

# GATULINE® EXPRESSION



## FAST TRACK SMOOTHING

The fight against the appearance and deepening of wrinkles remains the legitimate crusade of the cosmetic industry which needs raw materials offering **security** and **proven efficacy**.

Facial skin is subjected to the emotions and various forms of environmental stress and is marked by so-called "expression" lines. These lines result from **thousands of daily involuntary micro-contractions of the facial muscles**. They lead to the appearance of real deep wrinkles, the inevitable consequence of movements and pulling on the skin.

Besides the solutions proposed by plastic surgery and other invasive techniques, GATTEFOSSÉ proposes a **safe plant-based alternative** that meets the principal requirement of a skincare product: **rapid results**.

## GATULINE® EXPRESSION

*A targeted anti-wrinkle ingredient:  
the reliable option for smoother skin.*

Extracted from an tropical plant, GATULINE® EXPRESSION provides an effective solution to the demand for rapid reduction of facial wrinkles:

- **Quick action** shown *in vitro* and *in vivo*, as GATULINE® EXPRESSION **immediately limits** micro-contractions that create then aggravate facial wrinkles.
- Spectacular **reduction of wrinkles** leading to a **significantly smoother skin**.



## ORIGIN & COMPOSITION

### A plant based active

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**GATULINE® EXPRESSION** is extracted from the upper parts of the *Acmella oleracea* plant belonging to the Compositæ family (*Compositæ-Helianthææ*). This small plant, which blossoms all year long, has a broad geographical footprint, covering the whole tropical zone in South America, Africa and Asia.

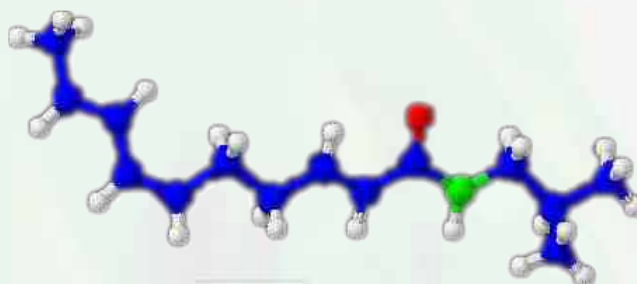
Originating from Peru and Brazil, *Acmella oleracea* is a cultivated non-endangered species, known and used for a very long time in Madagascar and **La Réunion**. Called “**Mafane**” in the Indian Ocean, this plant is used in food and as a medicinal plant. It is precisely in the wild region of **La Réunion** that GATTEFOSSÉ harvests it.

### Composition

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The bibliographic study has revealed a list of key majority compounds present in this plant. These are mainly isobutylamides of polyenic and polyenyinic acids. Of the dozen molecules identified, spilanthol (or (E,Z,E)-N-2-isobutyl-2,6,8-decatrienamide) is the molecule mainly responsible of the activity of **GATULINE® EXPRESSION**.

