

## SIPHONOCHILUS AETHIOPICUS RHIZOMA

### Definition

Siphonochilus Aethiopicus Rhizoma consists of the fresh or dried sliced rhizome of *Siphonochilus aethiopicus* (Schweinf.) B. L. Burtt (Zingiberaceae).

### Synonyms

*Kaempferia aethiopica* (Schweinf.) Benth.  
*Kaempferia ethelae* J. M. Wood

### Vernacular names

Indungulo, isiphephetho (Z),

### Description

#### Macroscopical<sup>1,2</sup>



Figure 1 a: Live plant



Figure 1 b: Fresh rhizome

Deciduous aromatic rhizomatous plants, bisexual or female, to 1m high; **leaves** 30-400 × 50-90mm, glabrous; **flowers** (Oct-Feb) 2-6, faintly scented, borne just above ground level in inflorescences separate from the leaf shoot, white to bright pink with yellow markings on lip; corolla tube white, 30-40mm long; tepal lobes 60-80mm wide.

### Microscopical

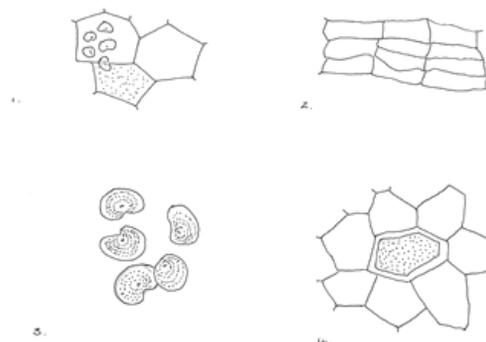


Figure 3: microscopical features

Characteristic features are: pale golden brown cork tissue, the suberised cell walls staining with Sudan IV (2); thin-walled parenchyma cells of the central stele (1) containing abundant starch grains; the latter are oval or kidney-shaped (3), bright yellow-brown oleoresin cells scattered throughout the parenchyma (4); the absence of fibres, tannin and lignified tissue.

### Crude drug

Collected as required or found in the marketplace as light brown-buff fleshy rhizomes, sometimes with roots attached; cone-shaped with transverse ring markings; similar in colour to commercial ginger (*Zingiber officinale*) but lacking the pungency of the latter; a distinct cambium visible when freshly cut; fracture crisp; odour scented aromatic.

### Geographical distribution

Formerly rare in forests of KwaZulu/Natal, Mpumalanga, Northern Province and Swaziland; now almost extinct in the wild in

<sup>1</sup> Kiew, K. Y. (1980). Taxonomic studies in the genus *Kaempferia* (Zingiberaceae). *Notes of the Royal Botanic Garden (Edinburgh)* **38(1)**: 1-12.

<sup>2</sup> Pooley, E. (1998). A field guide to the wild flowers of Kwazulu-Natal and the eastern region. Natal Flora Publications Trust, Durban.

South Africa, but preserved in cultivation; propagated also by tissue culture.

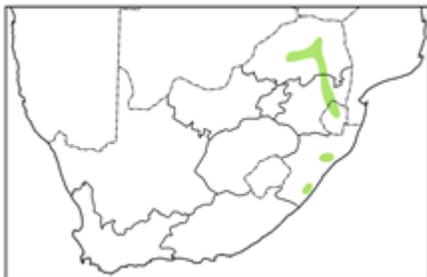


Figure 4: distribution map

### 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<sub>f</sub> values of major compounds:

0,34 (grey-mauve); 0,38 (grey-mauve); 0,49 (grey-mauve); 0,57 (grey-mauve); 0,76 (tangerine); cineole: 0,79 (blue-purple)

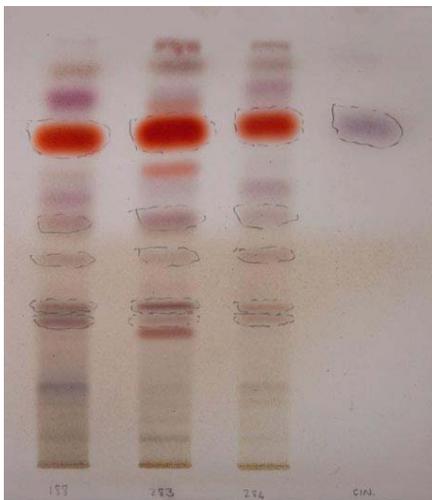


Figure 5: TLC plate

HPLC on C<sub>18</sub> column, method according to Appendix 2b.

