

# PELARGONIUM TRISTE RHIZOMA

## Definition

Pelargonium Triste Rhizoma consists of the fresh or dried tuber of *Pelargonium triste* (L.) l'Hérit. (Geraniaceae).

## Synonyms

*Pelargonium flavum* L. Ait.

## Vernacular names

kaneelbol, naelblom (A)

## Description

### Macroscopical<sup>1</sup>



Figure 1 a – Live plant

Perennial geophyte with a large subterranean tuber and tuberous roots; **leaves** compound pinnate, hirsute to sparsely hairy, grey-green, 10-45 cm long x 4-15 cm wide, borne on long petioles in a basal summer-deciduous rosette; **flowers** (Aug–Feb) sweetly scented at night, borne on long hirsute peduncles in a pseudo umbel of 6-20 blooms; petals light yellow-green with purple centre; **tuber** conical-elongate, up to 20 cm in diameter with

deeply fissured grey-brown corky bark, central core maroon red in transverse section when fresh, outer part cream-yellow.

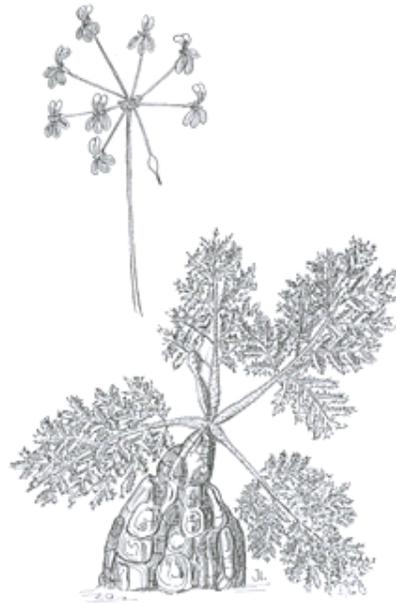


Figure 2 – line drawing

### Microscopical

The characteristic features are: the numerous ovoid starch grains, up to 30µ long, loose in the powdered drug or tightly packed in thin-walled parenchyma cells of the central stele (1+2); the abundant rosette aggregates of calcium oxalate, up to 90µ in diameter, loose in the powdered drug or in parenchyma cells of the stele (5); the tannin idioblasts with red-brown contents (5); the sclereids of the cortex (3); the cork cells of the outer bark (4).



Figure 1 b – Cut tuber

<sup>1</sup> Van der Walt, J..J.A. (1977). Pelargoniums of Southern Africa. Purnell, Cape Town.

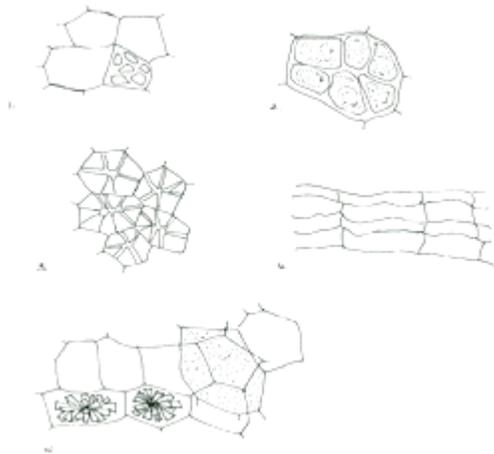


Figure 3 – microscopical features

### Crude drug

Entire tubers with attached root, bright red-maroon in transverse section when fresh, with an agreeable clove-like odour and an astringent taste.

### Geographical distribution

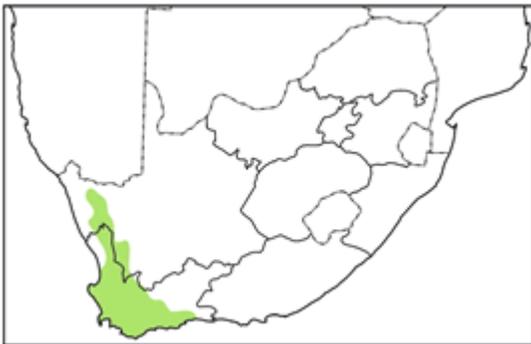


Figure 4 – distribution map

Confined to sandy flats and lower hill slopes of the Western Cape Province, from Namaqualand south to the Cape Peninsula and eastwards to Riversdale.