Fig. 1

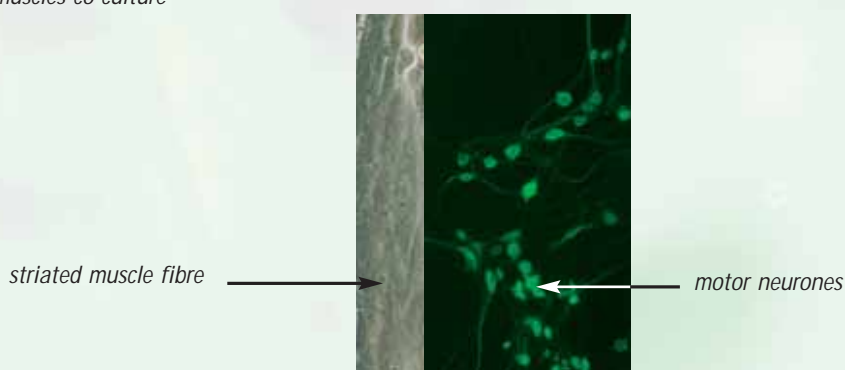


# IN VITRO EFFICACY

## Nerve-muscle co-culture model

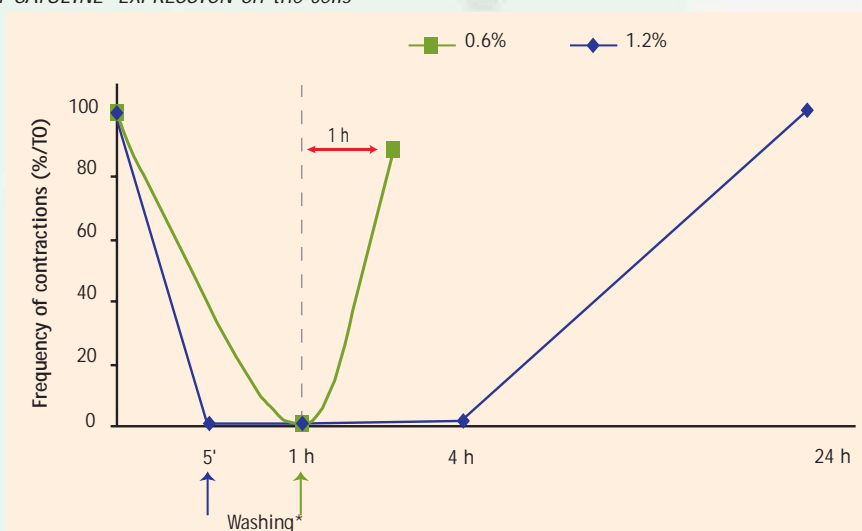
The myorelaxing activity of the extract was first tested on a model reproducing muscle contractions. This model is produced by the co-culture of motor neurones with human muscle cells forming striated muscle fibres which, once innervated, spontaneously contract (fig 2).

Fig. 2: Nerves-muscles co-culture



The muscle contractions were counted to prove that GATULINE® EXPRESSION extract blocked these contractions (fig 3). This blocking process is fully dependent on the concentration of the tested extract. As such, it was demonstrated that **just 0.6% of GATULINE® EXPRESSION is enough for complete myorelaxation.**

Fig. 3: Activity of GATULINE® EXPRESSION on the cells



\* (Change of the culture medium after complete blocking).

GATULINE® EXPRESSION shows a **fully reversible function** (complete recovery after 24 hours) and is thus positioned as a very safe extract while remaining highly effective.

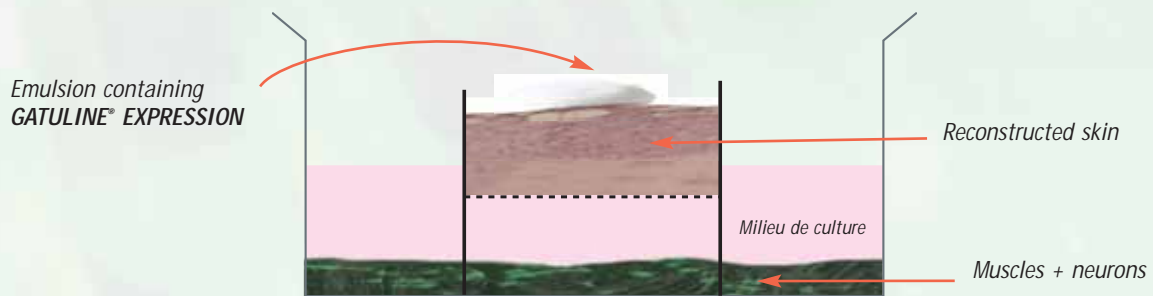
Secondly, the efficacy of GATULINE® EXPRESSION formulated in a cream was quantified using another innovative *in vitro* model.



## Bioavailability

In order to make sure that GATULINE® EXPRESSION **does not deteriorate in the formulation or after topical application**, a new model was tested. This was a co-culture described in the previous page topped with reconstructed skin containing epidermis and dermis (fig 4).

Fig. 4:?????



The efficacy of standard formulations (O/W emulsions) containing GATULINE® EXPRESSION was evaluated against a placebo. Muscle contractions were counted to highlight the activity of creams containing GATULINE® EXPRESSION on human skin and cells.

