

## **Capparis tomentosa (Capparidaceae)**

**English:** Caper, woolly caper-bush, caper bud **French:** Tapenade, tapeno  
**Spanish:** Tapeno

**African vernacular names:**

**Swahili:** Mkoyo **Tswana:** Motawana **Zulu:** Iqwanene, iqwaningi, quanini, umabusane

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### **The plant**

A small spiny tree or scrambling shrub found in tropical or other warm regions. In northern Botswana and South West Africa it is a good sized tree. It grows up to 10m height, well-branched and with dense leaves. It occurs in a wide range of habitats, as evergreen and costal forests, in open woodlands and hot dry thornvelds, and on mountain slopes.

Leaves are oblong to broadly elliptic, 3.5 to 8 and 1 to 2.5 cm, light green or greyish green, soft or velvety, with stipules. Flowers white or lilac, sepals thickly hairy, fruits always more than 2 cm in diameter.

The baby leaves and fresh shoots of the related species *C. spinosa* are eaten as a vegetable or salad. The flower buds are pickled and used as a pungent condiment.

The fruits of other species are reported to be edible.

### **Plant parts used:**

The aerial parts or leaves, the fruits, the roots

### **Constituents**

Glucosinolates are the characteristic compounds of the Capparidaceae plants. If plants are destroyed by crushing, glucosinolates are altered by the enzyme myrosinase into mustard oils. These bring a bitter taste and a hot smell and have skin irritant and antibacterial properties. Therefore plants of this family are used as condiments like radish or the fresh leaves of the lettuce Rucola.

In dried **leaves** glucocapparin, gluconorcappasalin and benzylglucosinolates can be found.

The air dried **root**, successively extracted with solvents was eluted on a Silica gel 60 column with EtOAc-petrolether mixture (4:1). It afforded colourless crystals of a new oxindole, 3-hydroxy-3-methyl-4-methoxyoxindole, mp 230° C, MS 193.073 (4).

Further compounds are common plant products like fatty acids, hydrocarbons,  $\beta$ -carotene, rutin, and sitosterol (6).

### **Traditional uses**

Leaves or roots of Capparidaceae plants are used as spices all over the world. In South Africa *C. tomentosa* has a reputation for healing a lot of complaints ranging from cough to infertility and impotence (4).

## **Results of experimental studies**

### **Antibacterial activity**

Out of a group of South African plants being documented useful for topical wound healing in the literature *C. tomentosa* aqueous and methanolic extracts were tested. There was **no** activity against *Staphylococcus aureus*, *Streptococcus pyogenes* and *Pseudomonas aeruginosa*, **nor** was any effect on fibroblast growth (5).

### **Anticonvulsant activity**

The new oxindole isolated from the roots of *C. tomentosa* showed a slight, anticonvulsant activity (4).

### **Toxic effects**

Nubian goats were given repeated doses of 5, 2.5 and 0.25 g/kg of dried leaves or stems of *C. tomentosa*, orally. At various time points after application the goats died or were slaughtered. The prominent features of intoxication were inappetence, locomotoric disturbances, paresis of the hind limbs and recumbency. Anaemia developed, kidney and liver functions were showing pathological changes. The anatomical investigation showed neural lesions in the gray matter of the spinal cord in the sacral region, degeneration of the renal proximal convoluted and collecting tubules, atrophy of the cardiac, renal and pelvis fat, and straw-coloured fluid in serous cavities. One goat receiving 2.5 g/kg daily developed toxicosis after 8 days, but recovered after cessation of plant administration (1).

Five desert sheep and three Zebu calves were given dry leaves of *C. tomentosa*. The clinical signs of the poisoning were weakness of the hind limbs, staggering, flexion of the fetlock and the phalangeal joints, inappetence and recumbency. In the serum there was a decrease of total protein and calcium. An increase of glutamic oxalacetic transaminase (GOT), ammonia, sodium and potassium values were reported. The main pathological changes were vacuolisation of the neurons and axons in the spinal cord and necrosis of the centrilobular hepatocytes and renal convoluted tubules and glomeruli (2).

### **Results of clinical studies**

No results were available

### **Evaluation**

The most important chemical compounds in the plant family of *Capparidaceae* are glucosinolates bringing the pungent smell of the condiment. But there was only one, new information about the components of *C. tomentosa* reporting an oxindole with a weak anticonvulsant activity (4).

This compound -no information about its content- with its heterocyclic structure must be judged as toxic, particularly with regard to the fatal results with the goats and sheeps.

**Therefore all parts of *Capparis tomentosa* must be classified toxic in longer use.**

**Informations from Europe are indicating that the long-time use of the mustard plant and its botanical relatives may cause thyroïdal struma.**

The use as spice can be excluded here, because of its use in short times and small quantities.

***Capparis tomentosa*:**

<b>As a spice for humans</b>	<b>***</b>
<b>As a medical preparation or in greater amounts</b>	<b>- - -</b>

**References Capparis**

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