

KANNA EXTRACTION METHODS

Dry material:

Materials (or alcoholic extracts) are air-dried at maximum 40° C. before analysis. Yield figures for mesembrine are variable but are typically between 15 and 35 mg per gram dry leaves (mean value around 15 mg per gram dry weight).

Finely ground material (pestle and mortar) is mixed with 15 ml 0.05 M H₂SO₄ and left standing at room temperature for 20 minutes. After filtration, the remaining solids are re-extracted with 5 ml 0.05 M H₂SO₄. The aqueous phases are combined, applied to glass columns with a coarse grade celite (24 g), alkalinized with ammonia (4 ml) and extracted (1X) with 100 ml CH₂Cl₂. The CH₂Cl₂ extracts are dried with anhydrous Na₂SO₄ and the solvent evaporated under reduced pressure to leave the alkaloid as a pale brown oil. The alkaloids can also be extracted with hot or cold water instead of H₂SO₄, or with methanol, ethanol, acetonitrile, chloroform or dichloromethane.

In addition, the whole plant extract of *Sceletium N.E.Br.*, mesembranol and mesembranone were screened for biological activity by the National Institute of Mental Health in the United States of America through the contract with Novascreen. [...] These assays show that the whole plant extract, as well as mesembranol and mesembranone are highly potent serotonin-uptake inhibitors.

IN VITRO STUDIES

Various in vitro studies of the effects of the compounds of the invention were carried out in adult volunteers as follows:

Study 1. N=3 Healthy Adult Volunteers, All Health Professionals Sep. 13, 1996.

A single dose of standardised preparation of dried whole plant, standardised to contain 400 micrograms of mesembrine was taken sublingually.

Rapid onset of action (10-15 minutes) noted by all.

Anxiolytic effect noted by all.

Sustained elevation of mood noted by all.

Duration of anxiolytic action ranged from five hours to eight hours.

Study 2. N=2 Healthy Adult Volunteers, All Health Professionals Sep. 21, 1996.

A single 200 microgram dose of pure (-)-mesembrine dissolved in 1 ml of 60% ethanol was taken sublingually.

Rapid onset of action (7 and 12 minutes, respectively) noted by both.

Anxiolytic effect noted by both.

Sustained elevation of mood noted by both (for approximately eight hours and eleven hours respectively)

Duration of anxiolytic action ranged from five hours to eight hours.

Study 3. N=2 Adult Volunteers, Both Self-confessed Alcoholics and Polysubstance Abusers
Sep. 21, 1996.

A single 5 ml dose of a whole-plant aqueous-ethanolic extract containing 100 micrograms of mesembrine per ml of extract (60% ethanol) was administered orally (total dose of mesembrine 500 micrograms).

Rapid onset of action (15-20 minutes) noted by both.

Anxiolytic effect noted by both.

Neither volunteer imbibed alcohol or used any illicit or other drug for a twenty-four hour period following the administration of the single dose.

Examples of pharmaceutical compositions of the invention will now be given.

EXAMPLE 1

A liquid composition comprises a 60% ethanol/water solvent containing about 200 µg/ml of (-)-mesembrine.

A typical dose of the liquid composition is from 1 ml to 5 ml inclusive daily.

EXAMPLE 2

A sublingual tablet contains a spray-dried 30% aqueous-ethanolic extract of *Sceletium tortuosum*, containing 200 micrograms of (-)-mesembrine, and conventional pharmaceutical excipients.

EXAMPLE 3

An oral tablet contains 200 micrograms of pure (-)-mesembrine, and conventional pharmaceutical excipients.