SALVIA LUTEA HERBA

Definition

Salvia Lutea Herba consists of the fresh or dried flowering tops of *Salvia africana-lutea* L. (Lamiaceae).

Synonyms

Salvia aurea L.
Salvia eckloniana Benth.
Vernacular names
bruinsalie, strandsalie, geelblomsalie (A), dune sage

Description

Macroscopical[1]

Figure 1 – Live plant

Branched woody shrub to 2 m, with densely leafy tomentose stems, dotted with orange-red glands; **leaves** simple, alternate, petiolate, grey-green, leathery, aromatic, 15-35 (-55) × 6-20 (-40) mm, elliptic to obovate, entire to crenate, tomentose; **flowers** (Jun-Dec) borne in a usually dense inflorescence of 3-12 verticils, each comprising 2-4 flowers and subtended by persistent bracts; **calyx** campanulate, expanding to 30mm long in fruit, purplish, membranous, with short spreading hairs and orange-red glands; **corolla** golden-brown to red-brown ±35-45 mm long with upper lip twice the length of the lower lip; **fruit** a nutlet.

[1] Codd, L.E. (1985). *Salvia*,. In: Flora of Southern Africa **28**(4):79-101.

Figure 2 – line drawing

Microscopical

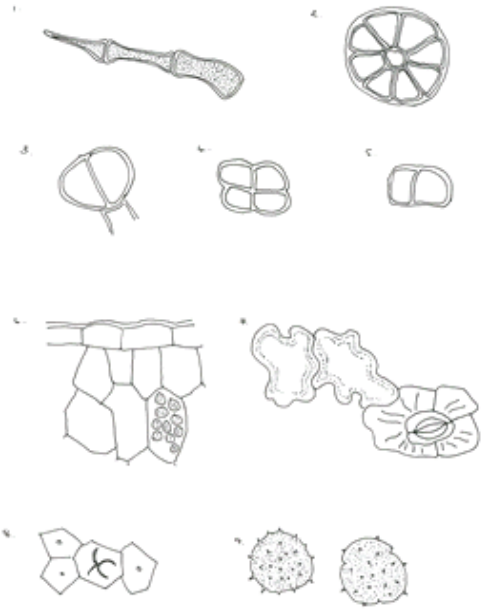

Figure 3 – microscopical features

Characteristic features are: the numerous uniseriate 2-3 celled clothing hairs of upper and lower leaf epidermis and stem, more numerous on lower leaf surface, forming a dense carpet-like layer; individual hairs are thick-walled, warty and ± 100m in length (1); the glandular trichomes of leaf and stem, with unicellular stalks and 2-4 celled heads ± 25m in diameter, with yellow-brown contents (3-5); the distinctive glandular hairs of the upper leaf surface with unicellular stalks and 8-celled heads ± 45-80m in diameter and

yellow-brown contents (2); the occasional spherical pollen grains, ± 20m in diameter, with spiny exine (9); the cells of the leaf epidermis with sinuous walls, striated cuticle and stomata raised above the level of the surrounding cells (7); the cells of the mesophyll with granular contents; the absence of calcium oxalate crystals and palisade layer; the starch grains of the leaf mesophyll (8)

Crude drug

Collected fresh when needed or sold in bundles of dried to semi-dried material comprising mainly leaves with occasional flowers and fruits. The leaves are grey-green, pungently aromatic and leathery.

Geographical distribution

Figure 4 – distribution map

Occurs in coastal dune scrub and arid fynbos on rocky slopes to 800m, from Namaqualand to the Cape Peninsula and eastwards to Port Alfred (Eastern Cape Province).

Quality standards

Identity test

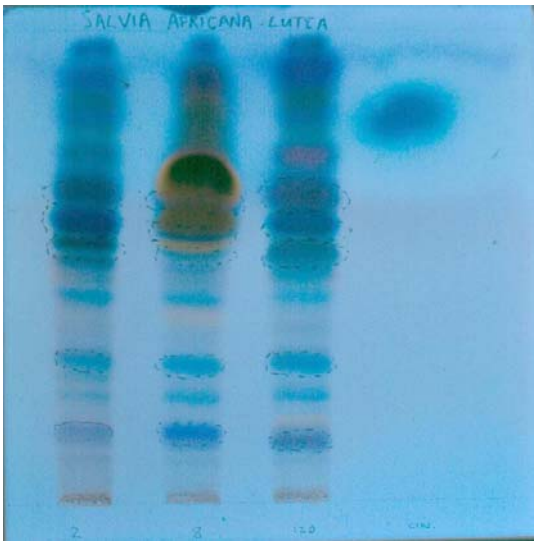

Figure 5 – TLC plate

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: 0,14 (light purple); 0,22 (blue); 0,53 (blue-green); 0,58 (purple); 0,64 (brown-mustard yellow); cineole: 0,8 (light blue)

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

Major compounds:

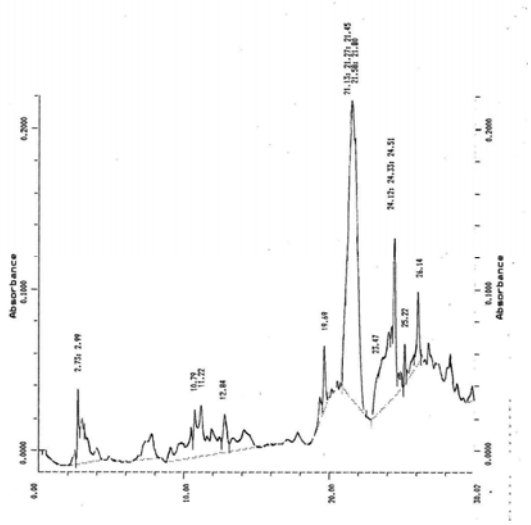

Figure 6 – HPLC spectrum

Methanol extract (Figure 6)
Retention times (mins): 19.69; 21.45; 24.51

Note The peaks for which retention times are given have not at the time of writing been confirmed as co-identical. Peak 1 represents more than one co-eluting compound.

