PELARGONIUM PELTATUM HERBA

Definition

Pelargonium Peltatum Herba consists of the fresh or dried leaves and smaller stems of *Pelargonium peltatum* (L.) l'Hérit. (Geraniaceae).

Synonyms

Pelargonium lateripes l'Hérit.
Vernacular names
Kolsuring, wildemalva (A); ivy-leaf geranium

Description

Macroscopical [1]

Figure 1 – Live plant

Climbing herbaceous slender-stemmed perennial to 2m or more; **leaves** succulent, peltate, entire, bluntly lobed or 5-angled, 2-7cm in diameter, ± glabrous, some populations with downy leaves or zonation patterns; **flowers** (Aug-Oct mainly) borne in 2-9 flowered umbel-like inflorescences on long peduncles, mauve, pink-mauve, pale pink or almost white.

Figure 2 – line drawing

Microscopical

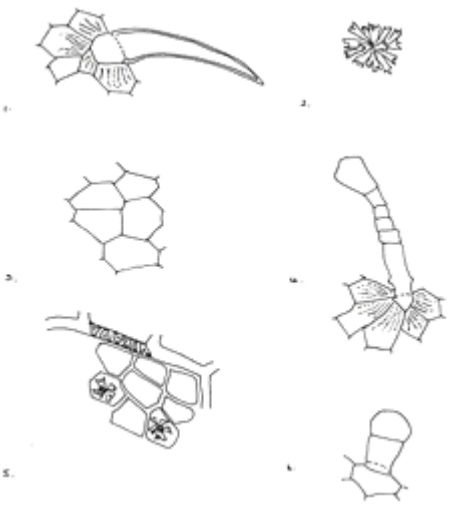

Figure 3: microscopical features

Characteristic features are: the unicellular clothing hairs of leaf and stem, up to 400µ long, thick walled, slightly warty, base swollen, surrounded by 4-5 subsidiary cells with striated cuticle (1); the numerous calcium oxalate cluster crystals (rosette aggregates), loose in the powdered drug or in the parenchyma of the leaf mesophyll, up to 90µ in diameter (2); the glandular hairs of the leaf lamina, with unicellular heads and 4-5 celled stalks, the basal cell elongated (4); the small glands with unicellular stalk and unicellular head up to 40µ in diameter (6); the thin-walled polygonal cells of the lower

[1] Van der Walt, J.J.A. (1977). Pelargoniums of Southern Africa. Purnell, Cape Town.

leaf epidermis with anomocytic stomata (3) and no underlying palisade layer.

Crude drug

Leaves bright green and succulent when fresh, light brown-beige after drying, with pleasant faintly aromatic odour and astringent taste.

Geographical distribution

Western and Eastern Cape Provinces from Wellington to East London, common in sheltered places in coastal or succulent bush.

Figure 4 – distribution map

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: 0.24 (light green); 0.41 (light green); 0.60 (mauve); 0.76 (mauve); cineole: 0.89 (blue-purple)

