

OSMITOPSIS ASTERISCOIDES HERBA

Definition

Osmitopsis Asteriscoides Herba consists of the fresh or dried leaves of *Osmitopsis asteriscoides* (Berg.) Less. (Asteraceae)

Synonyms

Leucanthemum asteriscoides (L.) Kuntze
Osmites asteriscoides Berg.
Osmitopsis asteriscoides (L.) Cass.
Osmitopsis calva Gand.

Vernacular names

Belskruie (A), mountain daisy

Description

Macroscopical¹



Figure 1 – Live plant

Erect robust woody shrub up to 2 metres in height, stems grey-brown, leafless in the lower half; **leaves** oblong-lanceolate, 1-8 cm long x 0.3-1.4 cm wide, sessile, gland-dotted, aromatic, leathery, glabrous to tomentose with entire to serrate margin; **flowers** (Jan-Dec) borne in capitula at branch ends; ray florets 10-20, white, with lamina 9-16mm long x 3-4.5mm wide.

¹ Bremer, K. (1972). A revision of the genus *Osmitopsis* (Asteraceae). Botaniska Notiser 125:



Figure 2 – line drawing

Microscopical

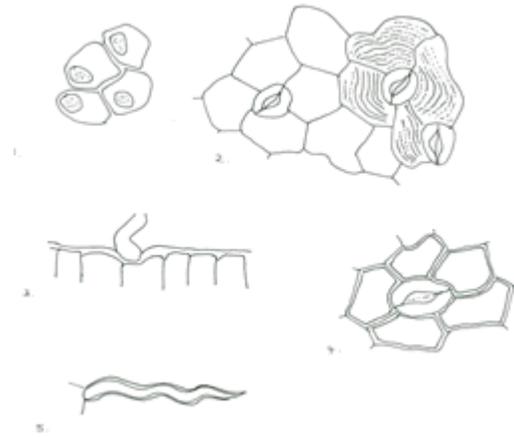


Figure 3 – microscopical features

Characteristic features are: the thin-walled sinuous unicellular clothing hairs, up to 800 microns in length (5), occurring free in the powdered herb or attached to fragments of the lamina; more numerous on the lower leaf surface; the absence of calcium oxalate crystals; the oil globules, up to 20 microns in diameter, staining red with Sudan IV, in cells of the subepidermal layers of both upper and lower leaf epidermis (1); the epidermal cells of the lower leaf surface with thickened walls and numerous anomocytic stomata (4); the epidermal cells of the upper leaf surface with sinuous walls and striated cuticle (2).

Crude drug

Collected as needed or found in the marketplace as bundles of fresh or dried leaf and stem; odour camphoraceous, texture leathery, colour light yellow-green.

Geographical distribution



Figure 4 – distribution map

Confined to damp, marshy montane habitats of the Western Cape Province; often in dense communities, from the Cape Peninsula eastwards to Bredasdorp.

Quality standards

Identity tests

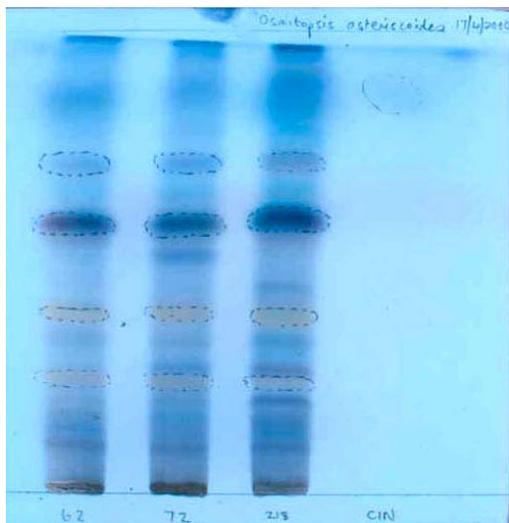


Figure 5 – TLC plate

Thin layer chromatography on silica gel using as solvent a mixture of toluene:diethyl ether:1.75M acetic acid (1:1:1). Reference compound cineole (0,1% in chloroform). Method according to Appendix 2a.

R_f values of major compounds: 0,25 (yellow); 0,39 (yellow); 0,58 (purple); 0,73 (light purple); cineole: 0,85 (blue-purple). HPLC on C₁₈ column, method according to Appendix 2b.