### Quality standards

### Identity tests

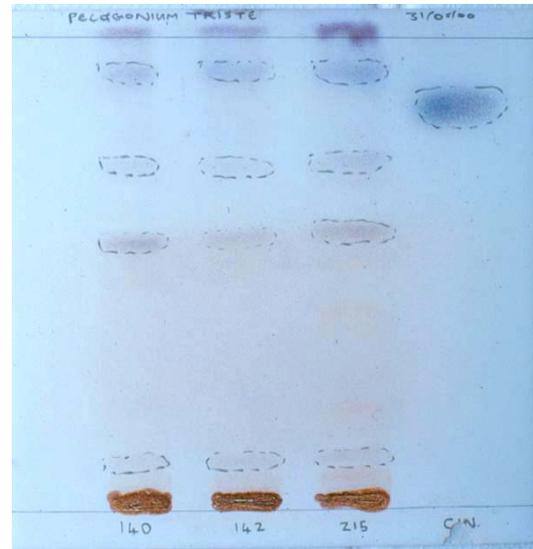


Figure 5 – TLC plate

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<sub>f</sub> values of major compounds: 0,11 (pale grey-brown); 0,58 (pale grey-brown); 0,72 (grey); 0,90 (purple); cineole: 0,83 (blue-purple)

HPLC on C<sub>18</sub> column, method according to Appendix 2b.

### Major compounds:

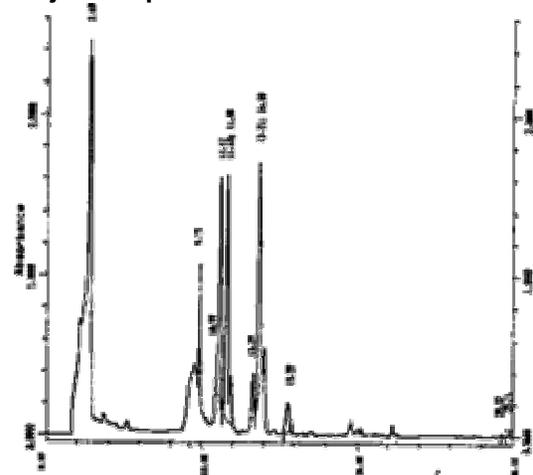


Figure 6 – HPLC spectrum

Methanol extract: (figure 6)  
Retention times (mins): 2.68; 11.17; 11.62; 13.71; 15.59

**Ethanol (70%) soluble extractive value:**  
not less than 18.0% (range; 18.55-22.39%)

### Purity tests

### Assay

Not yet available

### Major chemical constituents

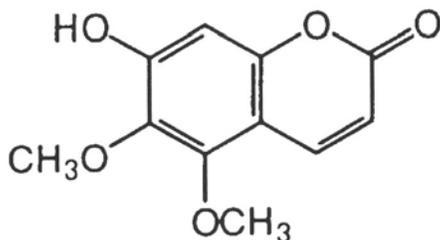


Figure 7 – chemical constituents

Preliminary microchemical tests in our laboratories indicated the presence of tannins and saponins but not of alkaloids, nor of cardiac, cyanogenic or anthraquinone glycosides. Coumarins e.g. 7-hydroxy-5, 6-dimethoxycoumarin (umckalin: figure 7), its 7-glucoside and scopoletin, have been identified as major constituents of root extracts of *P. triste* as well as of 11 other *Pelargonium* species<sup>2</sup>.

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

### Dosage forms

Used almost exclusively in the form of an aqueous infusion, taken orally, used as a gargle or externally applied.

### Medicinal use

#### Internal

For the treatment of diarrhoea and stomach upset.

#### External

For the treatment of haemorrhoids; as an antiseptic gargle for sore throat.

### Pharmacology/bioactivity

Experimental support for the traditional uses of this species is lacking; however the presence of astringent tannins provides a rationale for its use as an antidiarrhoeal and for the treatment of haemorrhoids.

Preliminary *in vitro* assays of aqueous extracts indicated no antimicrobial activity against *Pseudomonas aeruginosa*, *Candida albicans* or *Mycobacterium smegmatis* in the concentrations used. Some activity was recorded against *Staphylococcus aureus*.

### Contraindications

Not suitable for the treatment of diarrhoea in infants or children under two years of age.

### Adverse reactions

None recorded

### Precautions

No special precautions

### Dosage

One litre of boiling water is added to 3.5-7.0g (1-2 tablespoonsful) of dried ground material, infused until cold and strained. The infusion may be used as a gargle for sore throat, applied locally to relieve haemorrhoids or taken internally to treat diarrhoea, as follows:

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

**Children 6-12 years:** One quarter teacupful (45ml) two to three times daily.

Fluid intake (boiled cooled water to which has been added table salt and cane sugar)\* should be increased. If diarrhoea persists or is accompanied by vomiting, or there is blood in the stools, additional or alternative therapy should be sought.

\* Half a household teaspoonful of salt and eight teaspoonful of sugar to one litre of water)

<sup>2</sup> Wagner, H. and Bladt, S. (1975). Coumarins from South African *Pelargonium* species. *Phytochemistry* **14**:2061-2064.



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