

HELICHRYSUM PETIOLARE HERBA

Definition

Helichrysum Petiolare Herba consists of the fresh or dried flowering tops of *Helichrysum petiolare* Hilliard & Burt (Asteraceae).

Synonyms

Helichrysum petiolatum auct. non (L.) DC.

Vernacular names

kooigoed (A), imphepo, phefu (Xh)

Description

Macroscopical¹



Figure 1 – Live plant

Straggling, loosely-branched, soft-wooded evergreen shrub about 1m high, with long slender branches; **leaves** simple, alternate, petiolate, 10-35 mm × 10-30mm, broadly ovate, grey-woolly felted on both surfaces or with the upper surface sometimes only cobwebby and dark green in colour, with three prominent veins on reverse; **flowers** (Nov-Jan) yellow, sweetly scented, borne in subglobose heads of 18-30 individuals, ±5mm in diameter, the latter arranged in loose terminal panicles; involucre bracts in c. 5 series, loosely imbricate, ± equalling the

¹ Hilliard, O. (1983). *Helichrysum*. Flora of Southern Africa **33** (7), 2: 61.

flowers, opaque white with grey-woolly reverse; **fruit** a barrel-shaped, 5-ribbed, glabrous achene, ± 1mm long.



Figure 2 – line drawing

Microscopical

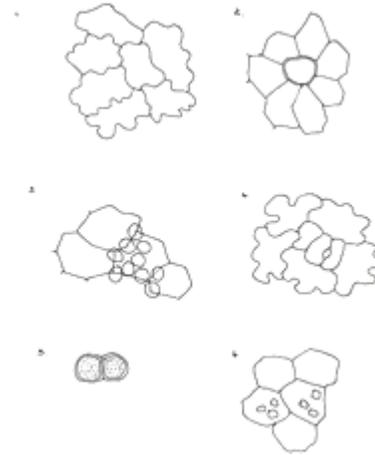


Figure 3 – microscopical features

1. Cells of lower epidermis with sinuous walls.
2. Polygonal cells of upper epidermis showing scars formed by trichome base.
3. Cells of upper epidermis showing underlying palisade layer.
4. Cells of lower epidermis with anisocytic stomata
5. Glandular trichome with unicellular stalk and bicellular head, ±40µ in diameter with yellow-brown contents.
6. Ovoid red-brown bodies of palisade, ±35µ in diameter.

Crude drug

Supplied in bundles of fresh or dry leafy twigs, the foliage characteristic soft, grey-woolly, aromatic; flowers may be present or absent, depending on season.

Geographical distribution

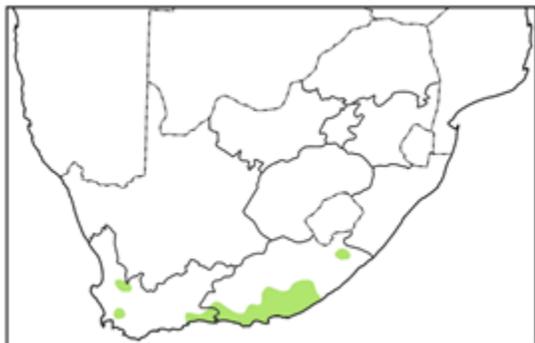


Figure 4 – distribution map

Occurs in the understory on forest margins, damp lower slopes or shady kloofs of the Cedarberg, Stellenbosch and southern Cape mountains, in the Eastern Cape coastal forests and the Amatola, Insizwe and Tabankulu Mountains.

Quality standards

Identity test

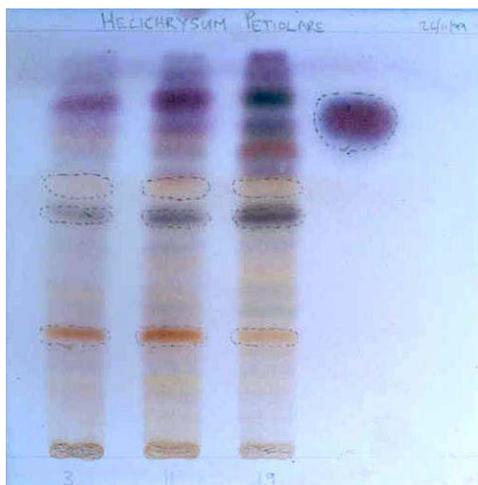


Figure 5 – TLC plate

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: 0,29 (mustard brown); 0,58 (grey-purple); 0,64 (light yellow); cineole: 0,80 (purple-blue)

HPLC on C₁₈ column, method according to Appendix 2b.

