability; identifying these types' farming and technological properties; researching the replication with in vivo steel possibilities of lavender types that has limited or sometimes no production possibility with seeding; and realizing the production of numerous healthy seedlings by in vitro micro replications from ripe lavender plants by making use of tissue culture techniques.

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KEYWORDS

Lavender, medical and aromatic plants

Poster Session 14

Submission ID: 1800

INVESTIGATION OF PREPARING A PROPOLIS CREAM WITH OLIVE OIL

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ABSTRACT

Propolis is a resinous material collected by honeybees from the flowers and trees [1]. Propolis is characterized by a series of biological properties, such as antibacterial, antiviral, antifungal, anti-inflammatory and antioxidant [1]. The applications are showed that propolis extracts are used to prevent and treat oral inflammations, cold syndrome and dermatological preparations [3]. The chemical composition of propolis is known to be very complex and influenced by the geographic origin [3]. In propolis active compounds are polyphenols, including phenolic acids and flavonoids [2,3]. Raw propolis cannot be used because of its useless materials, therefore it must be purified by solvent extraction to remove that unwanted materials and preserve the active polyphenolic fraction [2,3]. The extraction techniques used for the chemical analysis of raw propolis at room temperature is heat reflux extraction have been widely applied [2,4]. In this study, raw propolis is collected from the beekeeper from Pozantı plateau district. Before extraction raw propolis chunks into smaller pieces and stored in freezer for 1-2 days until it is hard. Then it is grinded to a powder. For the extraction, 5 grams of propolis powder in 100mL ethylalcohol (70%) is subjected 30min ultrasound-assisted extraction. It is filtered and evaporated under vacuum at 50°C. The extract is mixed with olive oil and some additives such as glycerin, thickening agent and emulsifier. The formulation of the cream and analysis detailed for creating a cream mark. References: [1] J.M. Sforcin, V. Bankova, Propolis: is there a potential for the development of new drugs? J. Ethnopharmacol. 133 (2011) 253–260. [2] A.M. Gómez-Caravaca, M. Gómez-Romero, D. Arráez-Román, A. Segura-Carretero, A. Fernández-Gutiérrez, Advances in the analysis of phenolic compounds in products derived from bees, J. Pharm. Biomed. Anal. 41 (2006) 1220–1234. [3] Y. Xu, L. Luo, B. Chen, Y. Fu, Recent developments of chemical components in propolis, Front. Biol. China 4 (2009) 385–391. [4] F. Pellati, G. Orlandini, D. Pinetti, S. Benvenuti, HPLC-DAD and HPLC-ESI-MS/MS methods for metabolite profiling of propolis extracts, J. Pharm. Biomed. Anal. 55 (2011) 934–948.

KEYWORDS

Propolis, olive oil, ultrasound-assisted extraction, cream

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Poster Session 14

Submission ID: 1801

THE ETHNOBOTANICAL FEATURES OF STRATONIKEIA ANCIENT CITY PLANTS

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ABSTRACT

In this study, the ethnobotanical properties of plants species distributed in Stratonikeia ancient city and its vicinity (Eskihisar village in Muđla)' between 2010-2012. A total of 318 plant taxon were evaluated their ethnobotanical properties. Two taxon are belongs to Gymnospermae and 316 of them belongs to Angiospermae. 265 species of belongs to Dicotyledonopsida and 51 species of monocotyledonopsida. The ethnobotanical usages of these plants, local names, used parts, etc. were reported. In generally, we observed these plants are used for traditional medicine, food, handicrafts, fuel, beliefs.

KEYWORDS

Ethnobotany, Stratonikeia Ancient City Muđla

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Poster Session 14

Submission ID: 1803

DETERMINATION OF PHENOLIC COMPOUNDS IN CHESTNUT POLLEN AND ITS ANTIOXIDANT EFFECT ON DNA OXIDATION SYSTEM

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ABSTRACT

Bee-pollen has long been used as a dietary supplement and also as an additive in cosmetics, food and medicine. It is composed of nutritionally essential substances such as carbohydrates, proteins, amino acids, lipids, vitamins, mineral substances and trace elements. Also pollen has been a rich source of flavonoid glycosides, which contains beneficial antioxidant, anti-inflammatory, anti-allergen, antiulcer, antibiotic and anti-carcinogenic properties. Bee pollen is used to cure conditions such as colds, flu, ulcers, premature aging, anemia, colitis, allergic reactions and enteritis. It is also used in the field of cosmetics for its contribution of vitamins to cold creams. Pollen is known to be supportive in the treatment of cancer. Antioxidant compounds can increase product shelf life by retarding the process of lipid peroxidation, which is one of the major reasons for deterioration of foods during processing and storage. Phytochemicals, such as phenolic compounds, are considered beneficial for human health because they decrease the risk of degenerative diseases by reducing oxidative stress and inhibiting macromolecular oxidation such as DNA. They have been shown to possess free radical scavenging and metal chelating activity in addition to their anticarcinogenic properties. The aim of this study was to determine antioxidant phenolic compounds in chestnut pollen and its antioxidant effect on DNA oxidation system. The chestnut pollen was extracted with organic solvent such as ethanol. The phenolic compounds in ethanolic extract of chestnut pollen were determined by high-performance liquid chromatography diode-array detector (HPLC-DAD). Syringic acid, hyperoside, kaempferol, isorhamnetin, pinocembrin, chrysin and galangin were detected in chestnut pollen. And also the antioxidant property of pollen extract was evaluated according to Folin-Ciocalteu and a chromium reducing antioxidant capacity (CHROMAC) methods. The CHROMAC is a novel method as a spectrophotometric total antioxidant capacity assay based on the reaction of excessive Cr(VI) with phenolic compounds and formation of coloured complex with remaining Cr(VI) and diphenylcarbazide as described by our previous study. Antioxidant ability of chestnut pollen was examined to investigate the prevention of oxidation of calf thymus DNA in Fenton reaction medium. It was understood that the chestnut pollen prevented DNA oxidation damage of 10% under oxidative environment. Consequently, the extract of chestnut pollen showed a significant antioxidant activity for the examination of DNA damage prevention.

KEYWORDS

chestnut pollen, DNA oxidation, Fenton, HPLC, CHROMAC

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Poster Session 14

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BLACK TEA WASTE NOT MUCH DIFFERENT FROM BLACK TEA

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ABSTRACT

The black tea is produced from the leaves of *Camelia sinensis* plant. The waste of the production process is discarded without any proper use. Black tea and black tea waste were studied in order to determine similarity or difference both in composition and antioxidant activities. Three widely used spectrophotometric antioxidant assays revealed that black tea waste retains much of the activity of black tea, with 39% of DPPH• scavenging activity, 76% of FRAP activity, and 84% of total phenolics content. On-line RP-HPLC-DAD-FRAP composition and antioxidant analyses showed that black tea waste has very similar compositional and antioxidant profile with black tea, the waste having more than 60% of the components of black tea. The chromatograms illustrate the mainly overlapping peaks in black tea and waste samples, and the FRAP chromatogram was same in the two samples. Inactive caffeine and highly active antioxidant gallic acid were the two major components in both tea and tea waste. Thus, besides its use as a source of caffeine and catechins, black tea waste can well be used for tea preparation, probably in tea bag form or as extract.

KEYWORDS

black tea, tea waste, on-line HPLC-FRAP, DPPH, total phenolics

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PRODUCTION OF FOOD COLORING FROM SAFFRON AND SAFFLOWER

OSMAN SAĞDIÇ¹, YÜKSEL BAYRAM²

ABSTRACT

Color materials are widely used in the food industry because they are a very important feature that determines the preference of food. In recent years, the adverse effects of some synthetic food colors on health have increased and in some countries, the prohibition of these colors has led to an increment in the tendency towards natural resources and studies on the use of the colors obtained from these sources have become increasingly important. In this study, the characteristics of saffron and safflower to be used for natural food dyeing will be emphasized. Saffron (*Crocus sativus*) is an onion culture plant of the family of Iridaceae that grows 20-30 cm in length, with purple flowers opening in the autumn. The flower harvest starts from October to the middle of November. In the world, saffron is mostly grown in Spain, France, Italy and Iran. While the production of saffron in Turkey is only done in Safranbolu province of Karabük until now, trial production has also started in Tokat, Kastamonu, Denizli and Şanlıurfa. Safflower (*Carthamus tinctorius*) is a grassy herbaceous Carthamus family from the Asteraceae family. There are types that are one or two years old. Safflower, which can reach 60 to 70 cm in length, opens yellow, red and orange flowers according to cesidium in July-September. The main land of this plant is Arabia. Safflower, which does not grow all over our country, is usually grown in Trakya, Isparta, Burdur and Eskişehir regions. Saffron traditionally has been used for many years as an alternative to traditional culinary arts because of its positive effects on the health and the kitchen, mostly as a color, aroma and flavoring spice. Therefore, many studies have been carried out on the bioactive properties of this flower. Antioxidant, antitumor, antidepressant, appetite regulator, enhances learning capacity and improves memory. Safflower is a plant with a very important place in the industry. It is preferred as dye material in food, cosmetics and textile products because of the dye giving feature of the flower petals. Safflower can be used for medicinal purposes in the treatment of certain diseases and also as tea. Saffron has important bioactive components. The main ones are; crocin, crocetin, picrocrocin and safranal. Two basic carotenoids, crocin and crocetin are responsible for the color. The dried stalk of *Crocus Sativus* is reddish yellow due to its cross and crossover. Crocin (24-27%) which is very well soluble in water and gives a color that is saffron has a bright yellow color. The taste of saffron comes from the picrocrocin, the second most commonly found ingredient, which makes up about 1% to 13% of the dry matter of the saffron. Picrocrocin is a compound that gives a bitter taste to safran. It adds flavor to food especially when used in meals. Safranal is the essential oil which is mainly responsible for the flavor of the saffron. At the same time more than 160 additional volatile components have been identified. Carotenoid derivatives of saffron, in particular crocin; due to its nutritive properties, it finds wide application in the food, cosmetic and nutraceutical industries. There are two color substances of safflower, safflower yellow (safflomin A, safflomin B) and safflower red (carthamin). The toxicity of synthetic food coloring has been a topic of

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controversy in recent times, increasing the need for healthy food stains to be obtained from natural sources. Because of this, it is very important to use coloring materials which can be extracted from such flowers, which have been used as spices for many years and which have positive health effects on their content, as natural food dyes.

KEYWORDS

Saffron, Crocus sativus L., Safflower, Carthamus tinctorius, Food colorant

THE NUTRIENTS OF FORMULA MILK IN TERMS OF MEETING THE NEEDS OF AN INDIVIDUAL

KENAN SINAN DAYISOYLU¹, BETÜL DEMİR², BETÜL KAHVECİ¹, MOHAMMED ZAKİR İBRAHİM¹

ABSTRACT

Kenan Sinan DAYISOYLU, Betül DEMİR, Betül KAHVECİ, Mohammed Zakir İBRAHİM Kahramanmaraş Sütçüimam University, Faculty of Engineering and Architecture, Department of Food Engineering, Avşar Campus, 46100, Kahramanmaraş, Turkey E-mail: kesiday@ksu.edu.tr Adequate and balanced nutrition is one of the most important determinant of human health, growth and development, more especially in babies. Cow milk is not recommended for newborn infant who cannot breastfeed because it causes iron deficiency in some of the newborn babies. In this period, some standardized dairy products are recommended and preferred as an alternative to breast milk such as; baby milk, baby formula, the bottle milk, formula milk, newborn milk e.t.c. In Turkey, the specifications of these products, which are regarded as approximate formulas for mother's milk, are determined and issued to the markets with the permission of the Ministry of Food Agriculture and Livestock. In this study, the contents of breast milk and formula milk were compared and it also includes the daily energy and nutritional requirement needs of baby's between 0-6 up to 07-12 month. In this study, the contents of breast milk and formula milk were compared and it also includes the daily energy and nutritional requirement needs of baby's between 0-6 up to 07-12 month. Furthermore, vitamin and mineral contents of cow milk and soya protein isolates, which are used in single and mixed form, have also been studied as based on 100 kcal. In addition, according to the written legal limits, the use of newborn milk in feeding 0-6 and 7-12 month infants is been researched. More especially, the situation and the meeting rates of baby needs is been investigated. It has been determined that the formula milk produced according to the reference value given in the Communiqué does not adequately meet the needs of vitamin A, D, E, Niacin, Folate, Choline, Iodine, Magnesium, Copper and Selenium requirements in the 0-6 month period. It has been found that the formula milk produced according to the base reference value compared to the reference values given in the Communiqué does not adequately meet the needs of protein, vitamins A, D, E, Niacin, B6, Folate, Choline, Phosphorus, Iron, Iodine, Magnesium, Manganese and Selenium in 7-12 month period. The formula milk produced according to the ceiling reference values found in the Communiqué is found to meet all the needs in 0-6 month period and failed to meet the adequate iron needed during the 7-12 month period.

KEYWORDS

Formula milk, newborn milk, baby milk, baby food

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SIMULTANEOUS DETERMINATION OF GALLIC ACID AND RUTIN IN DIETARY TEA PRODUCTS USING RP-HPLC/DAD DETECTION

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ABSTRACT

U.S. Food and Drug Administration (FDA) arranges dietary supplement products and dietary ingredients. In 1994, The US congress changed the Federal Food Drug and Cosmetic Act [1]. Under the Dietary Supplement Health and Education Act of 1994: Botanical products (Herbals), complementary nutritionals (amino acids, protein – rich foods, etc) and micronutrients (vitamins, microminerals) are all considered to be dietary supplements [2]. Dietary products are used up to extend our diet with needed micronutrients, herbs, protein and amino acid for ideal body function [3,4]. Different types of tea, pills and other similar products are sold to people over the internet for diet products. Diet products can be reached very easily. High Performance Liquid Chromatography (HPLC) system was applied to phenolic concentrations in ten dietary tea product samples in Turkey. The gallic acid and rutin compounds of dietary tea samples were determined using methanol extraction. The analytical HPLC system employed consisted of a Shimadzu Prominence high performance liquid chromatograph coupled with a 20A CBM (HPLC System Controller), a diode array detector (SPD-M20A, Tokyo, Japan), a SIL 20ACHT automatic sampler, a CTO-10ASVp column oven and a LC20 AT pump. The analytical data were evaluated using a LC Solution data processing system. The separation was achieved on a Agilent ZORBAX Eclipse Plus C18, 4.6 × 250 mm, 5 µm column (Milford, MA, USA) at 25°C. The mobile phase consisted of water with 3% glacial acetic acid (A) vs (B) methanol. The elution gradient applied at a flow rate of 0.8 mL/min was: 95% A/5% B for 3 min, 80%A/20%B in 15 min and isocratic for 2 min, 60%A/40%B in 10 min, 50%A/50%B in 10 min, 100%B in 10 min until the end of the run. Samples were dissolved in methanol, and 100 µL of this solution was injected into the column. The monitoring wavelength was 280 nm and 360 for the phenolic acids. The identification of each target compound was based on a combination of retention time and spectral matching [5]. Table 1. Retention time (Rt), wavelength (λnm), correlation coefficients (r²), limits of detection (LOD, s/n=3.3), average recovery (RSD, %) as determined for the gallic acid and rutin Compounds Rt (min) (HPLC-DAD) λnm r² LOD (µg/g) R % Gallic acid 7.8 280 0.999 0.010 91.43 (1.03) Rutin 45.6 360 0.999 0.050 95.21 (1.11) When applied to dietary tea products the proposed method showed good results. The calibration curves for all the species studied showed good linear correlation coefficients (r² ≥ 0.999), independent of the method used for sample preparation (Table 1). The quantitation limit ranged 0.010 to 0.050 µg/g in dietary tea products (Table 1).

