LEONOTIS HERBA

Definition

Leonotis herba consists of the dried aerial parts of Leonotis leonurus (L.) R. Br. (Lamiaceae).

Synonyms

Phlomis leonurus L.
Leonotis leonurus (L.) R. Br. var. albiflora Benth.

Vernacular names

wilde dagga (A), lion’s ear, minaret flower (E), umfincafincane (X), lebake (S), umhlalampetu (Sh)

Description

Macroscopical

Figure 1a: Live plant

Figure 1b: T/S of leaf

1. Cells of the lower epidermis with striated cuticle, stomata absent.
2. Cells of the upper epidermis with sinuous walls and anomocytic stomata.
3. and 4. Clothing hairs, more numerous on the lower leaf surface, margin and main veins.
5. Glandular trichome with 4-celled head, surface view.
6. Epidermal cells of the lower leaf surface over main vein.
7. Glandular trichome, particularly abundant on lower leaf surface, with 1-2 celled stalk and 4-celled head, lateral view.
8. Glandular trichome, 6-celled head, in surface view.
9. Clothing hair raised on papilla.

Figure 2: Line drawing

Figure 3: Diagnostic microscopical features

Shrub 2-5 m tall, branching from a thick woody base; stem pale brown and densely pubescent; leaves simple, opposite, petiolar, coriaceous, 50-100 × 10-20 mm, linear, acute at apex and base, serrate in the distal half; upper surface bright green, lower surface densely pubescent; inflorescence of 3-11 compact verticils; calyx 12-16 mm long, 4 mm in diameter, calyx teeth 10, subequal, spreading; corolla tubular, bright orange, 40-49 mm long, covered with orange hairs; fruit a nutlet 5-6 ×1.5-2 mm, brown.

**Microscopical**

Characteristic features are: the numerous uniseriate, curved, thick-walled, warty, 2-3 celled non-glandular trichomes of leaf and stem, 60-100 µm in length, particularly abundant on margin of lamina and main veins of lower leaf surface; the numerous glandular hairs of leaf and stem, with unicellular stalk and 4-celled head (up to 20 µm in diameter) and yellow-brown contents; the less numerous glandular trichomes of leaf lamina, with unicellular stalk and 6-8 celled head, thick-walled, head about 40 µm in diameter; cells of the lower epidermis with sinuous walls and striated cuticle, lacking stomata; cells of the upper epidermis with sinuous walls and numerous raised anomocytic stomata; single palisade layer; abundant crystal sand in cells of the mesophyll; occasional yellow hairs of the corolla.

**Crude drug**

Supplied in bundles comprising young leafy twigs, the leaves having a characteristic aromatic-pungent odour, bright yellow-green colour and rough texture; occasional flowers and fruits are present.

**Geographical distribution**

Locally common at forest margins, on rocky hillsides and river banks and in tall grassland of the Eastern and Western Cape Provinces, KwaZulu-Natal and Mpumalanga.

**Quality standards**

**Identity test:**

Thin layer chromatography on silica gel using as solvent a mixture of toluene:diethyl ether:1.75m acetic acid (1:1:1). Reference compound: thymol (0.1% in chloroform). Method according to Appendix A.

**Major compounds:**

yellow-mustard (Rf: 0.19); yellow-mustard (Rf: 0.38); blue-mauve (Rf: 0.4); thymol (pink): Rf:0.8.
HPLC on C\textsubscript{18} column, method according to Appendix 2b.

**Major compounds:**

Methanol extract: (figure 6a)
Retention times (mins): 2,56; 19,46; 20,64; 23,83; 24,92.

DCM Extract: (figure 6b)
Retention times (mins): 2,17; 3,24; 4,06; 10,14.

**Ethanol (70\%) extractive value:** not less than 22\%.

**Volatile oil content:** not less than 0, 15\% (0, 15-0, 18\%).

**Purity tests**

**Assay**

# Major chemical constituents\textsuperscript{2}

1. Diterpenoid labdane lactones: premarrubiin 0.00933-0.01567\%, marrubiin (possibly an artifact derived from premarrubiin during extraction)
2. Tannins, quinones, saponins, alkaloids and triterpene steroids were detected in preliminary tests in our laboratories; iridoids were not detected.

[Figure 6: chemical constituents]

## Dosage forms

Used mainly in the form of an aqueous decoction, orally, per rectum and as a topical application.

## Medicinal uses (traditional)

### Internal

For the treatment of cough, cold, influenza, chest infections, diabetes, hypertension, eczema, epilepsy, delayed menstruation, intestinal worms, constipation, spider bites and scorpion stings and as an antidote for snakebite.

### External

For the relief of haemorrhoids, eczema, skin rashes and boils.

## Pharmacology/bioactivity

Anti-nematodal activity has been demonstrated \textit{in vitro} against \textit{Caenorhabditis elegans} for aqueous and

100% ethanol extracts of the dried aerial parts of South African plants, at concentrations of 1.0mg/ml. A hexane extract proved inactive at a concentration of 2.0mg/ml. The same study found water and ethanol extracts to be inactive in an in vitro assay for anti-amoebic activity.

Molluscicidal activity of 80% ethanolic extracts of dried leaf, stem and fruits of Sudanese plants against Biomphalaria pfeifferi and Bulinus truncatus could not be demonstrated in vitro (concentration 200mg/litre).

Anticonvulsant activity of an aqueous extract of dried leaf has been demonstrated in vivo in the mouse (dose: 200.0mg/kg IP). In an in vitro assay for antiphage activity of aqueous fresh leaf+stem extracts of Greek plants, no activity was demonstrated against Bacteriophages MS2, PHI-CHI-174, T-7, T2, T4 or Bacteriophage-OPS. Extracts of shade-dried roots of Ethiopian plants were examined for anti-fertility activity in the rat, both in vitro (uterine stimulant activity) and in vivo (anti-implantation effects). Weak uterine stimulant activity was shown for 95% ethanol extracts but not for aqueous or n-butanol extracts (conc. 2.0%). Anti-implantation activity was shown by both n-butanol and ethanolic axtracts but not by aqueous extracts (dose: 0.93g/kg intragastrically).

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For external use, the decoction may be applied to the affected area using cotton wool or a clean cloth.

References