Gloriosa superba Linn.

Synonyms : *Gloriosa simplex , Menthonica superba*
Family : Colchicaceae
Parts Used : Root , Rhizome

Vernacular Names

English : Glory Lily
Malayalam : Menthonni
Hindi : Kalihari
Sanskrit : Visalya
Bengali : Bisha
Kannada : Nangulika
Tamil : Akkini chilam
Telungu : Adavinabhi

Distribution and Habitat: The plant is distributed throughout tropical India upto an altitude of 2500 m and in Andaman Islands. It is also cultivated in tropical and South Africa, Madagaskar, Indonesia and Malaysia. It is reported to be cultivated in some parts of Europe. Cultivation of the plant is mostly confined to the Southern states of India.
Botany: It is glabrous climbing herb with tuberous root stock, grows over hedges and small trees. Stem is 6 m long, grows to a height of 1.2-1.5 m before the stem branches into three.

• ***Leaves***: Simple, alternate or whorled, sessile, ovate- lanceolate, tip elongating in to a spirally coiled tendril, base cordate and margin entire.
• ***Flowers***: Large in terminal racemes.
• ***Fruits***: Capsules, linear-oblong, upto 6.8 cm long.
• ***Seeds:*** Oval in shape, testa spongy, embryo cylindric, 30-150 seeds per capsule, pale orange attached to the sutures.
• ***Tubers***: Cylindric, large, simple, 'V' shaped with the two limps equal or unequal in length pointed towards end brownish externally with a yellowish internal surface.

Properties:

1. Rhizome is oxytocic, anticancerous, antimalarial, stomachic, purgative, cholagogue, anthelmintic, alterative, febrifuge and antileprotic.
2. Leaf is antiasthmatic and antiinflammatory.
3. Root shows antigonorrhoeic and antibiotic activity.
4. This plant has poisonous effect to environment and livestock. The toxic properties are due to presence of alkaloids chiefly colchicines.

Chemical constituents:

1. The major alkaloids are colchicine, 3-demethyl colchicine and colchicoside. There is another alkaloid gloriosine which promises to be even more effective than colchicine in plant breeding for inducing polyploidy.
2. The flowers, leaves and tubers contain colchicine, superbin,lumicolchicine and gloriosine. Colchicine and colchicoside have been reported from seeds.

Uses:

• The roots and rhizomes are used in traditional system of medicine. Its abortifacient and antipyretic properties have been mentioned in ancient classics "*Charaka*". The name *Garbhaghatini* is due to this abortifacient activity. They are useful in the treatment of inflammations, ulcers, scrofula, haemorrhoids, pruritus, dyspepsia, helminthiasis, flatulence, intermittent fevers and debility.
• The root is given internally as an effective antidote against cobra poison. A paste of the root is also used as an anodyne; applications in bites of poisonous insects, snakebites, scorpion sting, parasitic skin diseases and leprosy.

Agrotechnology

Soil and climate**:** *G. superba* is a shallow rooted plant and grows well in a variety of soils either clay or sand. It grows well in a light porous soil with good drainage. For vigorous growth, greater blooms and strong tuber, a mixture of soil, sand and compost manure is recommended. This is a rainy season plant and sprouts well in warm, humid and tropical conditions. It should be grown in sun as the plants in shade become weedy and thin and move towards light.
Propagation*:* The propagation is mainly by tubers, by division of rhizomes. Seeds remain dormant for 6-9 months and due to hard seed coat, about 20-30 days are required for germination and seeds may take 3-4 years before it matures to flower. Treatment of seeds by gibberellin (1-3 ppm) resulted in higher yield of colchicine in the plant and higher production of tubers. Seeds are sown in lines at a distance of 4-6 cm apart. The seeds and rhizomes are sown usually in the last week of June to mid July. The rhizomes are planted by splitting carefully into two from their 'V' shaped joints (two buds being at the extreme end of each rhizome) in lines 20 cm apart at a distance of 20 cm.
After cultivation: They are watered regularly when the plants are growing. After green shoots appear 2-3 showers are given weekly. The irradiation of the plant at 42% natural sunlight intensity increased the production of tuber and colchicine.
Harvesting: They usually take 6-10 weeks to flower after sprouting and then set fruits. The fruits ripen at the end of October and after that aerial shoot eventually dies, leaving the fleshy tubers underground. The tubers are dug out with great care. An individual plant produces 50g tubers on an average. The average yield is around 4000-5000 kg of rhizomes and 1000 kg of seed per hectare. The content of colchicines is usually 0.358% and 1.013% in tubers and seeds, respectively.
Processing: Concentrated under vacuum to one third of its volume and extracted with chloroform for colchicine and related substances. Concentration of the aqueous phase to syrup, which is extracted, 6-8 times with a mixture of $CHCl_3$ - alcohol (4:1) yields colchicoside.