KEYWORDS

Gallic acid, Rutin, HPLC, Dietary tea

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Poster Session 14

Submission ID: 1810

DETERMINATION OF ANTIFUNGAL ACTIVITIES OF PSATHYRELLA CONDOLLEANA AND PSATHYRELLA SPADICEOGRISEA MACROFUNGUS CULTURES

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ABSTRACT

In this study, the antifungal potentials of the misella obtained from two Psathyrella (P.condolleana and P.spadiceogrisea) collected from Kırıkkale province were investigated. Ethanol and methanol extracts were prepared by taking samples from the liquid medium for determination of antifungal activity and were absorbed by discoid diffusion method and tested against two Fusarium (F.oxysporium and F. proliferactum) products. As a result of the study, P.spadiceogrisea-methanol extract was found to be most effective against F.oxysporium strain in the macrofungus species used.

KEYWORDS

Antifungal activities, Psathyrella, fusarium, Kırıkkale

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Poster Session 14

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COMPARISON OF IN VITRO ANTIOXIDANT ACTIVITIES OF DIFFERENT EXTRACTS FROM CENTAUREA VIRGATA LAM.

TOLGACAN AYDEMİR¹, ALI ŐEN¹, LEYLA BİTİŐ¹

ABSTRACT

The genus *Centaurea* belonging to the Asteraceae family comprises about 700 species predominantly found in the Asia, North Africa, America and Europe. This genus is represented by 34 sections and 226 species with an endemism rate of 66 % in Turkey. In traditional medicine, they are used for fever, menstrual disorders, vaginal candidiasis, the treatment of liver, kidney and ulcer diseases, as anti-diarrheal, stomachic, tonic, appetitive, anti-diabetic, antipyretic, also as a diuretic and expectorant. *Centaurea* species are characterized by the presence of acetylenes, lignans, flavonoids, and sesquiterpene lactones as main secondary metabolites. In this study, it is aimed to investigate antioxidant activities of hexane (CVH), chloroform (CVC), ethyl acetate (CVEA), aqueous ethanol (CVSE) fractions of ethanol extract and ethanol extract (CVE) obtained from the aerial parts of *Centaurea virgata*. The antioxidant activity of the extracts was tested by DPPH and ABTS methods and the results were expressed as IC₅₀ values (50% inhibitory concentration). The total phenolic content was determined by Folin-Ciocalteu method and the results were expressed as mg of gallic acid equivalent per g dry extract. CVEA extract had the highest DPPH radical scavenging activity with a IC₅₀ value of 138.7 µg / mL followed by CVE (200,3 µg/mL), CVC (293,2 µg/mL), CVSE (610,3 µg/mL) and CVH (824,8 µg/mL) extracts, respectively. CVEA extract had the highest ABTS radical scavenging activity with a IC₅₀ value of 72,89 µg / mL followed by CVC (234,6 µg/mL), CVE (240,5 µg/mL), CVSE (288,8 µg/mL) and CVH (487,4 µg/mL) extracts, respectively. When the total phenol contents of the extracts are compared, The highest amount of phenolic content was found in CVEA extract (51,3 mg/g). These results show that phenolic compounds may be responsible for the activity of the CVEA extract with high antioxidant activity.

KEYWORDS

Centaurea virgata, Asteraceae, Antioxidant activity, DPPH, ABTS, Total phenolic content

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Poster Session 14

Submission ID: 1812

MICROENCAPSULATION AND ITS APPLICATIONS IN ESSENTIAL OIL TECHNOLOGY

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ABSTRACT

Essential oils obtained from plants are complex mixtures of natural volatile compounds. They give plants their characteristic odors and are a common source of bioactive ingredients. Essential oils, and their components, are gaining increasing interest in the food, agriculture, pesticide, textile, cosmetic, and pharmaceutical industries because of their natural and safe status, wide acceptance by consumers, and multidimensional functional properties. Furthermore, essential oils could be considered suitable substitutions to chemical additives for use in the food industry. However, essential oils are unstable and susceptible to degradation in the presence of oxygen, light and temperature. So many attempts have been made to preserve essential oils through microencapsulation technology. Microencapsulation is an effective and important tool to prepare oil-based high-quality and health-beneficial products in various industries to enhance their chemical, oxidative, and thermal stability. The success of this technology is due to the correct choice of the wall material, the core release form and the microencapsulation method. Emulsification, spray-drying, electrospray system, freeze-drying, coacervation, and fluidized-bed-coating are the most commonly used techniques for the microencapsulation of essential oils. The choice of an appropriate microencapsulation technique and wall material depends upon the end use of the product and the processing conditions involved. In this study, some relevant microencapsulation aspects, such as the capsule, wall material, microencapsulation methods and their use in essential oil technology will be discussed.

KEYWORDS

essential oil, microencapsulation, spray drying, freeze drying

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Poster Session 14

Submission ID: 1813

AN EDIBLE WILD AND MEDICINAL MUSHROOM OF GİRESUN PROVINCE: POPLAR MUSHROOM (PLEUROTUS OSTREATUS)

SANEM BULAM¹

ABSTRACT

The edible wild mushrooms have been used as food and food-flavouring materials in soups and sauces for centuries, due to their unique and subtle taste and flavor. The edible mushrooms are also important sources of bioactive molecules and produce a wide range of secondary metabolites with high therapeutic agents. The climate and vegetation are suitable for edible wild mushroom growing especially in Eastern Black Sea Region of Turkey. In Şebinkarahisar district of Giresun province, *Pleurotus ostreatus* (Jacq. ex Fr.) P. Kumm. (Oyster Mushroom, locally named Poplar Mushroom) which is one of the edible wild and also internationally medicinal mushrooms naturally grows on the rotten roots of cut poplar trees. The Poplar Mushroom has a large, oyster-like head section, with an average diameter of 5 to 25 cm, with natural samples ranging in color from white to gray or tan to dark-brown. They are collected and sold in the local markets by the local people between mid September and mid December depending on the climate conditions. *Pleurotus ostreatus* species is consumed as food by frying in vegetable oil or sauteing with the tomatoes and onions when it is fresh or after freezing in the winter. In the previous studies for *Pleurotus ostreatus* moisture 85-87%; in 100 g dried mushroom proteins 17-42 g, lipids 0.5-5.0 g, carbohydrates 37-48 g, celluloses 11.6 g, hemicelluloses 27.8 g, fibers 24-31 g, ash 6.1 g, minerals 4-10 g and total essential amino acids 126.7 g (excluding arginine and histidine) have been reported. Besides, the studies have previously documented that *Pleurotus ostreatus* plays an important role in the treatment of many diseases due to its anti-inflammatory, antibiotic, antiviral, antitumor, antibacterial, antidiabetic, antihypercholesterolic, antiarthritic, antioxidant, anticancer and immunomodulatory activities. Because it has a large amount of medicinal compounds like water soluble protein or polysaccharides, β -D glucan, glycopeptides, lovastatin and lectin. In this review, *Pleurotus ostreatus* mushroom species of Giresun province and its nutritional and therapeutic characteristics will be discussed.

KEYWORDS

Pleurotus ostreatus, Giresun, nutritional value, medicinal mushroom, therapeutic agents

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¹GİRESUN ÜNİVERSİTESİ

MEDICINAL MUSHROOMS AND THEIR PHARMACOLOGICAL EFFECTS ON HEALTH

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ABSTRACT

The edible wild mushrooms are consumed worldwide not only for their texture and flavor but also for their chemical and nutritional characteristics. They have higher protein, crude fiber, vitamin, mineral contents and contain less fat and energy. Furthermore, some mushrooms that are popular in Asian countries like China, Japan and South Korea may also have a medicinal value. These mushrooms are not only sources of nutrients but have also been reported as therapeutic foods which are useful in preventing diseases such as hypertension, diabetes, hypercholesterolemia and cancer. Their specific antitumor, antiviral, antithrombotic, antiallergic, immunomodulating, hypolipidemic, hypoglycemic, hypotensive and anti-inflammatory effects have previously been reported. These functional characteristics are mainly due to the presence of bioactive molecules such as dietary fiber and in particular cellulose, chitin, beta glucans, phenolic compounds, lentinan, lovastatin, ergosterol etc. The most popular medicinal species are *Agaricus blazei* (Brazilian Agaricus), *Auricularia auricula* (Wood Ear), *Cordyceps sinensis* (Caterpillar Mushroom), *Coriolus versicolor* (Turkey Tail), *Flammulina velutipes* (Enokitake), *Ganoderma lucidum* (Reishi), *Grifola frondosa* (Maitake), *Hericium erinaceus* (Lion's Mane), *Inonotus obliquus* (Chaga), *Lentinula edodes* (Shiitake), *Pleurotus ostreatus* (Oyster), *Polyporus umbellatus* (Zhu-ling), *Poria cocos* (Fu-ling), *Schizophyllum commune* (Split Gill) and *Tremella fuciformis* (White Wood Ear). The medicinal mushroom originated products are available as nutraceuticals and dietary supplements such as mushroom mycelium powder grown on grain and soybeans, powdered extracts in capsules or tablets and ethanolic extracts with or without glycerin. In the last few decades the medicinal mushrooms are increasingly started to be consumed in the Western countries among vegetarians and vegans. In this review, the most common medicinal mushrooms from Far East to Western countries and their pharmacological potential will be investigated.

KEYWORDS

Medicinal mushrooms, therapeutic, functional, nutraceuticals, dietary supplements

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¹GİRESUN ÜNİVERSİTESİ

Poster Session 14

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INVESTIGATION OF ENZYME ACTIVITY OF GARDENIN B AND CYNARININ A.

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ABSTRACT

Natural products have various biological activities. The secondary metabolites isolated from natural sources are used for drug discovery. Naturally occurring terpenes and flavon derivatives has a great interest among scientist due to having broad spectrum biological activities. Many drugs act as inhibitor or activator on some specific enzymes by binding to active site of enzyme. In this study; Inhibitory effects of secondary metabolites isolated from different sources were tested on carbonic anhydrase IX and chicken liver aldose reductase enzymes. CA IX is a novel target enzyme for cancer treatment [1]. Aldose reductase inhibitors uses as drug to treatment such as neuropathy, nephropathy, retinopathy, cataract and cardiovascular diseases emerging with diabetes [2]. The inhibitory effects of Gardenin B and Cynarinin A isolated different plant sources against two selected enzymes were evaluated spectrophotometric method. Cynarinin A is a guaiane-type sesquiterpene lactone and found in Cynara family [3]. Isolation and characterization Cynarinin A from Centaurea polypodiifolia were previously reported by our group [4]. Gardenin B (5-hydroxy-6,7,8,4'-tetramethoxy flavone), a polymethoxylated flavone, was isolated from *Mentha x dumetorum* for the first time and characterized by spectroscopic techniques including NMR and MS and by comprising literature data [5]. The obtained spectroscopic data as follows: m/z [M+H]⁺ 359.1170, λ_{max} 331, 284 nm, ¹H NMR (400 MHz, CDCl₃) δ 12.60 (s, 1H, 5-OH), 7.92 (d, J = 9.0 Hz, 2H, H2' and H6'), 7.06 (d, J = 9.0 Hz, 2H, H3' and H5'), 6.63 (s, 1H, H3), 4.13 (s, 3H, -OMe), 4.00 (s, 3H, -OMe), 3.97 (s, 3H, -OMe), 3.92 (s, 3H, -OMe). ¹³C NMR (100 MHz, CDCl₃) δ 183.04 (C4), 164.09 (C2), 162.79 (C4'), 152.97 (C5), 149.53 (C9), 145.80 (C7), 136.55 (C6), 133.00 (C8), 128.11 (C2' and C6'), 123.50 (C1'), 114.63 (C3' and C5'), 107.00 (C10), 103.77 (C3), 62.15 (-OMe), 61.72 (-OMe), 61.14 (-OMe), 55.56 (-OMe) with fully agreement literature. Chicken liver aldose reductase enzyme was inhibited by Gardenin B and cynarinin A with IC₅₀ values 53 and 231 μ M, respectively. Gardenin B and cynarinin A exhibited inhibitory effect against human recombinant CA IX with IC₅₀ values 86 and 346 μ M, respectively. 1. Winum, J.Y., et al., Carbonic anhydrase IX: a new druggable target for the design of antitumor agents. Medicinal research reviews, 2008. 28(3): p. 445-463. 2. Veeresham, C., A. Rama Rao, and K. Asres, Aldose reductase inhibitors of plant origin. Phytotherapy Research, 2014. 28(3): p. 317-333. 3. Liu, R., H. Kun-Lung, and J.-K. Liu, A new sesquiterpene lactone from the leaves of *Cynara scolymus* (Compositae). Acta Botanica Yunnanica, 2009. 31(4): p. 383-385. 4. Çelik, İ., et al., Crystal structure and computational study of 3, 4-dihydroxy-3-hydroxymethyl-9-methyl-6-methylidene-3a, 4, 5, 6, 6a, 9, 9a, 9b-octahydroazuleno [4, 5-b] furan-2, 8 (3H, 7H)-dione. Acta Crystallographica Section E: Crystallographic Communications, 2015. 71(12): p. 1425-1428. 5. Parmar, V.S., et al., Highly oxygenated bioactive flavones from Tamarix. Phytochemistry, 1994. 36(2): p. 507-511.

