ELYTROPAPPUS RHINOCEROTIS HERBA

Definition

Elytropappus Rhinocerotis Herba consists of the fresh or dried young tops of *Elytropappus rhinocerotis* (L.f.) Less. (Asteraceae).

Synonyms

Stoebe rhinocerotis L.f.
Vernacular names

renosterbos, renostertoppe (A)

Description

Macroscopical[1]

Figure 1 – Live plant

A much-branched grey to grey-green aromatic shrub 0,6 - 2,5m in height with young stems densely woolly; **leaves** minute, numerous, adpressed to the stem, usually woolly on both surfaces; **flowers** (Mar.-Sept.) inconspicuous, yellow, tubular, borne in capitula of mostly 3 florets, pappus well developed; **fruit** an achene with prominent longitudinal ribs.

Figure 2 – line drawing

Microscopical

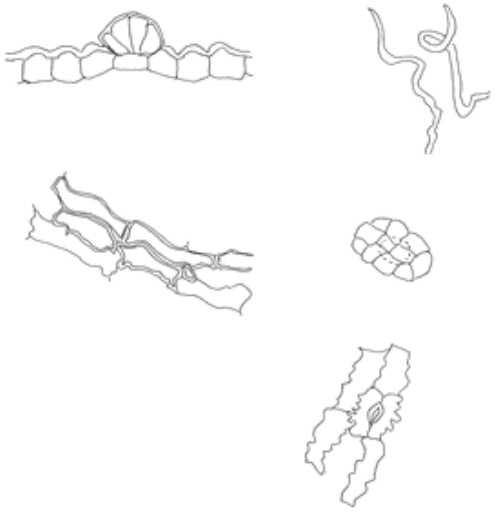


Figure 3 – microscopical features

The characteristic features are: the abundant long unicellular clothing hairs of leaf and stem, loose or attached to fragments of epidermis; the distinctive glandular hairs of leaf lamina and margin, with multicellular heads (up to 12 cells) and dark yellow-brown resinous contents, staining red with Soudan IV; the absence of calcium oxalate crystals.

[1] Levyns, M.R. (1935). A revision of *Elytropappus* Cass. *Journal of South African Botany* **1**: 89-103.

1. T/S leaf epidermis showing glandular hair with multicellular head (up to 12 cells) and dark yellow-brown resinous contents
2. Long unicellular clothing hairs of leaf and stem
3. Epidermal cells of upper leaf lamina (surface view)
4. Glandular hair (surface view)
5. Epidermal cells of lower leaf lamina

Crude drug

Bundles of young twigs, grey-green in colour with a distinctive aromatic odour, bitter taste and sticky resinous feel.

Geographical distribution

Figure 4 – distribution map

Common on dry clay flats and slopes throughout the Western and Eastern Cape Provinces, up to Namaqualand. Capable of forming pure stands covering a large area (renosterveld).

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: 0,78 (purple); 0,87 (pink); cineole: 0,84 (blue-purple)

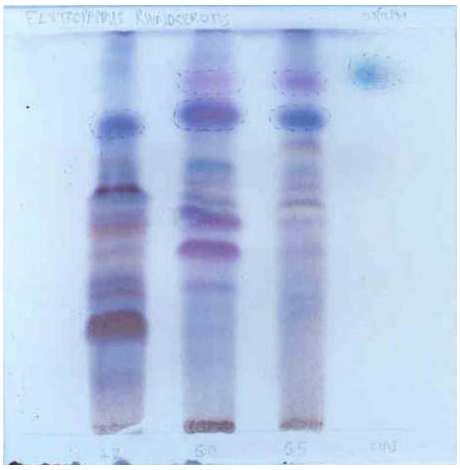


Figure 5 – TLC plate

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

Major compounds:
Methanol extract: (figure 6a)
Retention times (mins): 15.65; 19.62; 23.92; 24.87; 25.16; 27.46

