ERIOCEPHALUS HERBA

Definition

Eriocephalus Herba consists of the fresh or dried flowering tops of *Eriocephalus africanus* L. subspecies *africanus* and of subspecies *paniculatus* (Asteraceae).

Synonyms

*Eriocephalus umbellulatus* DC.

Vernacular names

wilderoosmaryn, kapokbossie (A), wild rosemary

Description

Macroscopical

This species is highly variable as regards habit, leaf form and composition of the capitulum, but two groupings are recognised at subspecific level. Subspecies *africanus* comprises spreading succulent-leaved forms from the coastal shrublands, while subspecies *paniculatus* is of more erect habit, not succulent and with a mainly inland distribution. Much-branched woody shrub to 0.9m in height and 4m in diameter. Old branches grey-brown to black, younger twigs red-brown to grey-green, pilose to glabrous; **leaves** highly aromatic, ericoid, succulent or non-succulent, arranged in fascicles, blue to grey-green or silver-grey tomentose, 8-17 ′ 0.4-2.5mm, segmented in ssp. *africanus*. **Inflorescence** a capitulum with white to pale pink female disc florets and falsely bisexual purple ray florets, arranged in terminal umbels, up to 9 per umbel, borne on peduncles ±8-10 mm in length; pappus covered after anthesis with indumentum of white silky hairs; seeds 1-3mm long.

Microscopical

Characteristic features are: the papillate cells of the epidermis, with thick cuticle and dark staining contents, each bearing a 2-3 celled thin-walled uniseriate clothing hair, up to 1mm long, with swollen basal cell; the
occasional pale yellow-brown spherical pollen grains, ±25μm in diameter, with warty exine; the ericoid leaves, almost cylindrical in transverse section, with 2-3 vascular strands and palisade layer beneath the epidermis; the absence of calcium oxalate crystals.

1. T/S papillate cells of epidermis, showing thick cuticle and dark staining contents
2. T/S leaf epidermis showing 2-3 celled, thin-walled, uniseriate clothing hair, up to 1mm long, with swollen basal cell
3. Epidermal cells showing stomata

Crude drug

Collected fresh when needed or available on markets as bundles of dried to semi-dried material. Most parts of the crude drug, which may comprise leaf, flower, fruit and seed, are highly aromatic.

Geographical distribution

Widespread in the Western and Eastern Cape Province and Namaqualand. Subspecies africanus occurs near the coast on saline or sandy soils of the Cape Peninsula and between Mossel Bay and Knysna; subspecies paniculatus is found further inland.

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 cineole (0.1% in chloroform). Method according to Appendix 2a. Rf values of major compounds: 0.46 (yellow); 0.57 (blue-grey); cineole: 0.89 (blue-purple)

Figure 5 – TLC plate

HPLC on C18 column, method according to Appendix 2b.

Major compounds:

Methanol extract: (figure 6a)
Retention times (mins): 11.08; 19.20; 20.90; 21.84; 24.24; 25.30

DCM Extract: (figure 6b)
Retention times (mins): 2.10; 2.54; 2.62; 3.55; 4.68

Figure 6 a – MeOH HPLC spectrum
Ethanol (70%) soluble extractive value: not less than 24% (23.93-31.07%).

Volatile oil content: not less than 0.67% (0.67-1.33%).

Purity tests

Assay

Major chemical constituents

Aerial parts of the plant have been shown to contain a mixture of sesquiterpene lactones of the eudesmanolide type e.g. 4a, 11-dihydroxy-eudesmane (4,11-eudesmanediol), 11-OH-5a-hydroperoxy-eudesmane, ivangustin and related compounds. The aliphatic alcohol dehydrofalcarinol has also been isolated.

Microchemical tests (our laboratories) indicated the presence of tannins, but not of alkaloids, saponins, cyanogenic glycosides or triterpene steroids.

Dosage forms

An aqueous decoction or infusion, or a brandy tincture is taken orally.

Medicinal uses

The use of this plant is recommended in traditional practice as a diuretic for the treatment of oedema, as a remedy for gynaecological and gastric disorders, as a diaphoretic and haemostatic.

Pharmacology/bioactivity

Antispasmodic activity has been associated with 4, 11-eudesmanediol and may underlie the use of this species as a remedy for dysmenorrhoea or stomach ache. Tannin content may account for reputed haemostatic properties.

In an in vitro assay for antimicrobial activity of leaf, stem and root extract fractions (CHCl₃, EtOH, MeOH, petrol ether, H₂O), no activity was demonstrated by any of the leaf or stem extracts against *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Mycobacterium smegmatis* or *Candida albicans*. Weak activity of a methanolic root extract (MIC 10.0mg/ml) against *Staphylococcus aureus* was demonstrated.

In vitro antimicrobial activity was demonstrated against *Staphylococcus aureus* (our laboratories) by aqueous extracts of dried leaf material, at concentrations of 10mg/ml and 5mg/ml. No in vitro activity was demonstrated against *Pseudomonas aeruginosa*, *Mycobacterium smegmatis* or *Candida albicans*.

Brine shrimp lethality assay:
Activity was shown by extracts prepared from dried leaf material by decoction (our

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laboratories), at a concentration of 1,000 mg/ml.

**Contraindications**

None known.

**Adverse reactions**

None known.

**Precautions**

No special precautions

**Dosage**

One-third of a teacupful (60 ml) of an infusion (one tablespoonful of dried herb/1 litre of boiling water) three times daily.