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KEYWORDS

Mentha dumetorum, *Centaurea polypodiifolia*, Gardenin B and cynarinin A, enzyme activity

Poster Session 14

Submission ID: 1819

THE MEDICINAL PLANTS SOLD IN HERBAL MARKETS IN DENİZLİ

MEHMET ÇİÇEK¹, OKAN ÇON¹

ABSTRACT

In this study, it was aimed to determine the plant species sold in herbal markets in Denizli and used by the public for medical purposes. Within the scope of the study, 8 herbal markets in the province center were visited, and information about the medicinal plants sold and the purposes they were used by the public were obtained. In negotiations with herbal markets in Denizli, it is recorded that the local names of the plants sold for medical purposes and which parts are used. Photographs of the related parts of the plants were taken. The Latin names of well-known species have been determined, and some of them have been sampled from their existing parts for later identification. Some were left at the genus level. In addition, information has been obtained about which diseases the medicinal products were used for medical purposes or for which purposes they were selected for treatment. A list has been prepared in line with the information obtained. This list includes information on Latin names, local names, used parts and what they are used for. As a result of the study, a total of 86 plant species belonging to 44 families and 80 genera were determined to be sold as the medicinal plant in the herbal markets in Denizli. Of these species, 71 naturally grow in Turkey. These species are collected from their natural habitat or cultivated. The 15 species are alien species and cultivated in Turkey. The great majority of the species belong to the families Lamiaceae (14 species), Asteraceae (11 species), Apiaceae (6 species) and Rosaceae (5 species), respectively.

KEYWORDS

medicinal plants, herbal market, ethnobotany, Denizli

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THE ANALYSIS OF MEDICINAL AND AROMATIC PLANTS IN SOCIAL AND SCIENTIFIC CONTEXT

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ABSTRACT

THE ANALYSIS OF MEDICINAL AND AROMATIC PLANTS IN SOCIAL AND SCIENTIFIC CONTEXT ABSTRACT WHO ARE WE AND WHAT OUR AIM IS The Association of Porsuk River Philosophers (APRP) was established in 2014. The aim of establishment is to contribute human to the awareness of the need for philosophic knowledge in personel and public domain. The Association has been keeping holistic researches on the base of the seven classic disciplines; Ethic, Knowledge, Science, Religion, Aesthetic, Politics, Ontology. Under the scientific discipline, with the slogan of "Returning To The Natural Life", the APRP began natural agricultural activities in the two deceres field. Primarily, in the light of natural farming principles in order to produce Vermicompost, Medicinal and Aromatic Plants. On the other hand, due to the protocol between Eskişehir Tepebaşı Municipality and APRP, some demonstrations were made in the garden of Esentepe Children's and Art Center, local seed production and distribution have been achieved. Throughout history, human beings have known to use the wild plants to heal the health issues. In our age, the methods of treatment under the name of "Alternative Medicine" has been applying by referring the science as a guide. Approximately, the 80% of the materials used in the manufacture of medicines that modern medicine requires of medicinal and aromatic plants origin. Apart their use as medicines; the medical and aromatic plants have contribution in foods, cleaning products, tooth paste and gums, herbal teas and cosmetics. With these developments, the trade of the Medicinal and Aromatic Plants all over the world have shown a great increase in the last 30 years. For many years, the herbal products that are required of trade are collected from nature, but this stituation has severely damaged on the endemics (flora and fauna). Many medicinal and aromatic plants have faced the danger of extinction. Also unconsciously harvesting plant have caused the invasion of dominant and recessive plants to each other's habitat. Briefly, these reasons above mentioned necessiated producing the Medicinal and Aromatic Plants by human, cultivation, increasing yield which were cultivated, extention of planting areas. Both Research Institutes and Universities in our country, have proper scientific researchs. It has been pleased to see that Minister of Food, Agriculture and Livestock have increased the project and support of Medicinal and Aromatic Plants in recent years. It is needed to make natural agricultural applications by volunteer organisations, such as APRP, with regard to social benefit, "for making the society conscious" when there is lack of public services. These kind of activities will be tried to reach to the cultivators who have interests. It should be the responsibility of non-governmental organisations to disseminate such activities and to transmit them to growers. In this context, APRP planted Menta (*Menthapiperata* L.) 50 m²; Sage (*Salvia officinalis*) 50 m²; (*Salvia Triloba*) 50 m²; Origano (*Origanum vulgare*) 50 m², (*Origanum onites*) 50 m², Rosemary (*Rosmarinus spicata*) 50 m² in the Sakintepe Campus, in the May of 2016. Another work has been realised in September of 2016 by buying 20 kg saffron (*Crocus sativus*) from the Geçit Kuşağı

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Research Institute and planted in 100 m² field which is registered as the name KARAASLAN. The quantity of the planted Medicinal and Aromatic Plants were determined and the historical and folkloric background of them synthesized and transferred to the cooperative organisation groups. Full paper will be presented over these conclusions.

KEYWORDS

Medicinal plants saffron melissa

Poster Session 14

Submission ID: 1822

ASPIR CULTIVATION IN DIYARBAKIR

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ABSTRACT

Aspir (*Carthamus tinctorius* L.) is undoubtedly the world's most popular and sought after medicinal and aromatic plant with all its varieties and uses. While all medicinal and aromatic plants are examined, visual beauty of aspirin, calming, softening properties, nostalgic and distinctive smell and magnificent landscape image reveals. Aspir is 50-100 cm length and flowers cream, white, yellow, orange. These flowers can also be used in the art of dyeing rope and cloth for centuries in the city. The aspiration plant is a one-year long-day oil plant with a pile root system that can go up to a depth of about 2.5-3.0 m and can grow in average between 110-140 days. Oilseed plants have a strategic prescription for human and animal nutrition due to oil, protein, carbohydrates, minerals and vitamins. Adding Aspir oil to the greasy dishes, which have an important place in Diyarbakır's culinary culture, will enrich this culture even more. The most important advantage of aspir compare to wheat and barley agriculture is that wheat and barley agriculture can be used in the agriculture of all the tools and equipment used from the preparation of soil to the storage of the product. In addition, drought tolerance increases the importance of Aspir cultivation in our province. The high yield obtained in the trial result made in Çınar District of our province last year has been effective in starting this work. This will also help to develop the medical and aromatic plant-related industry, which will create alternative sources of income that will bring innovation to the region. As a result of this work, facilities to be established for the processing of medical and aromatic plants will contribute to the economy of our province and country, and also increase the income level of our farmers, especially women. Since the areas where the aspir farming will be done will become a visual feast, it will be seen that it will be a stopping place for photographers as well as eco-tourism.

KEYWORDS

Aspirate, medical and aromatic plants

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Poster Session 14

Submission ID: 1823

ETHNOBOTANY OF THE GENUS SCUTELLARIA L. (LAMIACEAE) IN TURKEY

MEHMET ÇİÇEK¹

ABSTRACT

Scutellaria L., with about 360 species, is a subcosmopolitan genus of the family Lamiaceae. Most of its species occur in the tropics, and in Southern Hemisphere they are present mainly in the temperate mountains. The species of the genus Scutellaria are annual or perennial herbs or rarely subshrub plants. Its stems are four-angled and its leaves are opposite. The genus is most easily recognized by the shield on the calyx. As ethnobotanically, it is reported that the young leaves of *S. indica* and *S. baicalensis* from the Asian species of the genus are cooked as vegetable and the whole plant of *S. baicalensis* is used as a tea substitute (Tanaka, 1976). In addition, there is usage of *S. laterifolia* (American skullcap) against neurological disorders such as epilepsy, convulsion, hysteria, and insomnia in the New World (Millspaugh, 1974). The dried roots of *S. baicalensis* (Baikal skullcap), have been used in memory enhancing in Chinese traditional medicine (Adams et al., 2007). The genus Scutellaria consists of 39 taxa, 16 of which are endemic (41%) in Turkey. The Scutellaria species are known as “kaside” in Turkish. Little is known on the usage of Scutellaria in Turkish folk medicine. Infusion of its dried leaves is used as soothing, hemostatic and wound healing agent and also as a tonic by people in some parts of Eastern Anatolia (Özçelik, Ay and Öztürk, 1990). *S. orientalis* was reported to be used externally and internally for constipation, hemostatic, tonic, and wound healing purposes in Anatolian folk medicine (Baytop, 1999). According to the ethnobotanical studies conducted in Eastern Anatolia in the recent years, there are data about the usages as wound healing for *S. orientalis* subsp. *bicolor*, in the remedy of cancer and hemorrhoids for *S. orientalis* subsp. *pichleri* and *S. orientalis* subsp. *virens* (Mükemre et al., 2015), and as astringent for *S. orientalis* subsp. *bicolor* and *S. orientalis pichleri* (Çakılcıođlu and Türkođlu, 2010). No data found about its selling in herbal markets in Turkey.

KEYWORDS

economic botany, ethnobotany, Turkish traditional medicine, Scutellaria, Lamiaceae

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INVESTIGATION OF IN VITRO CYTOTOXIC ACTIVITY OF LIQUIDAMBAR ORIENTALIS MILL. METHANOL AND CHLOROFORM FRACTIONS AGAINST HT-29 AND HCT-116 CELL LINES

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ABSTRACT

Liquidambar orientalis Mill. is a herbaceous plant which has medicinal and cosmetic properties in the family of Hamamelidaceae (Li vd. 1997). In the Mediterranean region, it is widely used in phytotherapy for diseases or health problems. General area of usage are burn, wounds and cuts (Fakir vd. 2009) In addition, ulcer, stomach ache, mouth diseases and antiseptic use are available (Everest ve Öztürk 2005). The goal of this work is to investigate the cytotoxic effects of Liquidambar orientalis Mill methanol and chloroform fractions in HT-29 and HCT-116 (human colon carcinoma) cell lines. The cytotoxicity of fractions was determined using XTT ((2,3-Bis-(2-Methoxy-4-Nitro-5-Sulfophenyl)-2H-Tetrazolium-5-Carboxanilide)) assay. The HT-29 and HCT-116 cells were used to determine cytotoxicity and chloroform and methanol fractions were investigated. As a result; IC50 values of the chloroform fraction ranged from 25 to 50 µg / ml in HT-29 cells and 50 to 200 µg / ml in HCT-116 cells after treatment at different doses for 24 hours, 48 hours and 72 hours, And 250 to 500 µg / ml in both HT-29 and HCT-116 cells after being treated at different doses for 24h, 48h and 72h, respectively. According to this chlorofom fraction of Liquidambar orientalis showed strongest cytotoxic effect while methanol fraction exhibited moderate cytotoxic effect. Further investigation is still needed to understand their mechanisms of action and usage as antitumour agents. Reference 1) Li J, Bogle AL, Klein AS. interspecific relationships and genetic divergence of the disjunct genus Liquidambar (Hamamelidaceae) inferred from dNA sequences of plastid gene matK. Rhodora1997; 99:899:229–40. 2) Fakir H, Korkmaz M, Güller B. Medicinal plant diversity of western mediterranean region in Turkey. Journal of Applied Biological Sciences 2009; 3:2:30–40. 3) Everest A, Ozturk E. Focusing on the ethnobotanical uses of plants in Mersin and Adana provinces (Turkey). J Ethnobiol Ethnomed 2005; 1:6.

KEYWORDS

L.orientalis, cytotoxicity, XTT

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Poster Session 14

Submission ID: 1826

ANTIMICROBIAL ACTIVITY OF *CENTAUREA URVILLEI* DC. SUBSP. *ARMATA* WAGENITZ

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ABSTRACT

In this study, we reported, for the first time to our knowledge, antimicrobial activities of hexane (CUH), chloroform (CUC), ethyl acetate (CUEA), aqueous ethanol (CUSE) fractions of ethanol extract and ethanol extract (CUE) obtained from the whole plant of *Centaurea urvillei* subsp. *armata*. Antimicrobial activity against *Staphylococcus aureus* ATCC 29213, *Staphylococcus epidermidis* ATCC 12228, *Escherichia coli* ATCC 25922, *Enterococcus faecalis* ATCC 29212, *Klebsiella pneumoniae* ATCC 4352, *Pseudomonas aeruginosa* ATCC 27853, *Proteus mirabilis* ATCC 14153, *Candida albicans* ATCC 10231, *Candida tropicalis* ATCC 750 and *Candida parapsilosis* ATCC 22019 were determined by the microbroth dilutions technique using the Clinical Laboratory Standards Institute (CLSI) recommendations. CUC, CUE and CUH extracts showed moderate antifungal activity against *Candida albicans* with MIC values of 312, 625 and 625 µg/mL, respectively. All extracts exhibited moderate antimicrobial activity against *Candida parapsilosis* (MIC: 312-625 µg/mL). CUH extract showed a strong antimicrobial effect against *Candida tropicalis* with a MIC value of 39 µg/mL, while CUE and CUC extracts had moderate activity with MIC values of 312 µg / mL. The CUC extract showed moderate antibacterial activity against *Staphylococcus aureus*, *Staphylococcus epidermidis* and *Escherichia coli* with MIC values of 625 µg / mL. The CUE extract exhibited poor antibacterial activity against *Staphylococcus aureus* with a MIC value of 1250 µg/mL. These results indicate that the extracts are particularly active against *Candida* species. Also, CUH extract which has a very strong activity against *Candida tropicalis* is good candidate for further bioactivity-guided fractionation in the search for new active antifungal compounds.

KEYWORDS

Centaurea urvillei subsp. *armata*, Asteraceae, Antimicrobial activity, MIC

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ANTIPROLIFERATIVE AND RADICAL SCAVENGING EFFECTS OF SOME NATURAL PHENOLIC COMPOUNDS

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ABSTRACT

Phenolic compounds, commonly known as polyphenols, are present in plants and classified as simple phenolic acids (hydroxybenzoic and hydroxycinnamic acids) and flavonoids. They affect sensory properties of foods, such as flavor, astringency, aroma, and color. Research on phenolic compounds is carried out because of their biological and pharmacological properties. The aim of the study was to investigate the antiproliferative and radical scavenging effects of some plant origin phenolic compounds. The radical scavenging effects of these compounds were studied by DPPH assay. DPPH scavenging activity of the tested compounds decreased in the order of gallic acid > chlorogenic acid > apigenin-7-glucoside > hesperidin > 4-hydroxybenzoic acid. Also, in this study, 4-hydroxybenzoic acid (4-HBA), gallic acid (GA), and apigenin-7-glucoside (A-7-G) were investigated for their antiproliferative activities on human cervical adenocarcinoma (HeLa) cell line at the concentrations of 5–100 µg/mL by using BrdU ELISA assay during 24 h of incubation. GA exhibited the highest activity against HeLa cells (IC₅₀ < 5 µg/mL). The potency of inhibitions (at 100 µg/mL) against HeLa cells were found as GA > A-7-G > 4-HBA. Our results showed that gallic acid exhibited highest radical scavenging and antiproliferative effect.

KEYWORDS

Gallic acid, HeLa, BrdU ELISA, polyphenol, DPPH

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Poster Session 14

Submission ID: 1834

ANTIOXIDANT AND ANTICHOLINESTERASE ACTIVITIES OF THE ETHANOL EXTRACTS FROM VARIOUS PARTS OF IN VIVO AND IN VITRO GROWN PISTACIA LENTISCUS L.