#### Major compounds:

Methanol extract:

Retention times (mins): 7.31; 8.04, 8.48, 8.60

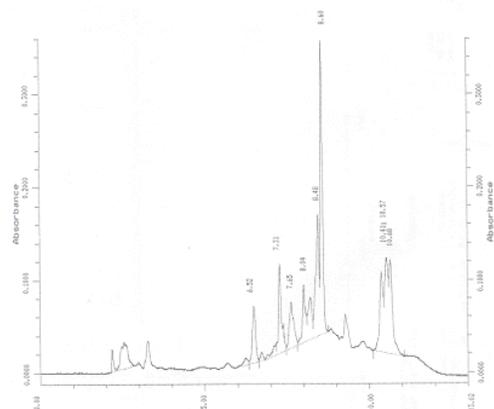


Figure 6: HPLC spectrum

Ethanol (70%) soluble extractive value: not less than 1.7% (range:1.70-3.06%, determined according to the method of the BHP, using 15g fresh material extracted with 100ml 70% ethanol, taking 25ml aliquots)

Volatile oil content: not < 0.33%

#### Purity tests

#### Assay

Not yet available

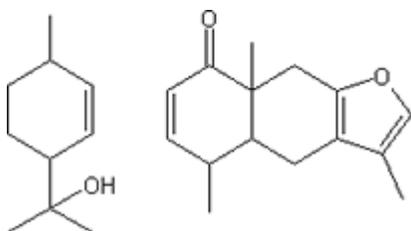
#### Major chemical constituents

Little is known of the secondary chemistry of this species. A report of the volatile oil composition of an unidentified *Kaempferia* (now *Siphonochilus*) species appeared in 1915<sup>3</sup> and ongoing work has identified  $\alpha$ -terpineol and a sesquiterpene as constituents<sup>4</sup> of the oil in *S. aethiopicus* rhizome.

<sup>3</sup> Goulding, E. *et al.* (1915). *Journal of the Chemical Society* **107**: 314.

<sup>4</sup> Holzapfel, C.W. *et al.* (in prep.).

Chemotaxonomic studies in the genus *Siphonochilus*.



$\alpha$  - Terpineol

Siphonochilus sesquiterpenoid

**Figure 7: chemical constituents**

### Dosage forms

A piece of fresh rhizome is chewed.

### Medicinal uses

Treatment of cough, cold, sinusitis, malaria, menstrual pain.<sup>GR 12</sup>

### Pharmacology/bioactivity

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

The decongestant and antimicrobial activity of many essential oils probably largely accounts for the popularity of this species as a decongestant and antibiotic. Preliminary work has demonstrated prostaglandin-inhibitory (COX-1 assay) activity for ethanolic extracts of *S.aethiopicus* tuber and leaf<sup>5</sup>.

### Contraindications

None known.

### Adverse reactions

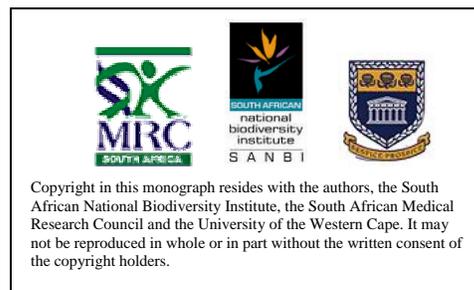
None recorded

### Precautions

No special precautions

### Dosage

To be determined



<sup>5</sup> Lindsey, K., Jäger, A.K., Raidoo, D.M. and van Staden, J. (1999). Screening of plants used by Southern African traditional healers in the treatment of dysmenorrhoea for prostaglandin-synthesis inhibitors and uterine relaxing activity. *Journal of Ethnopharmacology* **64**: 9-14.