Major compounds:

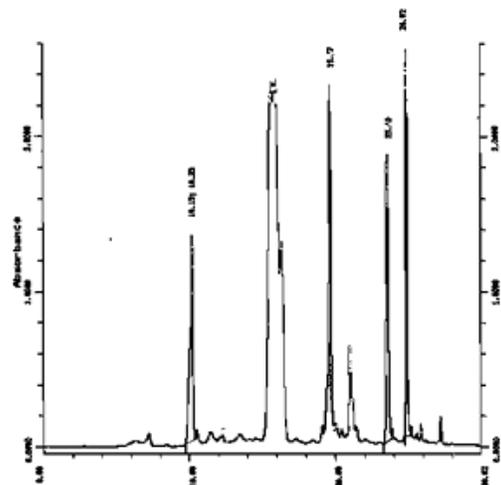


Figure 6 – HPLC spectrum

Methanol extract: (figure 6)
Retention times (mins): 10,25; 19,67; 23,60; 24,92

Ethanol (70%) soluble extractive value:
not less than 17,0% (range 16.77-29.12%)

Volatile oil content: not less than 1.0% (V/W)

Purity tests

Assay

Not yet available

Major chemical constituents

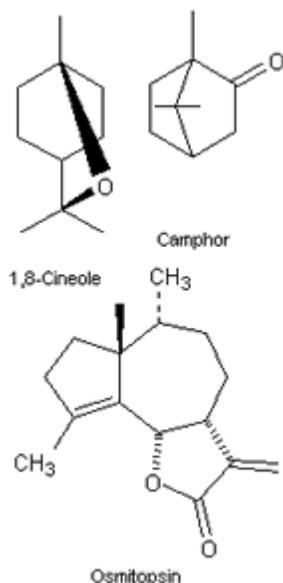


Figure 7 – chemical constituents

Microchemical tests in our laboratories indicated the presence of tannins in *Osmitopsis asteriscoides* but not of alkaloids, saponins, nor cyanogenic, cardiac or anthraquinone glycosides. Nine sesquiterpene lactones of the guaianolide type have been isolated from the overground parts of this species^{2,3,4}. These are derivatives of the parent compound osmitopsin which has a *cis*-12,6-lactone ring known only from this species. Other compounds isolated from *O. asteriscoides* include a seco-guaiane derivative and two pairs of epimeric menthene derivatives⁴.

The essential oil obtained from the leaves varies in content from 0.69%^{GR1} to 1.0% (our laboratories) and is rich in camphor and 1,8-cineole^{G1, 3,4}. Analyses of 2 different collections of oil showed cineole content to vary between 60-64% and cineole+camphor

to account for $\pm 72\%$ of the composition of the oil.^{GR1, 5}

Dosage forms

Used as an aqueous infusion or brandy tincture, taken orally or applied externally.

Medicinal uses

Internal

For the relief of bronchial congestion, fever, colds, cough, influenza and colic.

External

To treat sprains, joint pain and inflammation.

Pharmacology/bioactivity

Little is known of the pharmacology or bioactivity of this species. No *in vitro* antimicrobial activity of aqueous extracts of South African collections of *Osmitopsis asteriscoides* against *Pseudomonas aeruginosa*, *Candida albicans*, *Staphylococcus aureus* or *Mycobacterium smegmatis* was observed, in the concentrations used for disc assays in our laboratories.

An *in vitro* investigation of the antimicrobial activity of leaf essential oil demonstrated fungicidal activity against *Candida albicans* and bacteriostatic activity against *Staphylococcus aureus*.⁵

The decongestant action of 1,8-cineole (eucalyptol), the rubefacient action of camphor and the use of essential oils in general as carminatives, antispasmodics and counter-irritants are well known^{G3}. It seems therefore that sound rationale exists for the traditional uses of *Osmitopsis asteriscoides*.

Contraindications

⁵ Viljoen, A. *et al.* (2003). *Osmitopsis asteriscoides* (Asteraceae)-the antimicrobial activity and essential oil composition of a Cape-Dutch remedy.

² Bohlmann, F. and Zdero, C. (1972). Eine neue Guajanolide aus *Osmitopsis asteriscoides*. *Chemische Berichte* **105**: 1919-1922.

³ Bohlmann, F. and Zdero, C. (1974). Neue sesquiterpenlacton aus *Osmitopsis asteriscoides* (L.) Cass. *Chemische Berichte* **107**: 1409-1415.

⁴ Bohlmann, F., Zdero, C., Jakupovic, J. and Rourke, J.P. (1985). *cis*- Guajanolide aus *Osmitopsis asteriscoides*. *Liebig's Annals of Chemistry*: 2342-2351.

None recorded

Adverse reactions

Sesquiterpene lactones are common constituents of members of Asteraceae and some have been shown to possess cytotoxic, antileukaemic, antitumour or antimicrobial activity. Many are associated with skin allergy in humans^{G3}. Allergic subjects should be cautioned when using this herb and courses of therapy of more than two weeks duration discouraged. This herb is reputed to cause profuse sweating.

Precautions

No special precautions

Dosage

Internal use

An infusion may be prepared by adding one litre of boiling water to two tablespoonsful (\pm 7.0g) of dried ground herb or twice that quantity of fresh herb, allowing to stand until cold and straining before use.

Adults: Half a teacupful (90ml) three times daily

Children (6-12 years): Quarter of a teacupful (45ml) three times daily.

External use

A tincture may be prepared by steeping 20g of dried powdered herb in a closed vessel in sufficient surgical spirit to produce 100 ml, for 3-4 days, with occasional shaking. The extract is filtered and applied to the affected area as necessary for painful joints or sprains.