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ABSTRACT

In the present study, anticholinesterase and antioxidant activities of the ethanol extracts from different parts of in vivo and in vitro raised *Pistacia lentiscus* were studied. The DPPH free radical scavenging activity and cupric reducing antioxidant capacity (CUPRAC) methods was used to determine antioxidant activity. A spectrophotometric method developed by Ellman, Courtney, Andres and Featherstone was used to determine the acetyl- and butyryl-cholinesterase inhibitory activities. In terms of DPPH free radical scavenging activity, 6 samples prepared from root, stem and leaf parts of the female and male genotypes and 3 in vitro samples were found to have a very high antioxidant potential. It has been determined that samples prepared from stem parts of both female and male genotypes have higher activities than other parts. In vivo samples were more active than in vitro samples in both male and female genotypes. The CUPRAC activities of in vivo samples were higher from the standarts BHT and α -TOC. Absorption values in 100 μ g/ml concentration for female leaf, stem, root, male leaf, stem, root, BHT and α -TOC were determined as 3.06, 3.81, 3.31, 2.65, 3.80, 3.46, 3.18 and 1.69 respectively. There is a decrease in the activity of in vitro samples in the CUPRAC activity. Also, in vivo samples of female and male genotypes were found to have a high anticholinesterase enzyme activity. Among the ethanol extracts, the extracts from the stem part of male genotype have the highest activity against both acetylcholinesterase and butyrylcholinesterase enzymes. This study indicated that the ethanol extracts of the stem parts of both lentisk genotypes may be a new potential resource of natural antioxidant and anticholinesterase compounds.

KEYWORDS

: *Pistacia lentiscus*, Antioxidant activities, anticholinesterase activities, in vitro.

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EXAMINATION OF ANTIMICROBIAL ACTIVITY OF PULICARIA DYSENTERICA (L.) BERNH

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ABSTRACT

The genus *Pulicaria* in Turkey is represented by 6 species, *P. arabica*, *P. armena*, *P. dysenterica*, *P. odora*, *P. sicula* and *P. Vulgaris*. *Pulicaria dysenterica* is known as “Çayır otu, yara otu, papatya” in Turkey. In traditional medicine, it is used for constipation, the treatment of abdominal pain, stye in eye, cold, bronchitis, inflamed wound, also as carminative, diuretic. Also the plant is used against dysentery. In this study, the antimicrobial activities of ethanol (PDE) extract and its fractions (hexane (PDH), chloroform (PDC), ethyl acetate (PDEA), and aqueous ethanol (PDSE)) of *Pulicaria dysenterica* were also evaluated. Antimicrobial activity against *Staphylococcus aureus* ATCC 29213, *Staphylococcus epidermidis* ATCC 12228, *Escherichia coli* ATCC 25922, *Enterococcus faecalis* ATCC 29212, *Klebsiella pneumoniae* ATCC 4352, *Pseudomonas aeruginosa* ATCC 27853, *Proteus mirabilis* ATCC 14153, *Candida albicans* ATCC 10231, *Candida tropicalis* ATCC 750 and *Candida parapsilosis* ATCC 22019 were determined by the microbroth dilutions technique using the Clinical Laboratory Standards Institute (CLSI) recommendations. PDE and PDH extracts showed moderate activity against *Candida tropicalis* with MIC values of 312 µg/mL. All extracts (except PDE) with MIC values of 625 µg/mL had moderate activity against *Candida albicans*. PDH, PDC, and PDEA extracts exhibited moderate antifungal activity against *Candida parapsilosis* with MIC values of 625 µg/mL. All extracts against *Staphylococcus aureus* were found to have poor antibacterial activity with MIC values of 1250 µg/mL. PDC showed moderate activity with a MIC value of 625 µg/mL, while PDH with a MIC value of 1250 µg/mL showed weak antibacterial activity against *Staphylococcus epidermidis*. This is the first study to examine the antifungal effect of *Pulicaria dysenterica* on *Candida* species and the results of this study showed that extracts are effective on *Candida* species.

KEYWORDS

Examination of antimicrobial activity of Pulicaria dysenterica (L.) BERNH.

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Poster Session 14

Submission ID: 1837

DETERMINATION OF ANTIFUNGAL AKTIVITES OF PHELLINUS IGNIARIUS AND PHELLINUS LUNDELLII

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ABSTRACT

: Fusarium species, known as plant pathogens, cause bottom rot, leaf and spike burn and rot in various cereal products. Grain such as wheat, corn oast, rye and other plant foods such as peanuts, tomatoes and potatoes and they can form toxins. In this study, antifungal aktivites of two Phellinus (Phellinus igniarius and Phellinus lundellii) species collected from Kırıkkale province were investigated. Samples were taken from solid media and ethanol and methanol ekstrakt were prepared and applied againts two Fusarium(Fusarium crookwellense and Fusarium oxysporum) by disk diffusion method. As a result of this study, it was determined that the ekstrakts of Phellinus igniarius prepared in ethanol and methanol had antifungal effect on Fusarium oxysporum and Fusarium crookwellense. It has been ebserved that the ethanol-ekstrakte ekstrakt of Phellinus lundellii can not have antifungal activity. It was observed that the ethanol and methanol ekstrakt of Phellinus lundellii could not have antifungal activity Fusarium crookwellense.

KEYWORDS

Antifungal aktivites, Phellinus, Fusarium, Türkiye

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Poster Session 14

Submission ID: 1838

THE USE OF AROMATIC PLANTS AND SPICES IN VEGETABLE OILS: FLAVORED OILS

ENES BERBER¹, DERYA ARSLAN¹, AYŞENUR ACAR¹, HASAN HÜSEYİN KARA²

ABSTRACT

Spices have been used by many cultures since ancient times in order to enhance the flavor and aroma of foods, and generally have antioxidant and antimicrobial properties. Many aromatic plants and spices are known to increase the nutritional value and shelf life of foods. Today, synthetic antioxidants such as BHT and BHA are used as additives to increase the shelf life of oil-rich foods. Careless use of many synthetic additives has significant health risks. Many antioxidant active ingredients found in spices and herbs have been used to aromatize vegetable oils to increase the oxidative stability of the product. In addition to spicy aromas, it is preferred because of the reasons such as very low health risks, higher consumer acceptance and increased bioactive qualities of the product. This increases the interest in spices as antioxidant sources. There are examples in the world where various vegetable oils such as soy and canola are aromatized with aromatic herbs and spices, the most common application in the world and in Turkey is the aromatization of olive oils. Turkish food codex olive oil and pomace notification defines flavored olive oil as; "Olive oil which is obtained by adding different spices, plants, fruits and vegetables and in terms of other characteristics, carries the properties of the products of its category within the scope of this notification." Flavored olive oil is also expressed in terms of aromatized, aromatic, gourmet and boutique olive oil in sector jargon. Seasoning of olive oil is a process usually applied to natural extra virgin olive oils to increase nutritional value, enrich sensory properties and prolong shelf life. When the studies carried out in this matter are examined, aromatic plants and spices themselves can be added in crushing or kneading stages of olive oil production as well as plant infusions, extracts or essential oils can also be used. In addition, the incorporation rate of infusion or extracts of these different spices or plants and the time needed for infusion/maceration have also been the subject of studies. According to many studies carried out on olive oil, the seasoning of olive oil causes an increase in oxidative stability, along with studies in which the reduction in antioxidant activity and amount of phenolic components are also detected. It is reported that the combined use of aromatic plants has stronger positive effects.

KEYWORDS

Aromatized vegetable oils, aromatic plants, spices

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Poster Session 14

Submission ID: 1840

CULTIVATION OF TRUFFLES AND DEVELOPMENT PLANS ECO-SYSTEM MANAGEMENT FOR THE TRUFFLE INDUSTRY

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ABSTRACT

Throughout, human history. Truffles have been consumed in many countries and have been used as folk medicine and in cosmetic products. The quality and variety of truffles demanded by peoples has increased as consumers desire more and ecologically is a key of living sustainably in semi-arid and arid areas. In both ecological and socio-economic importance setting, the inoculating plants with mycorrhizal fungi considered greatly a good solution for in a degraded ecosystem where the truffles yield lost or threatened for many reasons: ecological factors influence, human activities and methods use for harvested it. The aims of this research has demonstrated that the production of mycorrhized plant by inoculation seedling of likely hosts plant with slurry of truffle spores is one inoculation technique encourage the cultivation of truffles .

KEYWORDS

key words: slurry of truffle spore, mycorrhized hosts plant, cultivation.

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ANTIOXIDANT AND VOLATILE COMPOSITION OF ESSENTIAL OIL FROM MYRTUS COMMUNIS IN TURKEY

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ABSTRACT

The isolated essential oils from seven air-dried plant species were analyzed by gas chromatography–mass spectrometry (GC-MS). The essential oil from *Myrtus communis* was characterized by the presence of α -terpinene (34.4%), cineole (9.6%), linalool (6.2%), α -pinene, camphene, cineole, terpineol, terpinen-4-ol, thymol, caryophyllene. Antioxidant activity was evaluated as a free radical scavenging capacity (RSC), together with the effect on lipid peroxidation (LP). RSC was assessed by measuring the scavenging activity of essential oil on 2,2-diphenyl-1-picrylhydrazil (DPPH) and hydroxyl radical, together with the effect on lipid peroxidation (LP). RSC was assessed by measuring the scavenging activity of essential oil on 2,2-diphenyl-1-picrylhydrazil (DPPH) and hydroxyl radicals. Effect on LP was evaluated following the activities of essential oil in Fe²⁺/ascorbate and Fe²⁺/H₂O₂ systems of induction. Investigated essential oil reduced the DPPH radical formation (IC₅₀ = 7.05±0.26 μ g/mL).

KEYWORDS

GC-MS analysis; essential oils; Myrtus communis, antioxidants.

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THE EXTREMELY USE OF OILS OBTAINED BY COLD PRESS (COLD PRESS) OF SOME PLANTS

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ABSTRACT

MULBERRY SEED OIL Latin: Oleum Morus alba Mulberry (Morus alba) is a tree-shaped plant from the family Moraceae. It is known that the oil obtained from the cold press method of mulberry cores is rich in especially essential fatty acids and vitamin E vitamins. It is stated that when used as a mouthwash in the treatment of oral wounds due to its antiviral and antibacterial properties, it can also be used in the treatment of throat pain, tonsillitis, improvement of mouth and teeth wounds and in the treatment of infections caused by candida species fungus known as thrush in children. It has also been reported that antiinflammatory, antipyretic and antitussive corticosteroids may be used to support the treatment of diseases such as mouth-throat infections, asthma and arthritis (joint inflammation). CHIA SEED OIL Latin: Oleum Salvia hispanica Chia (Salvia hispanica); It is a plant of Lamiaceae family like island tea. The most important feature of oil obtained by the cold press method of Chia seed, which is known to have many health benefits; The amount of herbal omega-3 ALA (Alpha Linolenic Acid) is at a high level. It is used for the treatment of Metabolic Syndrome patients with the help of treatment, support for weight loss, support to increase the endurance of athletes, anticoagulant and antihypertensive properties, cardioprotective and antiinflammatory effect, nutritional support (salat and yoghurt ease of use by joining) are reported to be able to be used as support in many diseases. The level of ORAC (Oxygen Radical Absorbance Capacity) indicated as an antioxidant capacity value is very high and it is reported that it can help the athletes to increase their stamina during competition and training. HEMP SEED OIL Latin: Oleum cannabis Cannabis oil produced by the Cold Press method contains essential polyunsaturated fatty acids and tocopherols such as omega 3 and omega 9. The ideal omega-3 / omega-6 ratio, containing hemp oil, is an ideal nutritional supplement for a healthy and balanced diet. Anticonvulsant and antiepileptic properties, antidepressant and antihypertensive properties, antioxidant and antiinflammatory properties, hypercholesterolemia, nutritional support (ease of use by adding to salatas and yoghurts) and support for many diseases for anti-amyloid and antiepileptic properties, help to reduce tremor in dystonic movement disorders, healthy and balanced nutrition can be used as. FLAX SEED OIL Latin: Oleum Lini Almost every part of flax (Linum usitatissimum) plant has commercial use, especially flaxseed is very important in terms of food and nutrient sectors. Especially strong and durable fibers found in the structure are of great importance in terms of usage areas. The oil obtained by cold press method from flax seeds is predominant due to the presence of α -linolenic acid (ALA, 18: 3n-3) and lignan in the content of flax seed oil. A number of studies have shown that atherosclerosis plays an important role in increasing secondary mortality and morbidity to cardiovascular disease (CVD). Recent studies have shown that the presence of omega-3 fatty acids in daily diets is effective on preserving the heart, that omega-3 fatty acid ingestion of 0.5-2 grams per day is effective in protecting against cardiovascular diseases and that there is no additional effect of taking them at higher doses. Support for osteoporosis

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and menopause treatment has been considered as a source of herbal Omega 3 (ALA), especially in vegetarians, in adults who can not consume fish. In patients with chronic constipation (constipation) it is known that in addition to being a good source of nutrients due to treatment support and fibrous structures in their contents, they also increase bowel movements in adults.

KEYWORDS

Cold press, mulberry, chia, hemp, flax

Poster Session 14

Submission ID: 1846

CHIA SEED: A NEW FUNCTIONAL FOOD

ŞEHRİBAN UĞUZ¹, SEVAL ANDIÇ¹

ABSTRACT

Chia (*Salvia hispanica* L.), a biannually cultivated herb, is one of the oldest crops cultivated for centuries by the Aztec tribes (natives before Hispanic colonization) in Mexico. The seeds were used for the preparation of medicines, foods and paintings by Aztecs and Mayas. Chia disappeared as crop for centuries and was rediscovered in the middle of the 20th century. The chemical composition consists of protein (15–25%), fats (25% to 40% oil with 60% of it comprising ω -3

KEYWORDS

Chia, Salvia hispanica L., functional food,

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Poster Session 14

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ANTIBACTERIAL EFFECT OF ESSENTIAL OIL OF ROSA DAMASCENA MILL. ON PSEUDOMONAS TOLAASII

ESİN BASIM¹, HÜSEYİN BASIM¹

ABSTRACT

Rose essential oil has been used to natural beauty treatments for thousands of years. Rose oil is a good bactericide as well as it has a strong antimicrobial, antiseptic, antiparasitic and antibacterial activity. Essential oil of *Rosa damascena* was obtained by steam distillation from petals of *R. damascena* grown in the Isparta province of Turkey. In this study, antibacterial activities of different concentrations (1,10,20,30,40,50 μ g/ml) of rose (*Rosa damascena*) oil were investigated by in vitro agar diffusion and volatility tests against *Pseudomonas tolaasii*, a causal agent of bacterial brown blotch disease on cultivated mushrooms (*Agaricus bisporus*). It was determined that the essential oil showed an effective antibacterial activity against *P. tolaasii* strains comparing with those of *Thymbra spicata* (100 μ g/ml) essential oil and Streptomycin (100 μ g/ml). The *R. damascena* essential oil has a potential to be used a natural protectant for bacterial brown blotch disease pathogen, *Pseudomonas tolaasii*. Future detailed works needs to be completed for a practical use of the essential oil to control bacterial brown blotch disease on cultivated mushrooms. This is a first report of antibacterial activities of the rose oil against *P. tolaasii*.