Fig. 5: In vitro activity of formulated GATULINE® EXPRESSION

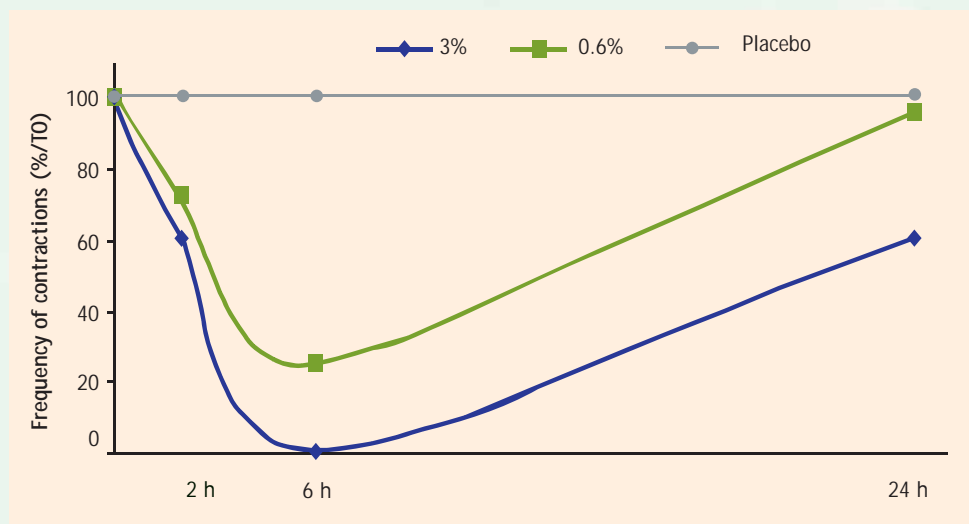


Figure 5 shows that GATULINE® EXPRESSION is a stable active ingredient, just as effective once formulated in a cream. Its **activity** is confirmed as **dose-dependent and reversible**.

GATULINE® EXPRESSION used in a standard formulation presents **good bio-availability**.

The 24 hour residual relaxing power of the cream containing 3% GATULINE® EXPRESSION allows us to expect an interesting **cumulative effect** when used daily.

## IN VIVO EFFICACY

The *in vivo* smoothing efficacy of GATULINE® EXPRESSION has been demonstrated on “crow's feet” wrinkles.

Skin smoothing was assessed by topometric analysis using a hi-tech technique: the **Fringe Projection** technique. This allowed GATTEFOSSÉ to demonstrate very precisely the benefits provided by daily application of GATULINE® EXPRESSION.

Fringe Projection, a purely optical method, used to assess roughness of the skin, allows us to avoid artefacts due to contact with the skin.

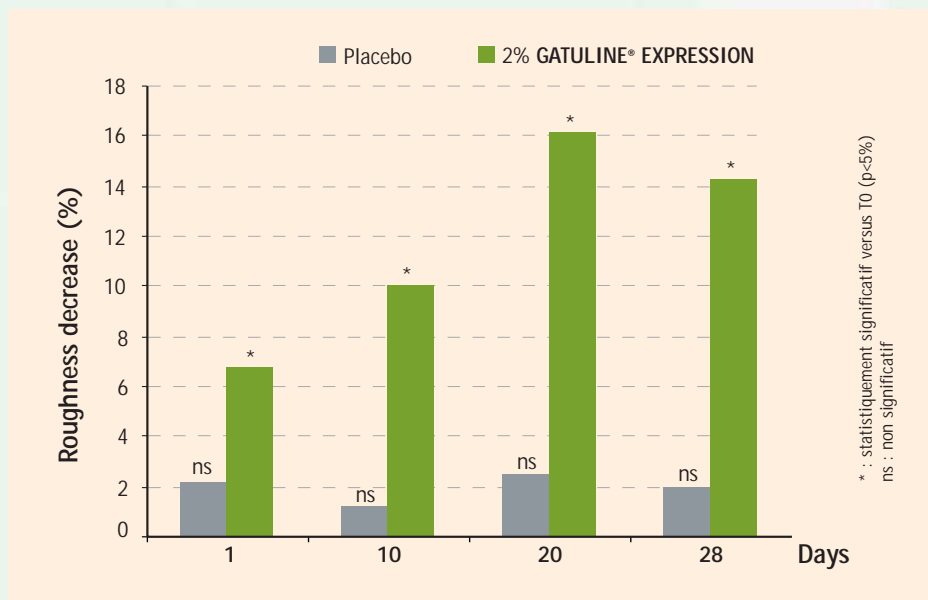
Tests were carried on two panels of volunteers (20 and 30 people) with twice-daily application for 28 days:

- 1 panel using a placebo formulation on half of the face and a formulation containing 2% of GATULINE® EXPRESSION on the other half
- 1 panel using a placebo formulation on half of the face and a formulation containing 5% of GATULINE® EXPRESSION on the other.

For the first panel, the roughness was quantified several times. This revealed the strong activity of GATULINE® EXPRESSION extract formulated at 2% (Fig 6).

**75% of volunteers** reacted very rapidly to the smoothing effect of GATULINE® EXPRESSION, the very next day after the first application.

Fig. 6: Average roughness on 15 people



The smoothing effect is visible and is reinforced during the first month of use.

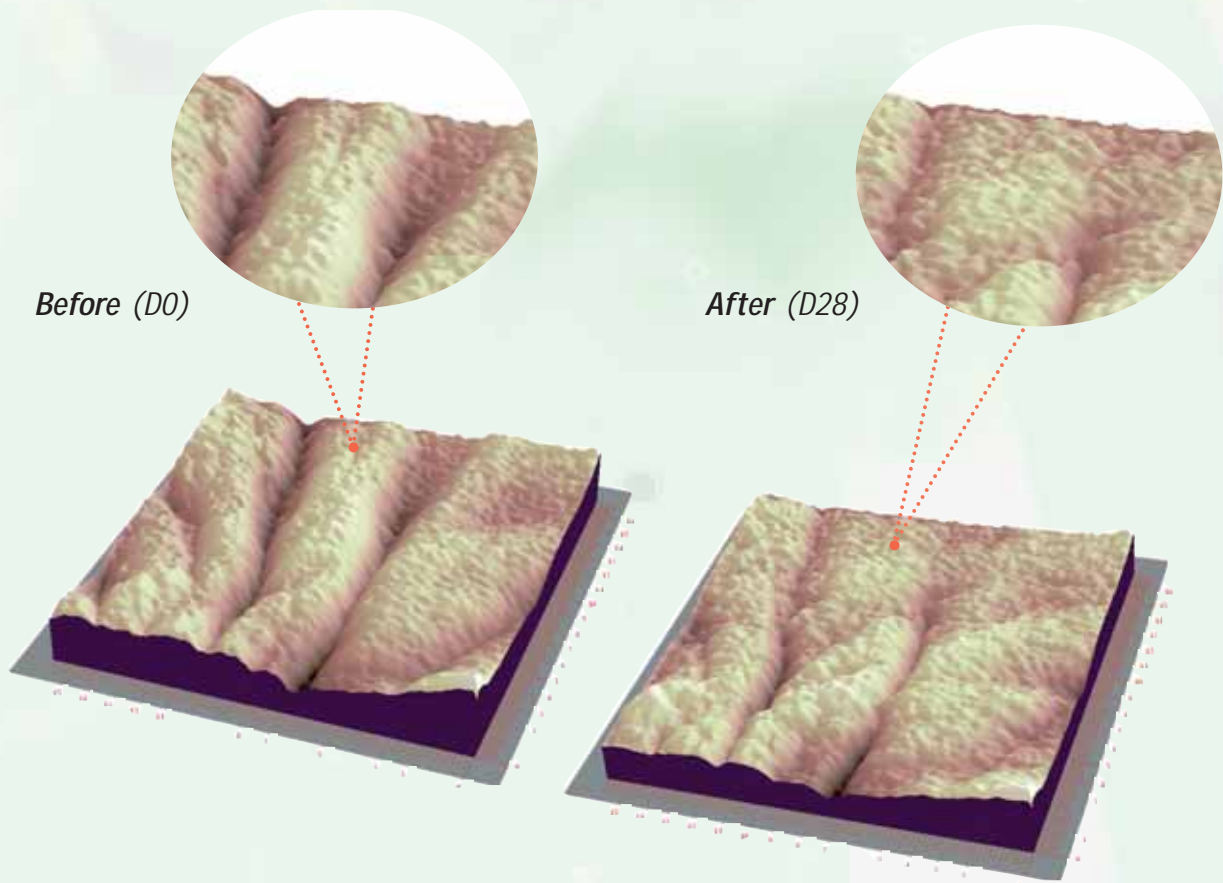
The activity is therefore instant on the reduction of expression lines with only 2% of GATULINE® EXPRESSION.