Ethanol (70%) soluble extractive value: not less than 21.6% (range: 21.59-24.54%)

Volatile oil content: not less than 0, 67% (0, 67-1, 5%)

Purity tests

Assay

Not yet available

Major chemical constituents

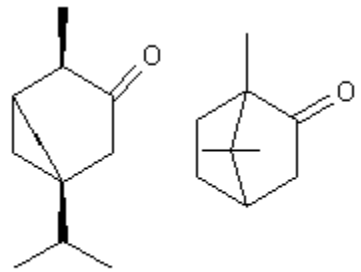

Figure 7 – chemical constituents

Little is known of the secondary chemistry of this species. Microchemical tests carried out in our laboratories indicated the presence of tannins, alkaloids, triterpene steroids and quinones. Cyanogenic glycosides and saponins were not detected. The chemistry of many other members of the genus *Salvia* (±900 species), particularly those used medicinally or as culinary herbs, has been well researched. Compounds isolated include diterpene abietanes, isopimarene derivatives and steroids[2]. The essential oil of *Salvia officinalis* is known to contain camphor as well as α- and ß-thujones.

Dosage forms

An aqueous decoction or infusion is taken orally or applied locally as a skin wash.

Medicinal uses

Taken orally to treat respiratory tract problems, influenza, fever, headache, digestive disorders; used externally as a wash to treat minor burn wounds.

Pharmacology/bioactivity
Brine shrimp lethality assay:

Activity was shown by extracts prepared from dried leaf material by decoction, at a concentration of 1 000mg/ml.

Antibiotic activity assay

In vitro antimicrobial activity against *Staphylococcus aureus* was shown by aqueous extracts prepared from dried leaf material by decoction, at concentrations of 10mg/ml and 5mg/ml. No activity was shown against *Pseudomonas aeruginosa, Candida albicans* or *Mycobacterium smegmatis.*

In vivo antipyretic activity of aqueous extracts of dried leaf against LP-induced increase of rectal temperature was demonstrated in rats (dose: 100mg/kg IP). Similar extracts showed analgesic activity in mice (dose: 100mg/kg IP), in both the hot plate test and the acetic acid–induced writhing assay. [3]

Many *Salvia* species are used as traditional medicines in various parts of the world. Some have been shown to possess antibacterial, antioxidant, cardiovascular, antidiabetic and antitumour activity. See [2] for a recent review of the bioactivity of the genus.

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[2] Ulubelen, A. (2003). Cardioactive and antibacterial terpenoids from some *Salvia* species. *Phytochemistry* **64(2)**: 395-399.

[3] Amabeoku, G.J, Eagles, P., Scott, G., Springfield, E. P. and Mayeng, I. (2001). Analgesic and antipyretic effects of *Dodonaea angustifolia* and *Salvia africana-lutea*. *Journal of Ethnopharmacology* **75(2/3)**: 117-124.

Contraindications

None known.

Adverse reactions

None reported. However, while the secondary chemistry of this species has not been the subject of much scientific study that of other *Salvia* species is well known. *Salvia officinalis* (BPC 1934; BHP 1996), in addition to various phenolic acids (e.g. ferulic, chlorogenic, rosmarinic acids) and tannins, contains 1-2.8% of volatile oil, of which the major components are α- and β-thujone and camphor. The convulsant activity of sage oil, attributable to these terpenoids, has been documented in both animals and humans[4].

In vivo hypoglycaemic activity (rabbit) has also been reported for various *Salvia* extracts used in phytotherapy[5] [6]. Preparations of *Salvia africana-lutea* and *S. africana-caerulea* should therefore be used with caution in patients receiving hypoglycaemic or anticonvulsant therapy.

Sage is traditionally reputed to possess abortifacient activity and to affect the menstrual cycle[7]. This is attributable to the presence of thujones, which are known to be abortifacient and emmenagogic, in the volatile oil. Preparations of indigenous *Salvia* species should therefore be used with caution in pregnant women.

Precautions

None reported.

Dosage

An infusion may be made with two tablespoonsful (±7.0g) of dried ground herb to which is added one litre of boiling water. The mixture is strained when cold. If fresh herb is used, four tablespoonsful of chopped leaf are infused with one litre of boiling water.
Adults: Half a teacupful (90ml) three times daily.
Children (6-12 years): Quarter of a teacupful three times daily.

[4] Newall, C. A., Anderson, L. and Phillipson, J. D. (1996). Herbal medicines-a guide for health care professionals. London. The Pharmaceutical Press.
[5] Jimenez, J. *et al.* (1986). Hypoglycaemic activity of *Salvia lavandulifolia. Planta Medica* **52**:260-262.
[6] Cabo, J. *et al* (1985). Accion hipoglucemiante de preparados fitoterapicos contienen especies del genero *Salvia. Ars Pharmaceutica* **26**: 239-249.
[7] Farnsworth, N. R. (1975). Potential value of plants as sources of new antifertility agents. *J. Pharm. Sci.* **6:** 535-598.