KEYWORDS

Agaricus bisporus, *Pseudomonas tolaasii*, Brown blotch disease, Rose Oil, *Rosa damascena*

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¹AKDENİZ ÜNİVERSİTESİ

Poster Session 14

Submission ID: 1848

**PRELIMINARY SEARCH FOR CAPILLARY PERMEABILITY
EFFECTS OF SELECTED MEDICINAL PLANTS AJUGA
CHAMAEPITYS, PHLOMIS GRANDIFLORA AND BONGARDIA
CHRYSOGONUM**

CEYLAN AKA¹, UFUK KOCA ÇALIŞKAN¹, ESRA AKKOL¹

ABSTRACT

Objective / Purpose: Capillary permeability is meaning of permitting capacity of a blood vessel wall. If this capacity/ability deteriorates, vascular diseases (such as atherosclerosis and peripheral artery disease, haemorrhoid, aneurysm, peripheral venous disease and varicose veins blood clots in veins (vte), lymphedema) occur. Our aim is to determine potential antiinflammatory effect of *Ajuga chamaepitys* (L.) SCHREB. (AC), *Phlomis grandiflora* H. S. THOMPSON var. *grandiflora* H. S. THOMPSON (PG), and *Bongardia chrysogonum* (L.) SPACH. (BC) by applying acetic acid-induced vascular permeability models. Material and Methods: Shade dried plant samples were extracted with pure methanol, and the extracts were evaporated to the dryness. Previously applied method was used for the animal experiment (Whittle, 1964; Yesilada and Kupeli, 2007). According to that method, each plant extract (400 mg/kg dose) was administered orally to a group of 6 BALB/c mice, waited for 30 min then the mice were injected with 0.1 mL of 4% Evans blue at the tail, after 10 min waiting period 0.5% (v/v) AcOH was injected i.p. and waited for 20 min. The mice were killed by dislocation of the neck, and the viscera were exposed and irrigated with distilled water, which was then poured into 10 mL volumetric flasks through glass wool, 0.1 mL of 0.1N NaOH solution was added, each flask was made up to 10 mL with distilled water. The absorption of the final solution was measured at 590 nm. In control animals, instead of the extract 0.5% CMC was given orally, and they were treated in the same manner as described above. Results: According our preliminary results, % inhibition values of acetic acid induced capillary permeability were determined as *Ajuga chamaepitys*, *Phlomis grandiflora* and *Bongardia chrysogonum*) respectively. AC and PG have higher potent effect on capillary permeability. These two plants are hopeful for vascular diseases. The results will be discussed.

KEYWORDS

capillary permeability, acetic acid-induced, phlomis, ajuga, bongardia

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¹GAZİ ÜNİVERSİTESİ ECZACILIK FAKÜLTESİ

INVESTIGATION OF MACRO AND MICRO MINERAL CONTENT OF SOME MEDICINAL AND AROMATIC HERBS AND IT'S INFUSION

ADEM GÜNEŞ¹, ERMAN BEYZİ², BAŞAK ORUÇ¹

ABSTRACT

Some of the elements to create organic structures are found in trace amounts, but in some cases they are too large to be toxic or toxic. While the levels of the trace play an important role in the fulfillment of metabolic activities, their deficiencies or toxic amounts are also causing diseases. In this study, crop raw and packaged sage, cumin, nigella and melissa were collected which grow naturally in our country. These herbs' direct and hot water extraction are analysed to check variations of the element contents (K, Na, Ca, Mg, P, Cu, Fe, Zn, Ni, Mn, Cr, Pb). As a result of the studies done on the plants, the nutrient contents of the plants differed. This study was determined cumin is the highest element content and melissa is the lowest element content in herbs samples. As a result of the examinations, Pb content of toxic element is higher in Cemen plant, Cd content is higher in Cemetery plant. In general, the amount and diversity of macro-micro elements and heavy metals found in medical plants can vary depending on the physical, chemical and biological properties of the soil and climate factors.

KEYWORDS

Medicinal herbs, macro and micro mineral

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EFFECIENCY OF PROPOLIS EXTRACT-DELIVERY NANOCOMPOSITE SYSTEM ON WOUND CARE

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ABSTRACT

Propolis is a strongly adhesive resinous substance collected, transformed and used by bees to seal holes in their honey combs, smoot houtthe internalwalls and protect the entrance against intruders It has a long history of being used in traditional medicine and been reported to have a broad spectrum of biological activities, such as anticancer, antioxidant, antiinflammatory, antibiotic, andantifungalactivities The biological or pharmacological activity is associated with phenolic compounds, mainly with potential antioxidantnamely "flavonoids" andaromaticacids. Flavonoids are frequently used as the main index for product evaluation of propolis. Propolis has recently become popular as a health drink and it claimed to prevent diseases such as dermatological wounds, inflammation, heart disease, diabetes, cancer, etc. Electrospinning is a unique fiber spinning technique of producing nanofibers from a large variety of bulk starting materials in a moderately easy, repeatable and simple fashion.It is a simple and inexpensive process that uses an electric field to control the formation and deposition of nanoormicro-sized polymeric nanofibers from a liquid polymer. Electrospun nanofibrous fabrics with high specific surface area, aspectratio and porosity as a result of random deposition of fibers, couldhave a greatpotential in biomedical applicationssuch as tissue engineering scaffolds, drug delivery carriers, wound dressings etc. In this study, potential of propolis extract (bee glue) solution based electrospun nanocomposite fabrics as wound dressing were investigated macroscopically in vitro experiments. PVA polymer with different concentrations were dissolved in water at 60 oC and then propolis extract was added into polymer solution. %5 PVA / %5 Propolis sol., %7 PVA / %7 Propolis sol., %9 PVA / %9 Propolis sol., nanocomposite fabrics were produced by electrospinning method over polypropilen nonwoven fabrics. SEM analyses tests were applied for the nanocomposite fabrics as wound dressing. In-vitro experiments showed that antimicrobial effectiveness of bacterial solutions with nanocamposite fabrics were better than those of not including nanocomposite fabrics bacterial solutions. According to investigations nanocomposite fabrics with propolis sol. were provided antimicrobial effect against to gram positive bacteria (S. aureus) and not provided antimicrobial effect against to gram negative bacteria (A baumannii and P. aeruginosa). The results indicated that the electrospun PVA/Propolis extract nanocomposite fabrics as wound dressing provided a good means for wound healing caused by gram positive bacteria.

KEYWORDS

Nanocomposite, PVA polymer, propolis, wound dressing

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Poster Session 14

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THE DETERMINATION OF WILD MEDICAL PLANTS GROWING IN ERZURUM AND USE OF THEM AGAINST VARIOUS DISEASES

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ABSTRACT

As in whole world, in our country, plants existing in the natural flora for different purposes has been used as a part of traditional cultere from past to today. Plants are of great importance in the prevention and treatment of diseases or the maintenance of health. According to the investigations of World Health Organization, there are approximately 20.000 plants used for medical purposes. Our country also has a rich flora in terms of medicinal plants. Medical plants are widely used by the people in the city of Erzurum located in eastern Anatolia. The aim of present study is to determine which wild medicinal plants growing in Erzurum are used for which illness by the people living in this city. This study was carried out on 73 volunteers, were selected randomly, living in Erzurum. The mean age of they was 41.34 ± 15.23 (mean \pm standard deviation). 34 (46.6%) of the participants were women, 39 (53.4%) were men. The data were collected through a questionnaire, also including open-ended questions, prepared by the researchers. it was asked which wild medicinal plants growing in erzurum had been used for which illness by participants. Also, participants' preferences were asked about plants and medicines in order to use in the treatment of diseases. Descriptive statistics, chi-square and Fisher's exact tests were performed for the statistical analysis of data. In this research, 31 different medicinal plants were detected, growing in Erzurum and used against various diseases. The findings of the research showed that the most commonly consumed plants are giant fennel (*Ferula communis*) (39.7%), Rheum ribes (known as "ışkın" in East Anatolian of Turkey) (19.2%), Nettle herb (*Urtica dioica* L.) (13.7%), rosehip (*Rosa canina* L.) (11%), mallow (*Malva sylvestris*) (9.6%), rumex crispus L. (8.2%). 68.9% of the participants consumed giant fennel herb stated that this plant was used for diabetes mellitus, and 31.1% were used for the treatment of infectious and respiratory diseases, and cancer and hypertension. It was found that the Rheum ribes was used for cancer (42.8%), diabetes mellitus (28.6%), respiratory and gastrointeninal diseases. Nettle herb was used for cancer (40%), respiratory (20%), infectious (20%) and rheumatic (10%) diseases, and diabetes mellitus (10%). All participants using rosehip consumed it against respiratory diseases. The participants stated that they used mallow in the treatment of the infectious, respiratory and gastrointeninal diseases. In addition to, it was determined that rumex crispus L. was commonly used in hemorrhoids treatment (50%). Participants' preferences (plants, medicines or both of them) were asked for the treatment of diseases. The preferences was compared with social security, economic situation, sex, education levels, occupation and age groups (the youngs, adults and the olds). All of the participants who did not have social security preferred to use the plant. No significant difference found between the age groups and the preference, but most of the olds (50%) preferred plants to medicines. There was no significant

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difference between women and men in terms of preferences, but it was found that most of men (53.8%) preferred using the plants. The results of this research showed that most commonly consumed wild medicinal plants by people living in Erzurum are giant fennel, rheum ribes, Nettle herb, rosehip, mallow, rumex crispus L.. The wild medicinal plants are used, especially, against diabetes, cancer, hemorrhoids, and infectious, respiratory, gastrointestinal and rheumatic diseases. Biological activity studies are needed to understand the effects of these plants on the treatment of these diseases.

KEYWORDS

Health, Wild Medicinal plants, Erzurum

Poster Session 14

Submission ID: 1853

INVESTIGATION OF SOME LAVENDER ESSENTIAL OILS COMPONENTS USING UV, FT-IR AND GC ANALYSIS

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ABSTRACT

ABSTRACT In recent years, the value of medical and aromatic plants has increased considerably. The flowers of *Lavandulastoechas*, which grow in maki areas of Western Anatolia, are used as analgesic and expectorants. English lavender (*L.angustifolia*) is used as essence. Lavender essential oil samples were analyzed using gas chromatography to determine the levels of camphor, linalool and linalyl acetate which is the criteria of the essential oil quality. The purpose of this study was to determine some spectroscopic and chromatographic properties of essential oils isolated from lavender (*L. angustifolia*), *Lavandula stoechas* and *lavandin* (*Lavandula x intermedia*) harvested in 2016 in Middle Anatolia. The essential oils, isolated by steam distillation, were analyzed by gas chromatography (GC), FT-IR and UV. In the FT-IR spectra OH, C=C, C=O and C-O bending and stretching peaks were determined. In the UV analyzes, characteristic absorption bands of linalool, linalylacetate and flavanoids, which are important main components of lavender, were observed in the range of 200-270 nm.

KEYWORDS

Lavander, essential oil, UV, FTIR

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Poster Session 14

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SPECTROSCOPIC INVESTIGATION OF ESSENTIAL OIL COMPONENTS IN SOME THYME SPECIES

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ABSTRACT

In many industries such as medicine, food, perfume and cosmetics, essential oils obtained from plants are used as raw materials. Thyme, is an important aromatic and medicinal plant containing an essential oil used widely in medicine and food industry. By the method of water steam distillation of thyme, 2 - 8%, an aromatic oil is obtained. These volatile fats are carvacrol and thymol from monoterpene phenols. Thyme essential oil has important properties such as antispasmodic, antirheumatic, antiseptic, bactericidal, diuretic, expectorant, insecticide etc. The purpose of this study was to determine some spectroscopic and chromatographic properties of essential oils isolated from *Thymus vulgaris*, *Satureja spicigera* and *Origanum vulgare* subsp. *Gracile*, harvested in Middle Anatolia. These essential oils, isolated by water steam distillation, were analyzed by gas chromatography (GC), UV and FT-IR. In the UV analyzes, characteristic absorption bands of carvacrol and thymol, which are important main components of thyme, were observed in the range of 200-275nm. In the FT-IR spectra bending and stretching peaks of phenols are observed.

KEYWORDS

Thyme, essential oil, UV, FTIR

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Poster Session 14

Submission ID: 1855

ALTERNATIVE FOR THE FUTURE: NATURAL FOOD COLORS

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ABSTRACT

Color additives are used to color many beverages, foods, and sweets in the world for many reasons. For example, food colors are used by the food and beverages industry to improve the color of the food which is lost while their processing. Many synthesized dyes were easier and less costly to produce and were superior in coloring properties when compared to naturally derived alternatives. These compounds have drawn considerable attention in recent years, not because of their coloring properties, but due to their potential healthpromoting effects. Amounts of artificial food dyes and added sugars in foods and sweets commonly consumed by children. Clinical guidance is given to help caregivers avoid artificial food dyes and reduce the amount of sugars in children's diets. Based upon many cell-line studies, animal models, and human clinical trials, it has been suggested that many natural food colorants, due to their potent antioxidant property, possess anti-inflammatory and anti-carcinogenic activity, cardiovascular disease prevention, obesity control, and diabetes alleviation properties. The food dyes market is segmented based on types which include synthetic and natural colors. Synthetic colors still hold a major share, but natural colorants are the fastest growing segment due to consumer consciousness especially in developed countries. The aim of this study is to draw attention to the value of natural food colors in terms of human health and to highlight Turkey's potential for natural food colorants.

KEYWORDS

Color additives, natural food colorants, natural antioxidants

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SORPTION OF ANTHOCYANINS FROM HIBISCUS FLOWERS ONTO DIATOMITE FROM AQUEOUS SOLUTION

ÖZKAN DEMİRBAŞ¹, ERDAL TALAŞ¹

ABSTRACT

Anthocyanins are natural colorants found in various colors such as orange, pink, red, violet to blue in the flowers and fruits of the vascular plants in nature. Anthocyanins are harmless and water soluble. Another important feature of anthocyanins is antioxidant activity, which is known to play a vital role in preventing neuronal and cardiovascular diseases, cancer and diabetes. The main colorant of the hibiscus flower is cyanidin-3-sophoroside. Diatomite is a silica sedimentary rock formed in the form of an amorphous silica containing a small amount of microcrystalline material in its structure. Considering these properties, in this study, the sorption kinetics or rates of the main colorants of hibiscus flowers to the diatomite surface in aqueous solutions was investigated. The determination of sorption, adsorption or desorption kinetics or rates is very important for elucidating the mechanism of these phenomenon. For this purpose, a series of experiments were carried out in order to better explain the mechanism of the sorption of the cyanidin-3-sophoroside molecule to the diatomite surface. The constants of the pseudo first and second order kinetics equations are calculated with the experimental data. Mass and intra-particle diffusion constants are also determined. Dried hibiscus flowers and diatomite particles used in the experiments were grounded and sieved to have a particle size below 50 micrometres. UV-Vis spectra of hibiscus flowers in different masses in aqueous solutions were as follows. The maximum wavelength, λ_{max} , from the graph is 520 nm for aqueous solutions containing hibiscus flowers. A linear relationship was observed between the hibiscus mass in the solution and the absorbance values of the solution at 520 nm. Thus, quantitative analysis has also been done in this study. Experimental studies were carried out with various parameters. These are solution temperature, time, equilibrium pH of solution and the mass and particle size of the hibiscus flowers and diatomite in solution. As a result of the experimental studies, no effect of the contact time on the sorption was determined. However, increasing pH and solution temperature increase sorption rate, while particle size decreases. In addition, the particles were characterized by FTIR-ATR, SEM and BET surface area measurements and TG analyzes.

