

ARCTOPUS ECHINATUS RADIX

Definition

Arctopus Echinatus Radix consists of the fresh or dried sliced root of *Arctopus echinatus* L. (Apiaceae).

Synonyms

Vernacular names

platdoring, pokkiesdoring, sieketroot (A)

Description

Macroscopical ¹



Figure 1a: Live plant.



Figure 1b: Dried Root.

Dioecious perennial stemless herb; **leaves** 5-8cm long × 4-7cm wide, borne in a rosette on flat petioles up to 5cm long, ovate to orbicular, three-lobed, dentate, with ciliate-spinous margin and lamina, **flowers** (May-July) inconspicuous, cream to pink, borne in simple umbels; **root** up to 40mm thick, grey

brown on the outer surface, pale yellow-brown internally, rapidly darkening on exposure to air; a distinct cambium visible in T/S; the cut surface of fresh root exudes copious white oleo-gum resin from ducts (vittae) situated in the inner phloem.



Figure 2: line drawing

Microscopical

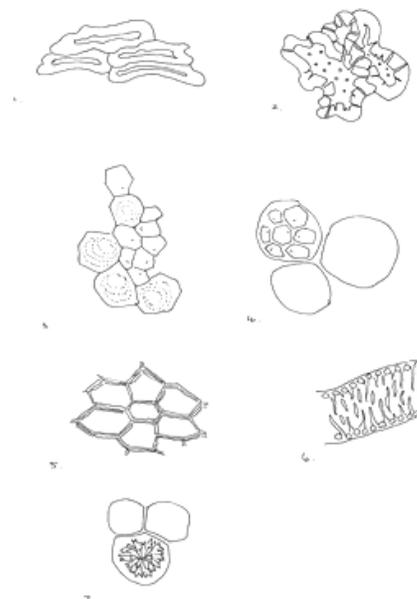


Figure 3: microscopical features

¹ Sonder, (1894). *Arctopus*. Flora Capensis 2: 564-565.

Characteristic features are: abundant fragments of yellow-brown cork tissue (5); groups of sclereids of the phloem (1 and 2); rosette aggregates of calcium oxalate up to 30µm in diameter in thin-walled parenchyma cells of the xylem (5); starch grains occurring loose in the powdered drug or in thin walled parenchyma of the phloem, individual grains more or less polygonal, up to 40µm in diameter with an eccentric hilum (3 and 4); abundant fragments of spirally or reticulately thickened vessels of the xylem (6).

Crude drug

Gathered as needed or available in the marketplace as fresh or dried root; texture pliable when fresh, brittle when dried; odour pleasant aromatic.

Geographical distribution

Southern Namaqualand and the western Karoo to the Cape Peninsula and eastwards to Grahamstown, on sand or granite flats and slopes.

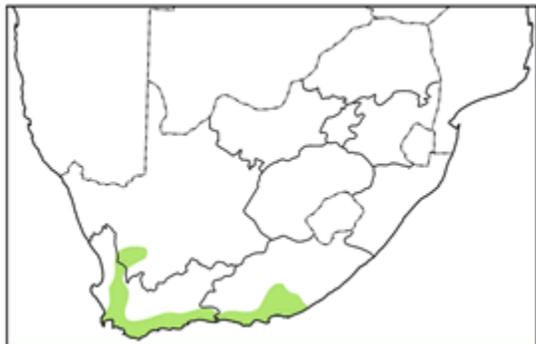


Fig. 4: distribution map

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: 0.229 (mauve); 0.685 (purple); 0.806 (deep purple); cineole: 0.694 (blue-purple)



Figure 5: TLC plate

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

Major compounds:

Methanol extract (figure 6)

Retention times (mins): 19.23; 20.04; 20.47

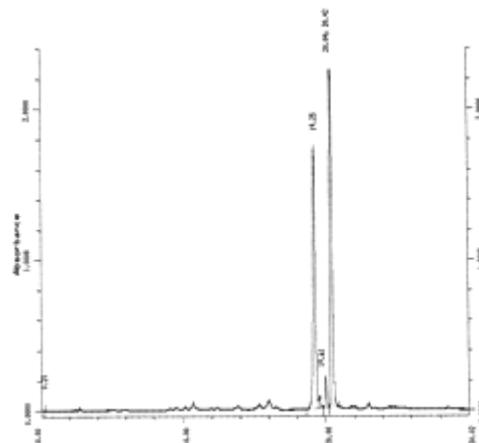


Figure 6: HPLC spectrum

Ethanol (70%) soluble extractive value: not less than 23% (range: 22.90-32.18%).

Purity tests

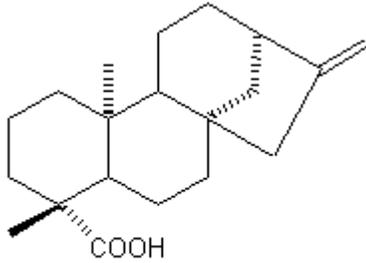
Assay:

Not yet available

Major chemical constituents

General phytochemical tests in our laboratories indicated the presence of saponins, reducing sugars and tannins but

not of alkaloids, nor of cardiac, anthraquinone or cyanogenic glycosides. Little investigation of the root secondary chemistry of this species appears to have been made, but there are reports of the occurrence of kaurene derivatives, similar in structure to those found in *Alepidea* species².



ent-16-Kauren-19-oic acid

Figure 7: chemical constituents

Dosage forms

Aqueous infusion or decoction, applied externally or taken orally.

Medicinal uses

The first written records of the use of this species, well known to the Khoi-khoi and San peoples, appeared in the late 18th century. Its use today includes the treatment of urinary tract disorders, venereal diseases, gynaecological problems and epilepsy; also as a diuretic and "blood purifier". Applied externally, it is utilised for dermatological disorders. ^{GR1, 11, 19, 23}

Pharmacology/bioactivity

No formal pharmacological studies appear to have been made of this species.

Contraindications

None known.

Adverse reactions

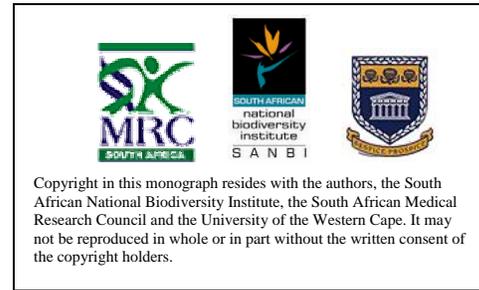
Drowsiness has been reported. ^{GR 1}

Precautions

No special precautions

Dosage

To be determined



² De Castro, A., van Wyk, B-E., Witte, L. and Tilney, P.M. (in prep.). Generic relationships in Southern African Saniculoideae (Apiaceae).