The results of the second panel have confirmed the significant activity of the extract on wrinkle reduction. With 5% of GATULINE® EXPRESSION, more than 83% of volunteers benefited from a reduction in crow's feet wrinkles.

Tested against a placebo, GATULINE® EXPRESSION offers very visible results on the skin of volunteers. Figure 7 shows that wrinkle depth is reduced, the skin is smoothed and looks younger.

Fig. 7: GATULINE® EXPRESSION at 5% in formulation



GATULINE® EXPRESSION is therefore a key ingredient for the reduction of facial wrinkles.

➡ Very rapid effect in comparison with traditional anti-wrinkle ingredients.

## Quality

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The *Acmella oleracea* plant is harvested in a pollution free environment through a supply chain which guarantees full traceability.

Identified and measured by HPLC, the spilanthol molecule is guaranteed in all batches with a minimum concentration of 50 mg/l of GATULINE® EXPRESSION.

## Intellectual property

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A patent on GATULINE® EXPRESSION has been filed for targeted application on wrinkle smoothing.

## CONCLUSION

Expression lines result from the accumulated effect on the skin of movements constantly imposed by the subcutaneous muscles. GATTEFOSSÉ research has found a solution to attenuate these muscle contractions and thus delay formation and deepening of these wrinkles.

The **myorelaxing mechanism** has been clearly identified as being the cause of the activity of GATULINE® EXPRESSION.

This activity has been traced back to Spilanthol, the active molecule in *Acmella oleracea*. GATTEFOSSÉ has isolated this molecule and proven its activity in myorelaxation tests.

*In vitro* tests conducted with GATULINE® EXPRESSION show that this *Acmella oleracea* extract **precisely and rapidly targets** the mechanism responsible for the formation of expression lines.

Finally, *in vivo* tests show that GATULINE® EXPRESSION **instantly and strongly reduces the wrinkled appearance** of the faces of a large majority of the **panelists**.

**GATULINE® EXPRESSION is thus destined to become a key active ingredient for the next generation of anti-wrinkle cosmetics.**





## APPLICATIONS

GATULINE® EXPRESSION is the ideal active ingredient for **facial anti-ageing and anti-wrinkle care**, in particular aimed at smoothing out expression lines. This targets crow's feet, forehead wrinkles, frown lines between the eyebrows and the nasogenian fold.

This new active is precisely dedicated to skincare products and its **easy formulation** allows its use in emulsions, microemulsions, serums and gels.

The recommended concentration of use is between 2% and 5%.

## SPECIFICATIONS :

### **Organoleptic characteristics:**

Aspect .....yellow to amber limpid liquid  
Odour .....characteristic

### **Physico-chemical characteristics:**

Specific gravity at 20°C (D20/4) .....0.87 to 0.91  
Refractive index at 20°C .....1.345 to 1.385  
pH .....5 to 7  
Dry extract .....> 0.5 g/100g  
Solubility at 20°C.....soluble in oils, insoluble in water  
Spilanthol content .....> 50 mg/l

### **Transport and storage conditions:**

This product does not contain preservative. Prevent exposure to light. Store under nitrogen at room temperature.