KEYWORDS

Sorption, hibiscus flowers, diatomite, anthocyanins, kinetics

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QUALITATIVE AND QUANTITATIVE ANALYSIS OF NATURAL ANTIOXIDANT SAGE(SALVIA OFFICINALIS)

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ABSTRACT

Sage (*Salvia Officinalis*) is a 50-100 cm high, purplish blue flowering, simple leafy, perennial and bitter plant. It grows on mountain slopes, is widely cultured. 1-2.5% contains essential oil, tannins and bitter substances. They're very rich in phenols, flavonoids and flavonols. The so-called "apple oil" or "bitter apple oil" is also produced from Anatolian sage. Sage is widely used for cold due to antiinflammatory, antimicrobial effect^{1,2} In this study, the sage plant collected from the Mediterranean region was extracted with different solvents and methods, and the yields were compared. The quantities of rosmarinic acid, carnosic acid and carnosol, which are responsible for the antioxidant capacity of the sage plant, were analyzed qualitatively and quantitatively by an HPLC device; The volatile oils in the extract were determined by GC-MS instrument and the total phenol content in terms of gallic acid in UV-VIS spectrophotometer was also examined. For this purpose, 70 mesh sieves were sieved after the sage plant was treated. Maceration were done for sages at 45 ° C with 70% ethyl alcohol in varying ratios (1: 6) and time (3; 6; 8; 10 hours); 100% methanol and 100% ethanol extractions; Soxhlet extraction efficiencies were compared. The proportions of rosmarinic acid and the amounts of carnosic acid and carnosol were analyzed in the extracted at UV detector and 280 nm wavelength by a Thermo Scientific Uimate HPLC instrument. As a result of the experiments, a maceration method with 70% ethanol with 25% extraction yield was chosen. As a result of calculations on the standard graphic of rosmarinic acid in analytical standards,; It was determined that 7.45 mg "rosmarinic acid"; 3,42 mg "carnosol + carnosic acid" in gram 70% ethanol extract of sage; Volatile components of the ethanol extract were detected on the Agilent brand GC-MS; The extract was found to contain high levels of cineol, camphor, borneol components.

KEYWORDS

Sage(Salvia Officinalis), Extract, HPLC.

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KINETICS OF INTERACTION BETWEEN SILICA SURFACES AND ANTHOCYANINS FROM HIBISCUS FLOWERS

ÖZKAN DEMİRBAŞ¹, ASLIHAN RÜMEYSA TEMİZ¹

ABSTRACT

Anthocyanins occur in all tissues of higher plants, including leaves, stems, roots, flowers, and fruits. Anthocyanins are glycosides of anthocyanidins, the basic chemical structure was given in Figure 1a. Cyanidin-3-sophoroside, the main colorant of the hibiscus flower, is also an anthocyanin. Despite the great potential of applications that anthocyanins represent for food, pharmaceutical, and cosmetic industries, their use has been limited because of their relative instability and low extraction percentages. Their use in textile is negligible as they lack affinity for the fiber and cannot sustain washing. Currently, most investigators are engaged in solving the problems that are associated with isolation and stability of anthocyanins, their purification, identification and their end uses. For this purpose, in this study, the sorption kinetics of the cyanidin-3-sophoroside molecule, main colorants of hibiscus flowers, to the silica surface in aqueous solutions was investigated. Dried hibiscus flowers and silica particles used in the experiments were grounded and sieved to have a particle size below 50 micrometres. UV-Vis spectra of hibiscus flowers in different temperature in aqueous solutions were given in Fig. 1b. The maximum wavelength, λ_{max} , from the graph is 520 nm for aqueous solutions containing hibiscus flowers. Experimental studies were carried out with various parameters. These are solution temperature, time, equilibrium pH of solution and the mass and particle size of the hibiscus flowers and silica in solution. As a result of the experimental studies, no effect of the contact time on the sorption was determined. However, increasing pH and solution temperature increase sorption rate, while particle size decreases. The constants of the pseudo first and second order kinetics equations are also calculated with the experimental data. Mass and intra-particle diffusion constants are also determined. In addition, the particles were characterized by FTIR-ATR, SEM and BET surface area measurements and TG analyses.

KEYWORDS

Sorption, hibiscus flowers, silica, anthocyanins, kinetics

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RATIONAL USE OF MEDICAL AND AROMATIC PLANTS

ŞADUMAN KARACA¹

ABSTRACT

Throughout the history of mankind, plants are known not only for food but also for long-lasting medical use as the data gathered from many archaeological excavations suggest. "Today, more than 375,000 plants have been identified in the world, but it is registered in the literature that only about 20,000 of them have been utilized by the people. "A large proportion of the vast majority of plants make up the medical and aromatic plant group "(Ceylan, 1996). Today, medical and aromatic plants (TAB) are generally grouped as spice, cosmetics, paint, pleasure, aromatherapy and phytotherapeutic use. Within the framework of this presentation, TAB will only cover medical plants, therefore plants that are included in field of therapy (phytotherapy). The fact that most of the world's diseases can not be treated and even diseases becoming more complicated from day to day for the last 20-30 years, has been engaging health institutions and individuals not only in our country but all over the world. In parallel with advancing technology, the emphasis on human health increases day by day, and the desperation against illnesses is also worrying. While alternatives are being sought for the treatment of diseases all over the world, the past treatment methods have come to the fore as a remedy for today's health problems. Phytotherapy stands for Plant Therapy, so it is useful to emphasize the rationality of plant drugs prepared for therapeutic purposes, because if the plant drug is not salutiferous, the disease process will further progress and even new diseases will be created involuntarily rather than healing it. Thus, since the Hippocrates, the physician has acted on the rationale of "Do not harm human beings first", which is the main rule. The second important step in the rational use of medical plants is the competence of the person who is practicing this profession. Here, it is essential to have a basic medical knowledge consisting primarily of the anatomy, physiology and pathology of the human organism. With this knowledge, a physician does not yet have a qualification to treat with plants. It also requires the healing knowledge of plants, which requires a thorough education. Only by integrating the knowledge of both of them, the physician will initiate a rational, healthy and long-term treatment process by taking the subject as an individual and applying a holistic treatment of the diseases as much as possible. The planned presentation is intended to present both the ideal criteria for plant drugs to the treatment practitioners in a rational way, as well as the rules that the specialists who will be practicing with plant drugs should pay attention to in the ideal environment, especially through the case of Germany, the country where this profession is applied in the most advanced stance through legal regulations and practices.

KEYWORDS

PHYTOTHERAPY, RATIONAL USE OF MEDICAL AND AROMATIC PLANTS

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¹ÜSKÜDAR ÜNİVERSİTESİ

Poster Session 14

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THE İMPORTANCE OF SAFFLOWER (CARTHAMUS TINCTORIOUS L.) AS A MEDICINAL PLANT, REGARDING İT'S ACTIVE SUBSTANCES

FATİH SEYİS¹, EMİNE YURTERİ¹, AYSEL ÖZCAN¹

ABSTRACT

More than 200 components are isolated from different parts (leave, flower and seed) up to now. The most known components are: flavanoids, phenylethanoids, coumarins, fatty acids, steroids and polysaccharides. 7 serotonin derivatives were isolated from safflower oil. The main components of safflower flowers is carthamin, an important flavanoid glycosides. İts flowers contains also arthamidin, isocarthamidin, quercetin, kaempferol, 6-hydroxykaempferol and its glycosides and hydroxysafflor yellow A, safflor yellow A, safflamin C, safflamin A, safflomin-A. Also lauric, miristic, palmitic, linoleic, arachidic and flavon luteolin and luteolin 7-O-beta-D-glucopyranoside and luteolin-7-O-(6"-O-acetyl)-beta-D-glucopyranoside are presents in *Carthamus tinctorius* flowers. Nikotiflorin, are present as a natural flavanoid in in the petals of *C. tinctorius*. An seconder metabolite, alkan-1,3-diols, was isolated from dried petals of safflower. The main essential oil componens of safflower flowers were determined as Caryophyllene, p-allyltoluene, 1-acetoxytetralin and heneicosane. An new quinokalkon C-glikoside, tinctormine was determined in safflower. The potentail use of safflower in phytotherapy and developments in its use as healing agent was discussed in detail. İt was determined that safflower has antioksidant, analgezik, antidiabetic, hepatoprotektic ve antihperlipidemic activities.

KEYWORDS

safflower, medicinal plant, active substances

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Poster Session 14

Submission ID: 1863

CHEMICAL CONTENT AND IMPORTANCE FOR COMPLEMENTARY MEDICINE OF TEA (CAMELLIA SINENSIS L.)

AYSEL ÖZCAN¹, EMINE YURTERİ¹, YUSUF ŞAVŞATLI ŞAVŞATLI¹, FATİH SEYİS¹

ABSTRACT

Tea belongs to the genus *Camellia*, family Theaceae, division Angiospermae in the plant kingdom. There are types with bushy forms as well as the single-stem types in cultivated types of tea plant. This plant is evergreen and the most valuable and most consumed drink after the water in all over the world. Tea produced from cultivated forms of the species *Camellia sinensis* (L) O. Kuntze can be obtained from the terminal bud and fresh leaves under this terminal bud forming at the tip of the young shoots on the cultivated plant. The black tea most consumed between processed tea products is obtained by withering, curling, oxidation, drying, classification and packaging processes of these fresh and non-fibber leaves. Four tea types can be obtained from plant: green tea, white tea, oolong tea and black tea. These tea types have medicinal and therapeutic effects in terms of their chemical compositions. The widely produced and traded tea types contain protein, carbohydrates, oils, polysaccharides, vitamins and minerals, caffeine, quercetin, kaempferol, flavonoids (catechin, epicatechin, epicatechin gallate, epigallocatechin, epigallocatechin gallate), gallic acid, chlorogenic acid, tanen and amino acid (total of 19 including theanine) in their structures. It has protective effects against coronary heart diseases, stroke, cardiovascular diseases, cancer, obesity, hypertension, arthritis, viral and inflammatory diseases and effects regulating to bone density due to its high antioxidant properties and chemical content. In this review, the bioactive substances in various tea types obtained from tea plants which is medically important and the importance of complementary medicine of these substances are discussed in detail.

KEYWORDS

Tea, complementary medicine, chemical composition

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Poster Session 14

Submission ID: 1865

THE MULTIPLICATION OF ORIGANUM SPP. COLLECTED FROM RIZE HIGHLANDS WITH SEED AND PERLITE

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ABSTRACT

The aim of this study was to determine the multiplication potential using seeds and cuttings of *Origanum* spp. collected from the highlands of Rize. Cuttings were obtained from material collected from nature and cuttings were cutted from the 2nd and 3rd node and were implemented with 1000 ppm and 1500 ppm IBA for 1 min and transferred to peat containing perlite. Seed were directly transferred to peat containg soil and the results showed us that success rate was 25 % in seed multiplication and 80% in multiplication with cuttings at 1000 ppm and 40 % in multiplication with cuttings at 1500 ppm..

KEYWORDS

Origanum, multiplication, perlite

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MEDICINAL İMPORTANCE OF WHITE TEA (CAMELLIA SINENSIS L.)

EMİNE YURTERİ¹, FATİH SEYİS¹, AYSEL ÖZCAN¹, YUSUF ŞAVŞATLI¹

ABSTRACT

It is possible to say that tea is the most consumed drink on the World after water. Specially şf Turkish tea is mentioned it has to be considered that tea takes it place at breakfast as well as in 5 o'clock service and also after meal as an irrepşlceable part of our culture. Tea is nowadays grouped according to its fermentation level as green and white (not fermented), partially poisoning (fermented) and oolong tea in three groups. The surplus or rarity of phenolic compounds in tea shows variation depending besides genotype/environment on cultivation package and on the process technology up to the last stage where tea is packaged. With the increase in number of processes in tea processing an increase in a and thearubigins and an decrease in the catechin group is given. The importance of unprocessed white tea is rising because of its high catechin content compared with other teas. Poliphenols, specially catechin derivatives are strong antioxidant agents and have explicit characteristics like oxidative stress inhibition and clenaing free radicals. İt is well known that oxidatiev damages are the reasons of diseases arising with develeptment of industry in the last years and it is also known that these damages are causing cardiovascular diseases, diabetes, neural crest damage and cancer in humans. Therefore, these antioxidants present in white tea are preventing the initiation or development o these diseases where endogenous defences are insufficient against reactive species.

KEYWORDS

White tea, health, medicine

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Poster Session 14

Submission ID: 1870

RESEARCH SOME OF QUALITY CHARACTERISTICS AND DRUG YIELD OF CULTURED MINT(MENTHA PIPERITA L.)

AYŞE SOLUK¹, YUKSEL KAN¹

ABSTRACT

This research has been conducted under Konya ecological conditions to determine the effect on yield and quality some characters of nitrogen fertilizers applied at the different doses of Mentha piperita in Medicinal Aromatic Plants laboratory and Medicinal and Aromatic plants Experimental Farm of Agriculture Faculty, Selcuk Universty. Experiment was designed and applied in randomized complete plot design with three replications in the year of 2012-2013. According to results of this research; plant height 31.50-48.50 cm, plants, drug herba yield 307,8-949,0 kg / da, essential oil yield 1.7-2.3 % and major essential oil component (mentol) was varried between 28.06 and 34.29 % . for M. piperita . According to the results of this research; The highest drug yield and essential oil yield for mint in Konya and similar ecology 10 kg/da nitrogen fertizer application is reasonabled.

