PEUCEDANUM GALBANUM HERBA

Definition

Peucedanum Galbanum Herba consists of the fresh or dried leaves and smaller stems of *Peucedanum galbanum* (L.) Drude (Apiaceae).

Synonyms

Bubon galbanum L.
Vernacular names
wildeseldery, bergseldery (A), blister bush

Description

Macroscopical

Figure 1 – Live plant

Robust, erect resinous-aromatic shrub up to 2.5 metres in height; **leaves** compound, up to 20cm long and 15 cm wide; leaflets rhomboidal with serrate margin and acute apex; terminal leaflets 3-lobed; **flowers** (July-Feb) inconspicuous, yellow, borne in compound umbels up to 15cm in diameter; **fruit** a ribbed cremocarp separating into two mericarps, each with 3 veins on the outer pericarp.

Figure 2 – line drawing

Microscopical

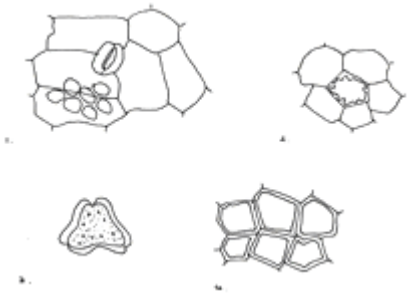

Figure 3 – microscopical features

Characteristic features are: the absence of epidermal hairs on leaf and stem; the absence of calcium oxalate crystals in the leaf lamina; the polygonal cells of the leaf epidermis, those of the upper surface smaller than the lower surface (1); the anomocytic stomata of both leaf surfaces; the schizo-lysigenous oleoresin ducts of leaf and stem (2), with yellow-brown contents; the occasional yellow-brown pollen grains ± 40 microns in diameter (3); the absence of lignified tissue.

Crude drug

Collected when needed or found in the marketplace as bundles of fresh or dried material; colour yellow-green, texture soft to slightly leathery, odour characteristic aromatic.

Geographical distribution

Figure 4 – distribution map

Confined to mid to upper mountain slopes of the Western Cape Province, from Piketberg to the Cape Peninsula and eastwards as far as Riversdale, in moist or shaded fynbos habitats.

Quality standards

Identity tests

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: 0,37 (pale beige-brown); 0,60 (yellow-green); 0,70 (mauve); 0,91 (grey-green); cineole: 0,86 (blue-purple)

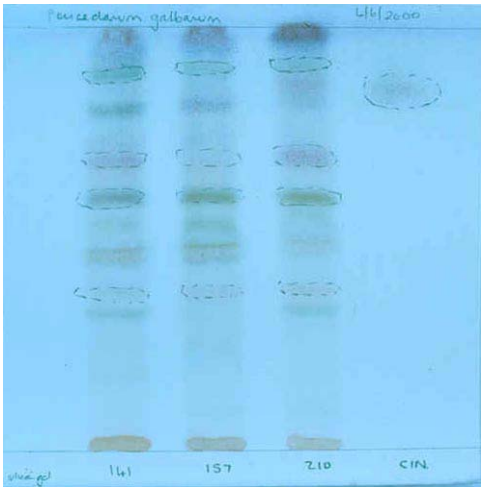

Figure 5 – TLC plate

HPLC on C_{18} column, method according to Appendix 2b.

Major compounds:

Methanol extract (Figure 6a):
Retention times (mins): 10.41; 20.41; 21.90; 24.07; 26.54
DCM extract: (Figure 6b):
Retention times (mins): 3.45: 3.96

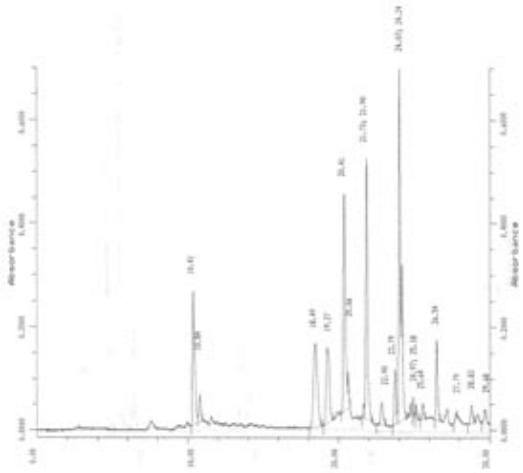

Figure 6 a – MeOH HPLC spectrum

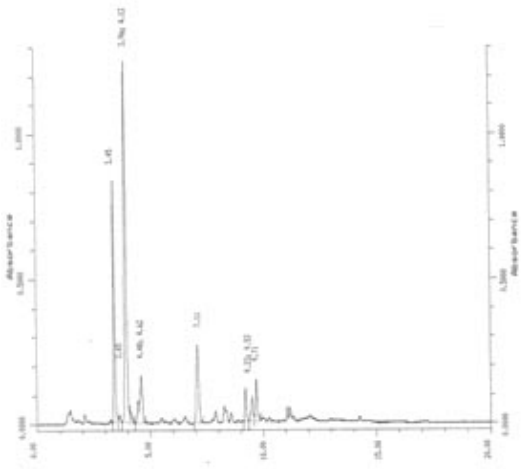

Figure 6 b - DCM HPLC spectrum

Ethanol (70%) soluble extractive value: not less than 27, 1% (range: 27,1-32,48%)