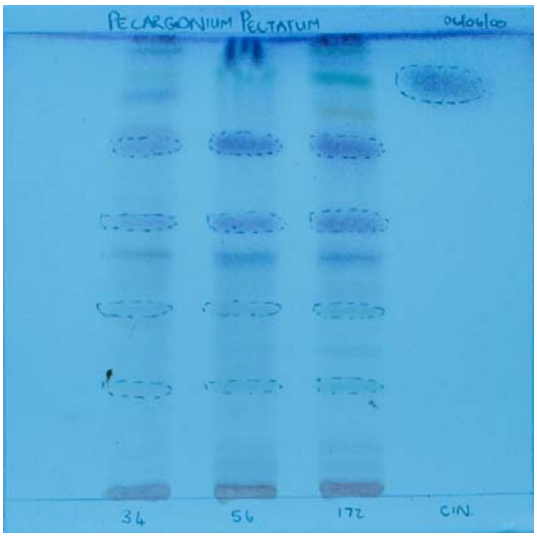

Figure 5 – TLC plate

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

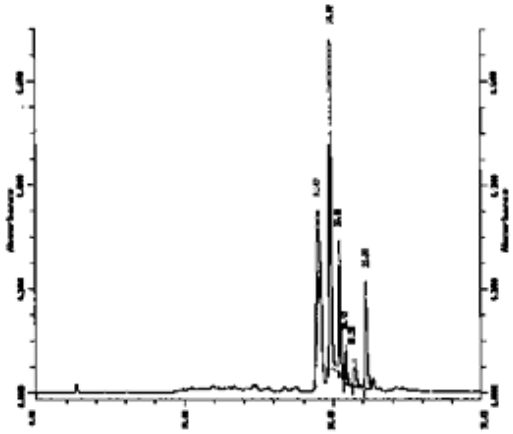

Figure 6 – HPLC spectrum

Major compounds:
Methanol extract: (figure 6)
Retention times (mins): 19.07; 19.89

Ethanol (70%) soluble extractive value: not less than 15.5% (range: 15.65-19.19%)

Purity tests

Assay

Not yet available

Major chemical constituents

The leaf contains high levels of potassium oxalate and malic acid, as well as other

organic acids e.g. citric, oxalic, succinic and tartaric acids, the levels of which vary according to the amount of light to which plants are exposed [GR1]. Phytochemical tests in our laboratories indicated the presence of tannins, saponins and reducing sugars, but not of alkaloids, nor of cardiac, anthraquinone or cyanogenic glycosides.

The indole alkaloids elaeocarpidine and its 20-H isomer epielaeocarpidine have been identified in leaves of 8 *Pelargonium* species but not in *P. peltatum* [2]. Hydrolysable tannins such as Pelargoniin A (Figure 7) appear to be major constituents of above ground parts of *Pelargonium* spp.[3]

(See *Pelargonium betulinum* for summary of genus secondary chemistry)

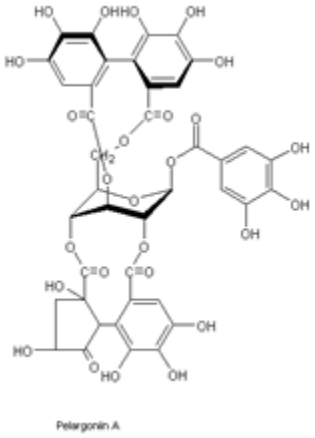

Figure 7: chemical constituents

Dosage forms

Fresh leaf juice may be applied directly to the affected area for the treatment of oral ulcers and diluted with a little water for use as a gargle. Fresh leaf heated in sweet oil is used as a plug to relieve earache or toothache.

Medicinal uses

The fresh leaf juice is considered to be antiseptic and astringent and of use in the treatment of sore throat and ulceration of the oral mucosa. Preparations of fresh leaf in oil are used to relieve earache or toothache. [GR1, 19, 20]

Pharmacology/bioactivity

In vitro antimicrobial activity against *Staphylococcus aureus* was demonstrated by aqueous extracts prepared from dried leaf material, at a concentration of 10mg/ml. No activity against *Pseudomonas aeruginosa, Candida albicans* or *Mycobacterium smegmatis* was shown by any of the extracts used in preliminary assays. *In vitro* assays for antiphage activity of aqueous extracts from fresh leaf and stem demonstrated activity against bacteriophages MS2, PHI-CHI-174, T2, T4, T7 and bacteriophage-OPS7. [4]

No other information is available regarding the bioactivity of this species.

Contraindications
None known

Adverse reactions
None documented

Precautions
No special precautions

Dosage
To be determined

[2] Lis-Balchin, M.T. (1996). A chemotaxonomic reappraisal of the Sectionn *Ciconium Pelargonium* (Geraniaceae). *South African Journal of Botany* **62(5)**: 277-279.

[3] Latté, K-P. (1999). Phytochemische und pharmacologische Untersuchungen an *Pelargonium reniforme* Curt. PhD thesis, University of Berlin.

[4] Yannitsaros, A. (1996). Screening for antiphage activity of plants growing in Greece. *Fitoterapia* **67(3)**: 205-214.