KEYWORDS

M. piperita, fertilizer, essential oil, menthol

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Poster Session 14

Submission ID: 1871

DETERMINATION OF OPPORTUNITY TO USE AND HABIT OF MEDICINAL AND AROMATIC PLANTS IN ORDU PROVINCE (TURKEY)

MERYEM YEŞİL¹, EMEL KARACA ÖNER¹, MEHMET MUHARREM ÖZCAN¹, AYŞEGÜL KIRLI¹

ABSTRACT

In this research, it is aimed to show the opportunity of usage of medical plants and consumption habits which the concentration of most of the consumption in which medicinal plants of the people living in the province of Ordu. In this regard, such a comprehensive study has not been found before in the provinces and districts of Ordu. In the study, the questions to be asked in the questionnaire were carefully selected and the questionnaire survey was completed with face to face interviews with 310 people in the Ordu center and districts. It was applied to people aged 18 years and over by convenience sampling. The obtained data were analyzed with descriptive statistical methods and the habit of using medical plants by the people living in Ordu provinces, the most used medical plants, the use of medical plants in the treatment of diseases and answering questions such as if they are used, which diseases are used most frequently?. According to the results of the research, medicinal plant use which has been determined to be the most used medical and aromatic plant in the province of Ordu as mint, thyme, sage, lime and garlic and has emerged medicinal plant use has been complained as diseases such as colds, digestive system disorders, sedatives, sinusitis / migraine, blood pressure regulator. The vast majority of respondents indicated that they use medicinal plants for the treatment of diseases, and also the second place is to treat both illnesses and maintain health. Also for the question 'where do you get the medical plants from?' mostly the choice is 'pick up myself from the herbalist and nature' .

KEYWORDS

Medicinal plants, usage habits, species, diseases, questionnaire

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Poster Session 14

Submission ID: 1880

RESEARCH SOME OF QUALITY CHARACTERISTICS AND DRUG YIELD OF CULTURED MINT(MENTHA SPICATA L.)

AYSE SOLUK¹, YUKSEL KAN²

ABSTRACT

This research has been conducted under Konya ecological conditions to determine the effect on yield and quality some characters of nitrogen fertilizers applied at the different doses of *Mentha spicata* in Medicinal Aromatic Plants laboratory and Medicinal and Aromatic plants Experimental Farm of Agriculture Faculty, Selcuk Universty. Experiment was designed and applied in randomized complete plot design with three replications in the year of 2012-2013. According to results of this research; plant height 43.88-64.36 cm, drug herba yield 479,6-1283.00 kg / da, essential oil yield 1.4-2.0 % and major essential oil component (carvon) was varried between 49.70 and 61.50 % for *M. spicata*. According to the results of this research; The highest drug yield and essential oil yield for mint in Konya and similar ecology 10 kg/da nitrogen fertizer application is reasonabled.

KEYWORDS

M. spicata, fertilizer, essential oil, carvone

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Poster Session 14

Submission ID: 1890

**ANTIFUNGAL EFFECTS OF THE ESSENTIAL OILS OF CUMIN,
LAUREL AND THYME AGAINST MYCOGENE PERNICIOSA, A
CAUSAL AGENT OF WET BUBBLE DISEASE ON CULTIVATED
MUSHROOM AGARICUS BISPORUS (LANGE) SING.**

ESİN BASIM¹, HÜSEYİN BASIM¹

ABSTRACT

The essential oils of cumin (*Cuminum cyminum* L.), laurel (*Laurus nobilis* L.) and thyme (*Thymbra spicata* L.), which are consumed as spices were tested in vitro for their antifungal effects against *Mycogene perniciosa*, a causal agent of wet bubble disease of the cultivated mushroom (*Agaricus bisporus* (Lange) Sing.). Antifungal effects of the different doses (1,5,10,20,30,40,50,100,200,500 µg/ml) of the essential oils of cumin, laurel and thyme were investigated in vitro for inhibition effect on mycelial growth of the *M. perniciosa*. The sterile deionized water was used as a control. The 5 mm diameter disc taken with cork-borer from colony side of the 7-days pathogen fungus was placed on Potato Dextrose Agar (PDA) medium. The different doses of the essential oils were placed the middle of the petri dish cover. The petri dishes were wrapped by parafilm as well as the petri dishes were reversed in position and incubated at 27°C. The even lower doses of Thyme oil showed 100% antifungal effect on *M. perniciosa* mycelial growth. The antifungal effects of the cumin and laurel on *M. perniciosa* were different according to the doses of the essential oils used. The cumin, laurel and thyme essential oils have potential to be used as natural agents for controlling wet bubble disease pathogen, *M. perniciosa*. A practical use of the essential oils needs to be completed future detailed works on direct cultivated mushrooms. This is a first report of antifungal activities of the cumin, laurel and thyme oils against *M. perniciosa*.

KEYWORDS

: *Agaricus bisporus*, *Mycogene perniciosa*, *Cumin Oil*, *Laurel Oil*, *Thyme Oil*, *Wet Bubble Disease*

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Poster Session 14

Submission ID: 1891

**ASSESSMENT OF α -AMYLASE, α -GLUCOSIDASE,
CHOLINESTERASE INHIBITION AND ANTIOXIDANT ACTIVITY OF
ALCEA BIENNIS, ARUM DIOSCORIDIS AND GERANIUM LUCIDUM**

HASYA NAZLI EKİN¹, DİDEM DELİORMAN ORHAN¹, İLKAY ERDOĞAN ORHAN¹, MUSTAFA ASLAN¹

ABSTRACT

Diabetes mellitus is a growing health problem worldwide causing severe and costly complications including blindness, cardiac and kidney diseases and increases the risk of cognitive impairment and dementia. The high glucose level of diabetic patients is the most important factor for the increased formation of free radicals such as superoxide which causes oxidative damage. It is considered that insulin signalling dysregulation is important contributing factors in Alzheimer's disease pathogenesis. The aim of the study is to determine antidiabetic, antioxidant and anti-alzheimer effect of *Alcea biennis*, *Arum dioscoridis* and *Geranium lucidum* α -amylase and α -glucosidase enzyme inhibition methods were used to examine antidiabetic activity of 80% ethanol extracts of the plants. Acetylcholinesterase (AChE) and Butyrylcholinesterase (BChE) inhibition methods were used to determine antialzheimer activity. DPPH and DMPD radical scavenging, metal-chelation, ferric-reducing antioxidant power (FRAP) assays were utilized for screening of antioxidant activity. Total flavonoid and phenolic content of the extracts were calculated. Among the tested extracts *G. lucidum* extract (95.05 \pm 0.77%) displayed the strongest α -glucosidase inhibitory activity. All of the extracts were inactive against AChE. All plant extracts displayed lower inhibition than 50% inhibition against AChE and BChE. *G. lucidum* extract (1.4042 \pm 0.072) showed high FRAP activity. Our findings indicated that *G. lucidum* contains potential compounds having selective α -glucosidase inhibitory activity and our work is in progress to identify their active components.

KEYWORDS

Alzheimer, Antioxidant, Diabetes, Alcea biennis, Arum dioscoridis, Geranium lucidum

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HEPATOPROTECTIVE EFFECT AND PHENOLIC PROFILE OF THE POLLEN ETHANOL EXTRACT OF PINUS BRUTIA TEN.

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ABSTRACT

The genus *Pinus* L. belongs to the family Pinaceae. *Pinus brutia* Ten. has the widest distribution area in Turkey. The pollens from *P. brutia* are used internally to enhance body resistance in recent years. In this study, hepatoprotective activity of the ethanolic pollen extract (80 %) of *P. Brutia*, which is known to use against hepatic disorders in some parts of Turkey was administrated by gavage to CCl₄-induced Swiss albino mice at various doses (100, 200, and 300 mg/kg). The effects on triglyceride, HDL, LDL, and cholesterol levels as well as on liver marker enzymes, e.g. alanineaminotransferase (ALT), aspartateaminotransferase (AST), alkaline phosphatase (ALP), and total bilirubin, RBC, WBC as well as platelet level of mice were investigated. The extract caused a significant decrease on triglyceride, HDL and LDL cholesterol, liver enzymes, and protein level compared with the CCl₄ group ($p < 0.05$). Blood cells were improved with the extract level compared with the CCl₄ group ($p < 0.05$). These findings were further approved by histopathological observations of liver cells of mice and it was expected that restoration of these parameters might be due to presence of some bioactive compounds. Therefore, the phenolic profile of the pollen ethanol extract was determined. In conclusion, traditional use of *P. brutia* pollens against hepatic disorders has been confirmed in vivo.

KEYWORDS

Pinus brutia, Hepatoprotective

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Poster Session 14

Submission ID: 1900

USES OF MEDICAL AND AROMATIC PLANTS IN LANDSCAPE RESTORATION WORKS

HÜSEYİN ŞAHİN¹, MURAT ERTEKİN²

ABSTRACT

In the 21. century, rapidly developing technology and industrialization, as being a parallel with this development, the raw material need is increasing constantly. So, made a big production to meet this raw material is caused increasing of mining areas. The mining operation that can be made large production is the open pit operation. In this study, the effects of open pit operation to natural area is examined and explained how to apply of landscape repair for activity of finished areas. In this context, operated in order to make a production of sand + clay and after that in the landscape restoration of the sample area is explored by Sile Forest Management Directorate in the area of Saritas Ridge in Yesilvadi Village which is connect to Sile, Istanbul. The most important point of chosen this area, to be a sample application to the landscape restoration works in the future for our country in order to landscape restoration to the field, as planting the medicinal plants, aromatic plants and as well as stone pine. The datas of the measured characters of planted types are evaluated in the SPSS Statistical Program.

KEYWORDS

Mining, planting , medical and aromatic plants, geographic information system, landscape restoration

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Poster Session 14

Submission ID: 1901

NEW TECHNIQUES IN PROPAGATION AND BREEDING OF BAY LAUREL (LAURUS NOBILIS L.)

MURAT ERTEKİN¹

ABSTRACT

An investigation was carried out to consider the effect of polystimulins (PS), gibberellic acid (GA3) and stratification date on the growth of laurel seedlings. A total of 1200 seed treated with PS-A6+ PS-K and GA3 at two different concentrations before stratified, and a total of 315 seedling were investigated taking account of height, collar diameter, root length and number of leaves. To conclude, it is obvious that hormone application is very effective and has contributed significantly to the metabolism of laurel seedlings. According to this study, the application of GA3 to laurel seedlings has been recommended for practical use in nursery situations.

KEYWORDS

Laurus nobilis, Seed, Seedling, Germination, Pre-sowing Treatment

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EFFECTIVE METHODS ON DORMANCY BREAKING OF SEEDS OF AILANTHUS ALTISSIMA (MILL.) SWINGLE

ÖMER LÜTFÜ ÇORBACI¹, MURAT ERTEKİN²

ABSTRACT

This study was conducted in an attempt to break dormancy and thus enhance germination of tree of heaven (*Ailanthus altissima*) seeds. The another aim is to bring new proposals to uses for environmental design. Prior to sowing, seeds were treated as follows: (i) cold stratification of seeds at 4°C for 30 and 60 days; (ii) soaking in 500 mg/l polystimulin (PS-A6+ PS-K), gibberellic acid (GA3), or benzylaminopurine (BAP) for 24 h and stratification for 30 days; or (iii) soaking in 100 ml/l effective microorganisms (EM 1), 5000 mg/l PS-A6+ PS-K, GA3 and BAP for 72 h, followed by stratification for 45 days.

KEYWORDS

Tree of heaven, dormancy, seed, pre-sowing treatment, ornamental plant

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Poster Session 14

Submission ID: 1903

ALLERGENIC PLANTS OF ANKARA, TURKEY

CENNET TEKİN CÜRE¹, ÖMER LÜTFÜ ÇORBACI², MURAT ERTEKİN³

ABSTRACT

In this study, allergen-bearing species in parks and green areas in Ankara city center are mentioned. While plant types mentioned; it was evaluated separately as broad-leaved trees, handed trees and trees, broad-leaved trees, climbers and climbers, perennials and seasonal flowers. The evaluations provided detailed information about the general characteristics of the plant, flowering times, fruit formation, allergenicity, ecological requirements, and whether the species is domestic or foreign.

KEYWORDS

Allergy, Allergenic plant, Pollen, Community health, Landscape

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EFFECTS OF ADDITION OF TEREBINTH, SESAME AND FLAXSEED FLOUR TO BISCUIT FORMULATION ON THE QUALITY AND SHELF LIFE OF THE BISCUIT

AYŞENUR USLU¹, NILGÜN ERTAŞ¹

ABSTRACT

Shelf life is an important quality parameter in biscuits. One of the criteria that determines the shelf life is lipid oxidation. During the oxidation of the lipids in foods, the bad taste and smell that occurs as a result of the reaction. In recent years some researches asserted that oxidation products could be serious threat to health. Some of these compounds even have a carcinogenic effect. For this reason, the addition of natural antioxidant compounds to prevent lipid oxidation is mentioned by the researchers. Terebinth, flaxseed, sesame seeds are rich in antioxidants. Terebinth contain important minerals and vitamins, such as B and E vitamins, sodium, phosphorus, potassium, magnesium, iron, calcium, zinc, manganese, copper, cadmium and selenium. Sesame seeds have a strong antioxidants such as sesamol, sesamin, sterols and E vitamin. The oils obtained from of sesame seeds, show a considerable antioxidant effect according to the amount of tocopherols present in the sesame seeds. Flaxseed is an important herbal source of health beneficial compounds. The lignan in flaxseed contains has antioxidant properties. The flaxseed, rich in α -linolenic acid and good quality protein, is also a natural source of phytochemicals such as flavonoid, lignan and phenolic acids. Flaxseed is generally classified as "functional food", "bioactive food" and / or "endocrine active food". In order to increase the shelf life and improve the quality of the biscuits, terebinth, sesame and flaxseed flour added to biscuit formulations. In this study, the physical properties (Diameter thickness, spread ratio), chemical properties (moisture, ash, protein), nutritional properties (phytic acid, total amount of phenolic substance, mineral substance), and shelf life properties (PH, determination of induction times, determination of peroxide) were determined in biscuits enriched with terebinth, sesame and flaxseed flour.

KEYWORDS

Biscuit, terebinth, sesame seeds, flaxseed, antioxidant

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Poster Session 14

Submission ID: 1911

BUCKWHEAT (FAGOPYRUM ESCULENTUM MOENCH) IN HEALTH IMPORTANCE AND FEATURES AS A FUNCTIONAL FOOD

EMİNE FAYDAOĐLU¹, MEHMET REFIK YÜCEL²

ABSTRACT

In this study, the relation of buckwheat to health is evaluated and its features as a functional food will be emphasized. The buckwheat plant has a significant positive effect on health with its naturally occurring components. It is also an important food product for celiac patients because it does not include gluten. Being a functional food, it can be used as raw material in many food items or it can only be consumed as cooked. The phenolic materials, antioxidants and fiber components increase the functional properties and nutritional value of the food which the buckwheat is added. In bread technology and in the production of baked goods, some problems such as low bread volume and hardness are caused. Allergen proteins have been studied which limit the use of buckwheat by enzymatic route or by fermentation.

KEYWORDS

Buckwheat, gluten-free goods, health, functional foods.