Purity tests

Assay

Not yet available

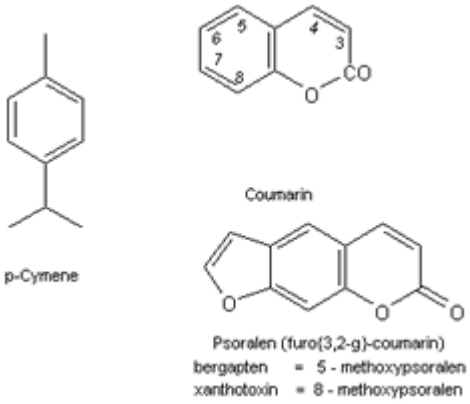

Figure 7 – chemical constituents

Major chemical constituents

Hydrodistillation of the aerial parts of the plant yielded 2,1% of a pale yellow volatile oil of which the major components were *p*–cymene (38.7%), xanthotoxin (5.0%), trans-β-ocimene (4.3%), nonane-4-one (3.9%) and psoralen (3.3%). Extraction of the aerial parts with petrol ether and ethanol yielded the furanocoumarins (figure 7) xanthotoxin, psoralen, bergapten, isopimpinellin and imperatorin.[1] [2]

Microchemical tests indicated the presence in this species of saponins and tannins, but not alkaloids nor cardiac or anthraquinone glycosides.

Dosage forms

A leaf decoction or infusion taken is by mouth, administered *per vaginam* or used as a steam bath.

Medicinal uses

A leaf decoction is used traditionally as a diuretic for the treatment of oedema, kidney and bladder ailments, kidney stones and gravel[3] while a leaf infusion is taken orally or used as a douche or steam bath as a remedy for miscarriage or to aid expulsion of retained placenta. Preparations of this species have been used, combined with *Pelargonium grossularioides* and *Mentha longifolia*, to suppress the menses and combined with *Diosma vulgaris* as a diuretic. It is recorded as being an effective diuretic and diaphoretic.[4] In the Montagu district, an infusion is taken to treat rheumatism, colds and gout. [5]

Pharmacology/bioactivity

Bergapten, psoralen, xanthotoxin, isopimpinellin and imperatorin are known to be photosensitisers when activated by UV light of wavelength 300-380nm. They intercalate readily into DNA, forming light-induced mono- or diadducts with pyrimidine bases. They are thus phototoxic, mutagenic

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[1] Campbell, W.E., Mathee, S. and Wewers, F. (1994). Phytochemical studies on the blister bush, *Peucedanum galbanum. Planta Medica* **60**: 586-587.

[2] Finkelstein, N., Albrecht, C.F. and van Jaarsveld, P.P. (1993). Isolation and structure elucidation of xanthotoxin, a phototoxic furanocoumarin from *Peucedanum galbanum. South African Journal of Botany* **59(1)**: 81-84.

[3] General reference 3

[4] General reference 4

[5] General reference 20

and photocarcinogenic[6]. These furanocoumarins, present in the overground parts of the blister bush, account for the well-known photodermatitis reported by hikers and botanists in the Western Cape Province. The reaction, which involves blistering, red-purple pigmentation and intense irritation of the skin, typically manifests 24-48 hours after contact with the plant and subsequent exposure to sunlight. Little information is available regarding the pharmacology of this species when taken orally. An infusion of the European herb Rue (*Ruta graveolens*), which also contains bergapten, psoralen and xanthotoxin, was formerly official in the BPC (1934) as an emmenagogue. Rue, known locally as wynruit, is still highly regarded in the Western Cape as an oral remedy for many ailments, but caution is expressed by healers and herbalists against its excessive use.

Contraindications

In view of its reputed effects on the uterus, this herb should not be taken during pregnancy.

Adverse reactions

See above

Precautions

Excessive or prolonged use of this herb should be avoided.

Dosage

To be determined

[6] Ashwood-Smith, M.J., Natarajam, A.J. and Poulton, G.A. (1982). *Journal of the National Cancer Institute* **69**:189-192. Ref. cited in 1 above.