Major compounds:

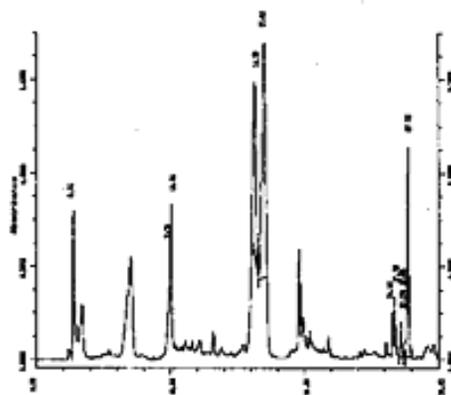


Figure 6 a – MeOH HPLC spectrum

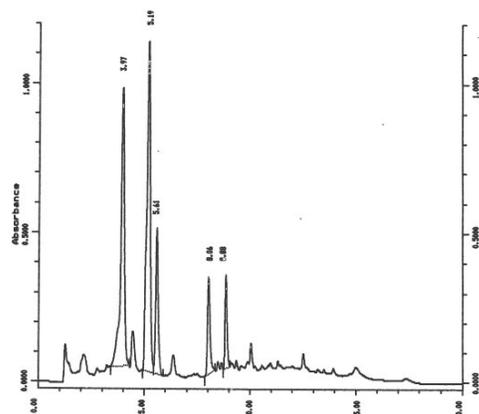


Figure 6 a – DCM HPLC spectrum

Methanol extract: (figure 6a)

Retention times (mins): 2.76; 10.06; 16.30; 17.01; 27.75

DCM extract: (figure 6b)

Retention times (mins): 3.97; 5.20; 5.61; 8.06; 8.88

Ethanol (70%) soluble extractive value: not less than 24% (range: 23.66-29.47%).

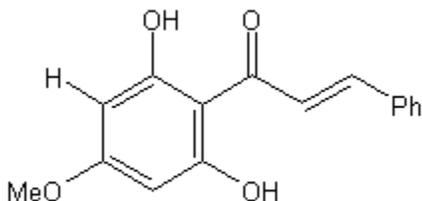
Volatile oil content: not less than 0,67% (0,67-0,83%).

Purity tests

Assay

Not yet available.

Major chemical constituents



acylated phloroglucinol from *Helichrysum petiolare*

Figure 7 – chemical constituents

Helichrysum petiolare has been shown to contain sesquiterpenes e.g. caryophyllene oxide, spathulenol, α -humulene, as well as flavonoids and phloroglucinol derivatives². Several other Southern African *Helichrysum* species have been investigated and shown to contain unusual flavonoids e.g. the chalcone helichrysetin as well as phloroglucinol derivatives e.g. caespitin. Also commonly present are α -pyrone derivatives, diterpenes and sesquiterpenes³.

Microchemical tests did not suggest the presence of tannins, alkaloids, saponins, cyanogenic glycosides or triterpene steroids in this species.

Dosage forms

An aqueous infusion or decoction in milk may be taken orally; fresh leaf is applied as a wound dressing and smoke from burning fresh leaves may be inhaled.

Medicinal uses

Aqueous infusions of this and related species are taken orally to relieve coughs, colds, catarrh, headache, fever, menstrual problems, weak heart, *angina pectoris*,

backache, urinary tract infections, nervous disorders and headache. Infusions may be applied externally as an antiseptic wash and whole leaf as a wound dressing.

Pharmacology/bioactivity

Brine shrimp lethality assay:

Activity was shown by aqueous extracts prepared by Soxhlet extraction of fresh leaf material, at a concentration of 1 000 mg/ml.

Antibiotic activity assay

Antimicrobial activity of aqueous extracts prepared from dried leaf material, at a concentration of 10mg/ml, was not demonstrated *in vitro* against *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Candida albicans* or *Mycobacterium smegmatis*. No other information is available regarding the bioactivity of this species. Other *Helichrysum* species have been shown to possess antibiotic activity, although the relevant studies have generally been based on other than aqueous extracts^{4 5}.

Contraindications

None known.

Adverse reactions

GR9, 17

None are recorded for this species. Sesquiterpene lactones are however common in the genus and may provoke dermatitis or other allergic responses in susceptible individuals

Precautions

See 15 above.

Dosage

An infusion is made by infusing one tablespoonful of dried material in a closed

² Jakupovic, J. *et al.* (1989). Twenty-one acylphloroglucinol derivatives and further constituents from South African *Helichrysum* species. *Phytochemistry* **28**(4): 1119-1131.

³ Jakupovic, J., Kuhnke, J., Schuster, A., Metwally, M and Bohlmann, F. (1986). Phloroglucinol derivatives and other constituents from South African *Helichrysum* species. *Phytochemistry* **25**(5): 1133-1142.

⁴ Mathekga, A.D.M. and Meyer, J.J.M. (1998). Antibacterial activity of South African *Helichrysum* species. *South African Journal of Botany* **64**(5):293-295.

⁵ Dekker, T.G. *et al.* (1983). Studies of South African medicinal plants. Part 2. Caespitin, a new phloroglucinol derivative with antimicrobial properties from *Helichrysum caespitosum*. *South African Journal of Chemistry* **114**:14-17.

vessel with 1litre of boiling water. When cold, the infusion is strained.

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

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



Copyright in this monograph resides with the authors, the South African National Biodiversity Institute, the South African Medical Research Council and the University of the Western Cape. It may not be reproduced in whole or in part without the written consent of the copyright holders.