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Poster Session 14

Submission ID: 1912

DETERMINATION OF ANTIOXIDANT CONTENT OF TURKISH PINE (PINUS BRUTIA TEN.) PEEL EXTRACT

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ABSTRACT

Turkey has the highest Turkish pine tree population. Turkish pine, which is such widely spread, is used in forestry industry. Generally plant phenolics constitute natural antioxidant resources. Pine peel extract is rich in polyphenols. Antioxidants effectively fight against free radicals and prevent the damage to the cells. Moreover, Turkish pine peel extract contains a polyphenol called oligomeric proanthocyanidin (OPC) besides these compounds, which are very precious for human health. Data indicate that OPC has very important effects on our health. It is believed that processing Turkish pine peels would provide great health benefits especially for preventing cancer. Besides this Turkish pine peels, which offers a great potential as raw material for us, would also make it possible to provide added value to the pharmaceutical and cosmetic sector. In this study, determination of antioxidant and antibacterial content of the extract, which would be obtained from Turkish pine peels, was targeted. Turkish pine peels are ground. The powder thus obtained was extracted for 6 hours in a soxhlet extractor. It was determined that the ethanol extract of Turkish pine showed more than 50% inhibition in a concentration range between 1-10 mg/mL. However, it was determined that the radical scavenging effect of Turkish pine extract decreased as the concentration increases. Nevertheless, it was observed that this decrease was at a low ratio. When incubation periods are considered an inhibition above 50% was observed in 30 minutes at all concentrations. It was determined that according to this the concentration at which the radical scavenging effect would be the maximum is 1mg/mL.

KEYWORDS

Antioxidants, proanthocyanidin, pinus brutia ten, Turkish pine tree

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Poster Session 14

Submission ID: 1915

HUMAN HEALTH EFFECTS OF PSEUDO-CEREAL

ELIF ÖNCEL¹, MUSTAFA KÜRŞAT DEMİR¹

ABSTRACT

HUMAN HEALTH EFFECTS OF PSEUDO-CEREAL Elif ÖNCEL, M. Kürşat DEMİR
Cereals and cereal products constitute a large part of our daily diet. However, cereal-like products are at the forefront, as common grains contain gluten protein and people with celiac disease should not consume gluten-containing foods. Pseudo-cereals in this context (quinoa, buckwheat and amaranth) are a good alternative due to gluten-free and high nutritional values. In addition to being a good source of protein, pseudo-cereals with balanced amino acid content also possess antioxidant properties. Quinoa, buckwheat and amaranth are a good source of vitamin-E and are thought to potentially have cholesterol-lowering properties with these characteristic. In recent years clinical studies have shown that amaranth as well as being an alternative to celiac disease, have also anticarcinogenic, antiallergic, antihypertensive and cholesterol-lowering properties due to anti-tumoral peptides such as lunasin and some other components. Buckwheat also has important phenolic components. Rutine in its content, which can be seen as a good cardiovascular drug for the treatment of disorder, are diglucosides flavanols. Rutine also reduces high blood pressure and prevents hemorrhagic diseases. On the other hand, polyphenols contained in quinoa have a great importance due to antioxidative and potential anticarcinogenic effect, which suggests the possibility of strengthening the immune system against cancer. In this review; the phenolic and antioxidative properties of quinoa, buckwheat and amaranth which have both balanced amino acid content and significant phenolic components have been mentioned.

KEYWORDS

Pseudo-cereal, Amaranth, Buckwheat, Quinoa

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PHYTOCHEMISTRY AND BIOACTIVITY OF NATURAL PRODUCTS FROM CEPHALARIA TUTELIANA

MERVE DAĐLI¹, SUHEYL KIRMIZIGÜL¹, NAZLI SARIKAHYA¹

ABSTRACT

Natural products are the source of numerous therapeutic agents. Recent progress to discover drugs from natural sources has resulted in compounds that are being developed to treat cancer, resistant bacteria, viruses and disorders [1]. *Cephalaria* genus which is belonging to Caprifoliaceae family has 94 species in Turkey. These species are widely spread out in Mediterranean Region [2]. Triterpenoid metabolites are the major class of this genus as well as iridoid, flavonoid, lignan glycosides and alkaloids. *Cephalaria* species have also many biological activities such as antioxidant, antimicrobial, antifungal and cytotoxic activities [3-7]. Considering this knowledge, our purpose is to isolate the seconder metabolic components from *Cephalaria tuteliana* which is an endemic plant collected from Istanbul-Turkey. The isolation and purification studies on n-BuOH fraction of *C. tuteliana* were performed by chromatographic (CC, TLC, VLC, MPLC) and chemical methods. Structures of the isolated natural compounds were determined with the help of different spectroscopic techniques (IR, 1D-, 2D-NMR, MS, HRMS, GC-MS). The potential biological activities of these natural compounds were also investigated. References 1. Ikan, R. Naturally occurring glycosides, Chichester, England: John Wiley & Sons, (1999). 2. Kus, S., Gokturk, R.S., 2005. Nordic J. Bot., 23:27-430. 3. Sarikahya, N.B., Kirmizigul, S., 2010. J. Nat. Prod., 73:825-830. 4. Tabatadze, N., Elias, R., Faure, R., DePauw-Gillet, M., Kemertelidze, E., Chea, A., Ollivier, E., 2007. Chem. Pharm. Bullet., 55:102-105. 5. Kirmizigul, S., Boke, N., Sumbul, H., Gokturk, R.S., Arda, N., 2007. Pure App. Chem., 79:2297-2304. 6. Zviadadze, L.D., Dekanosidze, G.E., Dzhikiya, O.D., Kemertelidze, E.P., 1983. Khim. Prir. Soedin., 1:46. 7. Yazicioglu, T., 1978. J. Am. Oil Chem. Soc., 55:412.

KEYWORDS

Cephalaria tuteliana, triterpene sapoin, iridoid, bioactivity

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SYNTHESIS OF GYPSOGENIN-CHALCONE HYBRID COMPOUNDS

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ABSTRACT

Gypsogenin aglycone (3-Hydroxy-23-oxoolean-12-en-28-oic acid), a natural saponin, is isolated from many plants belonging to carnations family (Caryophyllaceae). Gypsogenin with the pentacyclic triterpenic structure is a natural compound. It is well known that gypsogenin aglycone with sugar chains has shown a variety of biological properties such as antiviral, antitumor, anticarcinogenic, antioxidant and anti-cancer. However the gypsogenin aglycone that obtained from water extract of *Gypsophila arrostii* roots. Water used in making the halvah, is obtained from boiling water of *Gypsophila arrostii* plant roots. are obtained by boiling water. On the other hand, chalcones are natural aglycone compounds which display a wide range of biological activities, such as anticancer, antimutagenic, antiinflammatory, antituberculosis, antimalarial, antileishmanial, nitric oxide regulation modulatory, cardiovascular, and antihyperglycemic, activities. when a biodynamic heterocyclic system was combined with another, obtained natural products are the most challenging class of compounds for the total synthesis, due to their structural diversity and complexity as well as the interesting biological activity. Therefore, we designed and synthesized new gypsogenin-chalcone hybrid compounds in this study. Firstly, Gypso-Anhd compound was synthesized by substitution reactions involving acetylation at C-3 in gypsogenin aglycone. Nevertheless, methoxy substituted chalcones were synthesized. Then, in the third step of the study, Gypso-Anhd compound was combined with chalcone derivatives by using DCC/DMAP in DCM. Up to now, in our continuous research, we synthesized new gypsogenin-chalcone compounds (1-3). The synthesized compounds were established by IR, UV, ¹H NMR, ¹³C NMR, and LCMS analyses.

KEYWORDS

Gypsogenin, Chalcone, Hybrid compounds

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KEFİRAN FILMS

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ABSTRACT

Edible films are thin layers of materials used to protect and preserve many food products. The use of these protective coatings and suitable packaging by the food industry has become a topic of great interest because of their potentiality for increasing the shelf life of many food products. The largest part of materials used in packaging industries is produced from non-renewable material with the negative environmental consequence. Today, there is a big effort to extend the shelf life and enhance food quality while reducing packaging waste has encouraged the exploration of new biobased packaging materials, such as edible and biodegradable films from renewable resources. Water-soluble polysaccharides such as starch, chitosan, cellulose derivatives, alginate, carrageenan and pectin can form polysaccharide-based edible films. Kefir grains, the starter for obtaining the sour fermented milk kefir, are gelatinous irregular masses, composed of proteins and polysaccharides that contain LAB, acetic acid bacteria and yeasts involved in the fermentation. This polysaccharide component is a heteropolysaccharide containing equal amount glucose and galactose. This work focus on a review of the available literature on the properties and production of edible films based on kefiran.

KEYWORDS

kefir, kefiran, edible films, exopolysaccharide

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KEFİRAN EXOPOLYSACCHARIDE

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ABSTRACT

Kefir is a fermented dairy product with viscous, whitish color, and effervescent property. Lactic acid, acetic acid, ethanol, carbon dioxide and other compounds such as acetaldehyde, diacetyl and acetoin occur as a result of fermentation in the kefir product. Kefiran, a neutral polysaccharide that constituted by glucose and galactose produced by *Lactobacillus kefirianofaciens*, a lactic acid bacterium present in kefir grains and also in fermented product such as milk and whey. Kefiran, which has GRAS (generally recognized as safe) status, has been found to improve rheological properties of fermented milk. This exopolysaccharide has also several health promoting properties including antimicrobial activity, immunomodulating activity, anti-inflammatory activity and antiproliferative activity. Kefiran can be used as a food additive for its rheological properties. It has viscoelastic properties and is able to form gel at low temperature. It can use suitable packaging in food industry because of its potentiality for increasing the shelf life of many food products. In this study, we will focus on chemical and physical characteristics and health benefits of the exopolysaccharide produced by kefir grains during milk fermentation.

KEYWORDS

Kefir, kefiran, kefir grain, exopolysaccharide, glucogalactan

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EVALUATION OF ANTIHEMORRHOIDAL ACTIVITY OF CAPSELLA BURSA-PASTORIS ON EXPERIMENTAL HEMORRHOIDS IN RATS

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ABSTRACT

In this study was aimed to investigate effects on the levels of plasma and rekto-anal tissue some biochemical parameters of Capsella bursa-pastoris extract on hemorrhoid rats. A total of 48 Sprague Dawley female rats, weighing 200-250 g were used in the present study. Thirty six rats were randomly assigned into 6 experimental groups (8 rats per group). They were allowed to adapt to laboratory conditions for 7 days. The study was conducted for 18 days. Rats were divided into the following groups: Group I: Control Group, Group II: Croton oil, Group III: Capsella bursa-pastoris extract, Group IV: Croton oil + Capsella bursa-pastoris extract, Group V. Capsella bursa-pastoris tea and Group V: Croton oil+ Capsella bursa-pastoris tea. After 3 days of croton oil application, rats were treated with Capsella bursa-pastoris for 15 days. Blood and recto-anal tissue samples were collected for biochemical and histopathological studies. Plasma and recto-anal tissue GSH, CAT, GPx and SOD activity were significantly decreased in compared to CO group. Despite this decrease, plasma TNF- α , IL-6 and MDA; recto-anal MDA and MPO levels increased in this group. In contrast plasma and recto-anal tissue GSH, CAT, GPx and SOD activity were significantly increased, plasma TNF- α , IL-6 and MDA; recto-anal MDA and MPO levels decreased in following treatment with CBE and CBT. In conclusion, we recommend both extract and tea can be used safely for the treatment of hemorrhoids in the large population of patients who do not want to undergo surgery and do not want to use drugs or cream due to their many side effects but C. bursa pastoris tea gave more positive results than extract form as biochemical and histopathological findings. C. bursa pastoris tea can improve the health and quality of life of people who suffer from hemorrhoid disease.

KEYWORDS

Capsella bursa-pastoris, extract, hemorrhoid, oxidative stress, rat

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**EXTRACTION OF LAVENDER (*LAVANDULA OFFICINALIS*),
GENTIAN (*HYPERICUM PERFORATUM*) AND STINGING NETTLE
(*URTICA DIOICA*) PLANTS GROWN IN MERSIN REGION AND
INVESTIGATION OF THE ANTIOXIDANT AND ANTIBACTERIAL
ACTIVITY OF THEIR EXTRACTS**

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ABSTRACT

With its geographical place, climate and plant variety, agricultural potential and wide surface area Turkey is one of the leading countries in plant trade. This importance of Turkey is due to the plants, which give many of the products that constitute input to herbal medicine, plant chemicals, food and additives, cosmetics and perfume industries of developed countries, in the flora of our country. The main factor, which makes plants valuable, is the valuable chemical compounds they contain. The dirty air, which we breathe all day, harmful sun-rays, dangerous substances in the bad food, additives, unconscious eating habits and sedative lifestyle causes substances called free radicals to be produced in the body. The molecules, which minimize and block the effect of free radicals in the body, stop the chain reactions that may lead to many diseases and early aging, are called "antioxidants". Our body responds to these activities via antioxidants. Antioxidant molecules are the substances which protect our body against radicals that trigger many diseases such as cancer, inflammatory, coronary and atherosclerotic diseases. Antimicrobial substances placed in cosmetics provide protection against microbial deterioration. Therefore, plant extracts which have antimicrobial properties commonly used in cosmetics. In this study, the extracts of some plants (i.e., *Lavandula angustifolia*, *Hypericum perforatum* and *Urtica dioica*) grown in the geography of Mersin region and which have commercial value were obtained. Antibacterial and antioxidant properties of these extracts were investigated and the extracts showed significant antibacterial effect. Collected plant materials were extracted with ethanol by Soxhlet. The antimicrobial activity of *Lavandula angustifolia*, *Hypericum perforatum* and *Urtica dioica* extracts against *Staphylococcus aureus* (Gram positive) and *Escherichia coli* (Gram negative) was assessed by the agar-well diffusion method. One loop *S. aureus* and *E. coli* colonies were inoculated to 10 mL Nutrient Broth including 3 g/L meat extract and 5 g/L peptone and then incubated at 37 °C for 24 h. Population density of *S. aureus* and *E. coli* cultures was determined by McFarland standard and 100 µL bacterial suspension containing approximately 1.0 x 10⁶ CFU/mL cell was spread on to Nutrient Agar. The well was filled with 100 µL plant extract (50 mg/mL). Subsequently, the plates were incubated at 37 °C for 24 h. The diameter of the inhibition zones was measured as millimeters. The results showed that *Urtica dioica*, *Lavandula angustifolia*, *Hypericum*

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perforatum extracts have inhibition effect on growth of E.coli and S. aureus. Additionally, it was determined that these plant extracts were more effective on growth of S. aureus than that of E.coli. It might be due to the differences in cell wall structure of bacteria. The results may suggest that extracts of *Lavandula angustifolia*, *Hypericum perforatum* and *Urtica dioica* which have antimicrobial properties can be used for prevention self-life of cosmetics.

KEYWORDS

Lavandula angustifolia, *Hypericum perforatum* and *Urtica dioica*

*Biz bu topraklara sevgiden
bařka tohum ekmedik!..*

H.z. Mevlana

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