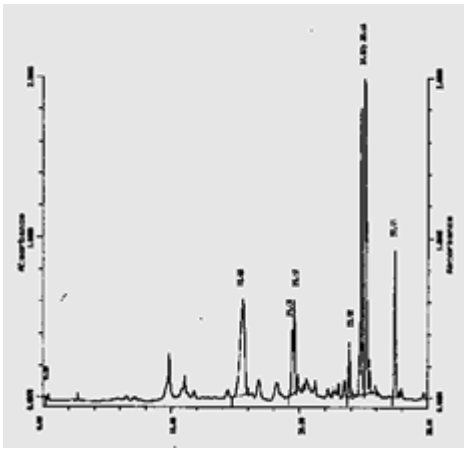


Figure 6 a – MeOH HPLC spectrum

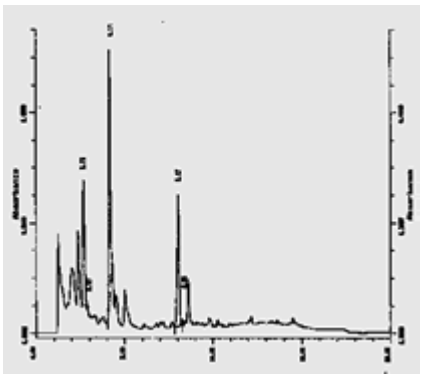


Figure 6 b – DCM HPLC spectrum

Dichloromethane extract: (figure 6b)
Retention times (mins): 2.72; 4.18; 8.07

Ethanol (70%) soluble extractive value: not less than 20% (range: 20.69-34.92%)

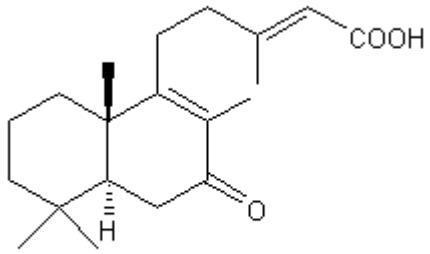
Volatile oil content: not less than 0,33% V/W (range: 0,33-0,66%)

Purity tests

Assay

Not yet available

Major chemical constituents



Rhinocerotinoic Acid

Figure 7 – chemical constituents

Microchemical tests in our laboratories indicated the presence of cardiac glycosides (2/3 collections), saponins, tannins and reducing sugars (3/3 collections) but not alkaloids or cyanogenic glycosides. Rhinocerotinoic acid, a labdane diterpene, has been isolated from the overground parts of this species[2].

Dosage forms

For children, the young tops are given orally as a powder; for adults a brandy or wine infusion is the traditional dosage form[3].

Medicinal uses

For the treatment of colic, wind, diarrhoea and acidity in young children; adult use is mainly for digestive disorders and as a bitter tonic to stimulate appetite

Pharmacology/bioactivity

No *in vitro* antimicrobial activity against *Pseudomonas aeruginosa, Candida albicans* or *Mycobacterium smegmatis* was observed in the concentrations used for disc assays in our laboratories. Some activity was recorded against *Staphylococcus aureus.*

Some preliminary studies on the use of this herb as an anti-hypoglycaemic were apparently carried out during the period 1975-1980 by the late Professor W. Jackson, at the Department of Endocrinology at Groote Schuur Hospital. We have not been able to follow up this report.

Contraindications

None documented or recorded by traditional healers and herbalists.

Adverse reactions

None documented or recorded by traditional healers and herbalists.

Precautions

No special precautions

Dosage

Children: half to one teaspoonful of young tops, powdered and dried, with a little warm water, for the relief of colic or mild diarrhoea.

Adults:
As directed.

[2] Dekker, T.G. *et al.* (1988). Studies of South African medicinal plants Part 7: Rhinocerotinoic acid – a labdane diterpene with anti-inflammatory properties from *Elytropappus rhinocerotis. South African Journal of Chemistry* **41:** 33-35.
[3] Anon. (1992). Herbs of the Montagu Museum. Press, Montagu.