### **Packing:**

Industrial standard pack.....plastic packing of 800 g or 4 kg  
Samples.....brown plastic bottle of 50 g

### **Regulatory:**

INCI name .....Alcohol (and) Water (and) Acmella Oleracea Extract  
CAS n° .....64-17-5/7732-18-5/90131-24-1  
EINECS n° .....200-578-6/231-791-2/290-335-0  
Australian and Japan .....Approved for cosmetic use

### **Toxicological profil:**

Local toxicity on the skin .....not classified  
Local toxicity on the eyes .....well tolerated  
Phototoxicity assay *in vitro* .....without phototoxic effect  
Phototoxicity .....without phototoxic effect  
Sensitization .....without allergic effect  
Photosensitization .....without photoallergic effect  
Systemic toxicity LD50>2000 mg/kg .....not classified  
Mutagenic effect (Ames test) .....without mutagenic effect



# FORMULAS

"WRINKLE CORRECTOR" SERUM			MM 8047/C
	INCI name	Trade name	%
<b>I</b>	GLYCERIN		4.00
	BUTYLENE GLYCOL		4.00
	<i>PRESERVATIVE</i>		0.50
	DEMINERALIZED WATER		79.90
<b>II</b>	ACRYLATE/C10-30 ALKYL ACRYLATE COPOLYMER	CARBOPOL® ULTREZ 20	0.10
<b>III</b>	ACRYLATES/ACRYLAMIDE COPOLYMER (and) MINERAL OIL (and) POLYSORBATE-85	NOVEMER® EC-1	0.05
<b>IV</b>	OCTYLDODECYL MYRISTATE	MOD	2.00
	ISOSTEARYL ALCOHOL (and) BUTYLENE GLYCOL COCOATE (and) ETHYLCELLULOSE	EMULFREE® CBG	1.00
<b>V</b>	DIMETHICONE (and) DIMETHICONOL		2.50
<b>VI</b>	ACRYLATES/ACRYLAMIDE COPOLYMER (and) MINERAL OIL (and) POLYSORBATE-85	NOVEMER® EC-1	0.45
<b>VII</b>	ALCOHOL (and) WATER (and) ACMELLA OLEACERA EXTRACT	GATULINE® EXPRESSION	5.00
	<i>PRESERVATIVE</i>		0.20
	C1-15985 (0.5 SOL.)		0.30
			100.00

Sprinkle Carbopol® Ultrez 20 over I. Leave to stand. Add III. Mix well. Under rapid mixing (rotor stator), add IV, then V to I + II + III. Continue rapid mixing for 10 min. Add VI and the components of VII. Continue moderate stirring for 15 min.

ANTI-WRINKLE SMOOTHING EMULSION			JB 1954/C	
	INCI name	Trade name	%	
<b>I</b>	CETYL ALCOHOL (and) GLYCERYL STEARATE (and) PEG-75 STEARATE (and) CETETH-20 (and) STEARATEH-20	EMULIUM® DELTA	4.00	
	ISOSTEARYL PALMITATE		3.00	
	TOCOPHERYL ACETATE		0.50	
	CALOPHYLLUM INOPHYLLUM (SCAVENG) OIL		1.00	
	PPG-3 MYRISTYL ETHER		2.00	
	HYDROGENATED POLYDECENE		5.00	
	<i>PRESERVATIVE</i>		0.70	
	CETOSTEARYL ALCOHOL		0.50	
	ISOSTEARYL ISOSTEARATE	ISOSTEARATE ISOSTEARYLE	2.00	
	DIMETHICONE		2.00	
	<b>II</b>	DEMINERALIZED WATER		65.77
		GLYCERIN		5.00
	<b>III</b>	CARRAGEENAN		0.30
<b>IV</b>	HYDROGENATED POLYISOBUTENE		3.00	
<b>V</b>	ACRYLATES/ACRYLAMIDE COPOLYMER (and) MINERAL OIL (and) POLYSORBATE-85	NOVEMER® EC-1	1.00	
<b>VI</b>	HDI/TRIMETHYLOL HEXYLACTONE COPOLYMER (and) SILICA		2.00	
<b>VII</b>	ALCOHOL (and) WATER (and) ACMELLA OLEACERA EXTRACT	GATULINE® EXPRESSION	2.00	
	<i>PERFUME</i>		0.20	
	C1-42090 (0.1 SOL.)		0.03	
			100.00	

