

## **Securidaca longipedunculata (Polygalaceae)**

**English:** Violet tree **Afrikaans:** Krinkhout

**African vernacular names:**

**Hausa (Nigeria):** Uwar maganigunar **Ibo:** Ezeogwu, tshi-venda, mpesu

**Swahili:** Chipvufana, mufufu, munyapunyapu, munyazvirombo, mutangeni, umfufu **Tsama:** maba

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### **The plant**

A medium sized violet tree, growing up to 6 m height, with a characteristic pale smooth bark. Leaves are variable in size and shape, alternate, often in clusters or crowded on dwarf spur branchlets, which are sometimes spine-tipped. When young they have fine hairs but lose them when mature. Flowers in short bunches are pink or purple with sweet scent. They are produced in early summer. They are about 10 mm long, borne on a long peduncle. Terminal and axillary sprays are 30-50 mm long, appearing with the young leaves. The fruits are round, with a distinctive membranous wing up to 40 mm, purplish green when young, becoming pale straw coloured between April and August.

The violet tree is widely distributed in woodlands and arid savannas of tropical Africa, especially in the Northwest and in the Limpopo provinces of South Africa and Mozambique. When in flower it is very attractive for birds, butterflies and other insects.

### **Plant parts used**

The roots, the extract of the roots

### **Constituents**

In the **roots** the flavonoids 1,7-dimethoxy-2-hydroxyxanthone and 1,4-dihydroxy-7-methoxy-xanthone, the saponine aglycones presenegin, elymoclavine, sinapic acid, 3,4,5-O-caffeoyl-quinic acid, securinine, methylsalicylate and different monosaccharides like glucose and fructose were found. The sugars result from hydrolysis of saponines (6).

From the ethyl acetate fraction further xanthenes were isolated. Some of them showed moderate antimicrobial activity (9).

The **seed oil** contains fatty acids and triacylglycerols with unusual structures, so seven chromatographically distinct groups of triacylglycerols in two series. One series represents monoaceto-triacylglycerols and the other one normal triacylglycerols with only long-chain fatty acids (8).

### **Traditional uses**

The violet tree is the most popular of all the traditional medicinal plants in South Africa and is used for almost every conceivable ailment. Some vernacular names means “king of medicines” The roots are very poisonous, smell like wintergreen oil and are said to contain methylsalicylate. In some parts of West Africa they are used as arrow poison.

The root and bark are taken orally either powdered or as infusion for treating chest complaints, inflammation, abortion, ritual suicide, tuberculosis, infertility, venereal diseases and for constipation. Toothache can also be relieved by chewing the roots. Powdered roots are used to treat headache by rubbing them on the forehead. Infusions of the root are used for washing topical ulcers. In Limpopo, the Venda take roots for mental disorders and against children’s illness during breast feeding. The Venda people mix the powdered root with maize and sorghum beverages for men being sexually weak. In Zimbabwe, the roots are given to people who are believed to be possessed by evil spirits. Pounded with water and salt they are used against snake bites and cough.

## **Results of experimental studies**

### **Pharmacological effects**

The root extract of *S. longepedunculata* was applied on cultured rat skeletal muscle cells. There the ionic sodium current increased drastically more than in cultured frog muscle cells (30 % over 10 %). The calcium current was not altered. Authors conclude that the plant extract can counteract to the venom of the snake *Naja nigricollis*, according to the fact that indigenous healers use this extract against snake bites. But no active substance could be identified (3).

The two xanthenes described above were tested on the rabbit corpus cavernosum smooth muscle cells. There was a significant relaxation activity on rabbit corpus cavernosum. The authors see it congruent to the use of the extracts of *S. longepedunculata* for the treatment of men with erectile dysfunctions (6).

### **Anti-inflammatory test**

In Swiss albino mice different fractions of the root extract were tested on topical oedema test in the ears. The methanol extract and fractions of it (petrol ether and methanol) inhibited topical oedema induced by xylene (4).

In the paw oedema test, induced by egg albumin in rats the methanol extract and the methanol fraction suppressed the oedema. The petrol ether fraction did not exhibit any anti-inflammatory activity (4).

## **Results of clinical studies**

No results were available

### **Toxicity test (LD50):**

In mice:           282 mg/kg per os  
                          11 mg/kg i.p.(4)

## **Results of clinical studies**

No results were available

## **Evaluation**

In the extracts of the root and root bark of *S. longipedunculata* saponines, xanthenes and methylsalicylate can be found as biologically active substances. The first two ones

are active on biological membranes, as the pharmacological effects describe above. Methylsalicylate may act as a bacteriostatic substance e.g. for cleaning skin ulcers. Saponines may be responsible for activity as arrow poison, too. The statements about *S. longipedunculata* as a poisonous plant are contradictory. In a summary of 1944 of fatal human poisoning in South Africa there is a reference about the toxic property (7), similarly in an overview about renal failures (1). In a newer database, revised in 2006 *S. longipedunculata* is mentioned as a plant with no hazards (2). Washing of skin wounds with water extract and application against rheumatism may be useful and harmless if not used over long time.

**The internal use of *Securidaca longipedunculata* with men must be advised against.**

***Securidaca longipedunculata***

<b>for washing skin wounds</b>	* *
<b>against rheumatism</b>	* *
<b>for internal use</b>	- - -

**References *Securidaca***

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