Under stirring, disperse Carrageenan into II. Heat I to II + III to 75 °C. Under rapid mixing (rotor stator 3000 rd/min), add I to II + III, mix for about 5 min. Add IV then V and maintain rapid mixing for about 5 min more. Cool under planetary stirring and at about 35 °C, add the other ingredients, one by one.

This information is presented in good faith, and we believe it is correct, but no warranty as to accuracy of results, or fitness for a particular use is given, nor is freedom from patent infringement to be inferred. It is offered solely for your consideration, investigation and verification.

## WORLDWIDE POSITION



### GATTEFOSSÉ REGIONAL AFFILIATES

#### CANADA

Gattefossé Canada, Inc.  
170 Attwell Drive, Suite 580  
Toronto, ONTARIO  
M9W 5Z5  
Tel. +1 416 243 5019  
Fax +1 416 243 8628

#### U.S.A.

Gattefossé Corporation  
650 From Road  
Paramus, NEW JERSEY 07652  
Tel. +1 201 265 4800  
Fax +1 201 265 4853

#### UNITED KINGDOM

Gattefossé (UK) Limited  
Arc House, Terrace Road South  
Binfield, Bracknell,  
BERKSHIRE RG42 4PZ  
Tel. +44 1344 861 800  
Fax +44 1344 451 400

#### SPAIN

Gattefossé España, S.A.  
• Av. Diagonal 460 6° A  
E-08006 BARCELONA  
Tel. +349 3 416 05 20  
Fax +349 3 415 35 46  
• C/Padilla, 73, 1° B

E-28006 MADRID  
Tel. +349 1 402 13 11/16 12  
Fax +349 1 402 00 82

#### FRANCE

Gattefossé France  
Parc des Barbanniers  
5 Promenade de la Bonnette  
F-92632 GENNEVILLIERS Cedex  
Tel. +33 1 41 47 19 00  
Fax +33 1 41 47 19 29

#### ITALY

Gattefossé Italia s.r.l.  
Via Derganino 20  
I-20158 MILANO  
Tel. +39 02 39314073  
Fax +39 02 66200440

#### SWITZERLAND

Gattefossé AG  
Haldenstrasse 11  
CH-6006 LUZERN  
Tel. +41 41 418 40 44  
Fax +41 41 418 40 59

#### GERMANY

Gattefossé (Deutschland) GmbH  
Rheincenter, Hauptstrasse 435  
D-79576 WEIL-AM-RHEIN  
Tel. +49 7621 720 07  
Fax +49 7621 79 22 93

### CORPORATE & HEADQUARTERS

**GATTEFOSSÉ:** 36 chemin de Genas - BP 603 - F-69804 SAINT-PRIEST Cedex - FRANCE  
Tel. +33 4 72 22 98 00 - Fax: +33 4 78 90 45 67 - E-mail: [infocos@gattefossé.com](mailto:infocos@gattefossé.com)  
[www.gattefossé.com](http://www.gattefossé.com)



GATTEFOSSÉ is an independent, multinational company headquartered in France which creates, manufactures and distributes specialty products used as ingredients by the cosmetic and pharmaceutical industries.

Present in almost 50 countries worldwide, GATTEFOSSÉ enjoys a strong know-how and position in lipochemistry, biology and extraction from natural sources.

GATTEFOSSÉ offers the cosmetic industry a variety of high performance products classified as:

- **BASES & ADDITIVES:** emulsifiers, coemulsifiers, emollients, dispersers, solubilizers, thickeners...
- **TRADITIONAL PLANT EXTRACTS**
- **SUBSTANTIATED ACTIVE INGREDIENTS** from vegetable and marine origins.