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Calotropis gigantea- botanical, pharmacological view

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Abstract

Calotropis gigantea is a big shrub; it's looking like a small tree, sports clusters of waxy flowers that are either white or lavender in colour found. Each flower consists of five pointed petals and a small, elegant "crown" rising from the center, which holds the stamens. This article views the botanical survey and full details of the plant of *calotropis gigantea*. It has oval, light green leaves and milky stem. The flowers last long, and in Thailand they are used in various floral arrangements. They were also supposed to be popular with the Hawaii queen Liliuokalani, who considered them as symbol of royalty and wore them strung into leis. In India, the plant is common in the compounds of temples. The fruit is a follicle and when dry, seed dispersal is by wind. The seeds with a parachute of hairs is a delight for small children, who like to blow it and watch it float in the air. This plant plays host to a variety of insects and butterflies.

Keywords: *Calotropis gigantea*, Crown, parachute of hairs, seed

Introduction

From pre-historic times to the modern era in many parts of the world and India, plants, animals and other natural objects have profound influence on culture and civilization of man. Since the beginning of civilization, human beings have worshiped plants and such plants are conserved as a genetic resource and used as food, fodder, fibre, fertilizer, fuel, and febrifuge and in every other way. *Calotropis gigantea* is one such plant^[1]. In ancient ayurvedic medicine the plant *Calotropis gigantea* is known as "sweta Arka".



Fig 1: *Calotropis gigantea*

Calotropis is drought resistant, salt tolerant to a relatively high degree, grows wild up to 900 meters (msl) throughout the country and prefers disturbed sandy soils with mean annual rainfall: 300-400 mm. Through its wind and animal dispersed seeds, it quickly becomes established as a weed along degraded roadsides, lagoon edges and in overgrazed native pastures. It has a preference for and is often dominant in areas of abandoned cultivation especially disturbed sandy soils and low rainfall. It is assumed to be an indicator of cultivation. It is a native of India, China and Malaysia and distributed in the following countries: Afghanistan, Algeria, Burkina Faso, Cameroon, Chad, Cote d'Ivoire, Democratic Republic of Congo, Egypt, Eritrea, Ethiopia, Gambia, Ghana, Guinea Bissau, India, Iran, Iraq, Israel, Kenya, Kuwait, Lebanon, Libyan, Arab Jamahiriya, Mali, Mauritania, Morocco, Mozambique, Myanmar, Nepal, Niger, Nigeria, Oman, Pakistan, Saudi Arabia, Senegal, Sierra Leone, Somalia, Sudan, Syrian Arab Republic, Tanzania, Thailand, Uganda, United Arab Emirates, Vietnam.

Plant profile

Habit: Shrub or a small tree up to 2.5 m (max.6m) height.

Root: Simple, branched, woody at base and covered with a fissured; corky bark; branches somewhat succulent and densely white tomentose; early glabrescent. All parts of the plant exude white latex when cut or broken.

Leaves: Opposite-decussate, simple, sub sessile, extipulate; blade-oblong obovate to broadly obovate, 5-30X2.5-15.5 cm, apex abruptly and shortly acuminate to apiculate, base cordate, margins entire, succulent, white tomentose when young, later glabrescent and glaucous.

Flowers: Bracteate, complete, bisexual, actinomorphic, pentamerous, hypogynous, pedicellate, pedicel 1-3 cm long.

Floral Characteristics: Inflorescence: A dense, multiflowered, umbellate, pedicled cymes, arising from the nodes and appearing axillary or terminal.

Calyx: Sepal 5, Polysepalous, 5 lobed, shortly united at the base, glabrescent, quincuncial aestivation.

Corolla: Petals five, gamopetalous, five lobed, twisted aestivation.

Androecium: Stamens five, gynandrous, anther ditheous, coherent.

Gynoecium: Bicarpellary, apocarpous, styles are united at their apex, peltate stigma with five lateral stigmatic surfaces. Anthers adnate to the stigma forming a gynostegium.

Fruit: A simple, fleshy, inflated, subglobose to obliquely ovoid follicle up to 10 cm or more in diameter.

Seeds: Many, small, flat, obovate, 6x5 mm, compressed with silky white pappus, 3 cm or more long.

Scientific Classification

Kingdom	:	Plantae
Order	:	Gentianales
Family	:	Asclepiadaceae
Subfamily	:	Asclepiadoideae
Genus	:	Calotropis
Species	:	Gigantea

Cultivation and Collection

The seeds freely float in the air and natural regeneration is very common. Vegetative propagation through stem and root cuttings is very useful in large scale multiplication of the superior genotypes. *Calotropis* has been cultivated in South America and on the Caribbean Islands for the production of fibres at a spacing of 1-1.5m. When cultivated annual yields of up to 500kg/ha are expected. A single harvest per season is preferable to a double or triple harvest; a single harvest would result in a net saving of energy input both on the form and in the processing plant. It is well suited for intensive energy farming in arid or semi-arid regions where frost is not a limiting factor [2].

Side Effects

Interfere with heart function, Vomiting, Diarrhoea, Slow heartbeat, Convulsions, Death

Uses: Asthma, Abortifacient, Anti-cancer, Anthelmintic, CNS activity, Epilepsy, Eczema, Expectorant, Fever, Leprosy, Migraine. Finally the result of these things useful of ethanol extract of *Calotropis gigantea*

Asthma: Rahul mayee *et al.* was studied the ethanolic extract of root of *Calotropis gigantea* by using various *in vivo* and *in vitro* models. The results of these studies indicated usefulness of ethanol extract of *calotropis gigantea* is asthma [3]

Anti-cancer: Vishnu priya *et al.* was studied the Methanolic Root Extract of *Calotropis gigantea* Induces Apoptosis in Human Hepatocellular Carcinoma by Altering Bax /Bcl-2 Expression [4].

Anthelmintic and cytotoxic potential: Yoheshmurti *et al.* was evaluated the Different extracts of *Calotropis procera* leaves were evaluated for *in vitro* anthelmintic activity against Indian earthworms *Pheretima posthuma*, and for *in vitro* cytotoxic activity against the Hep-2 (human larynx epithelial carcinoma) cell line. Dose dependent activity was observed in different extracts of plant leaves [5].

CNS Activity: Ameeta Argal *et al.* was studied the alcoholic extract of peeled roots of *Calotropis gigantea* R.Br. (Asclepiadaceae) was tested orally in albino rats at the dose level of 250 and 500 mg/kg bodyweight for CNS activity [6].

Epilepsy: Subhas S *et al.* was evaluated on anti-convulsant activity of stem barks of *Calotropis gigantea* linn in experimental animals [7].

Fever: Chitme *et al.* was studied the roots of *Calotropis gigantea* have been used in leprosy, eczema, syphilis, elephantiasis, ulceration and cough in the Indian system of traditional medicine. The present communication evaluated its antipyretic activity by using yeast-induced and TAB (Typhoid) vaccine-induced pyrexia in rats and rabbits. In both yeast-induced and TAB vaccine-induced fever, the fever was significantly reduced and the body temperature was normalized by administration of 200 and 400 mg/kg dose intraperitoneally. Based on the results of the present study it can be concluded that the extract of *C. gigantea* has potential antipyretic activity against both yeast-induced and TAB vaccine-induced fever, indicating the possibility of developing *C. gigantea* as a cheaper and potent antipyretic agent [8].

Antitussive: Y. A., Jaliwala *et al.* was studied the pharmacological evaluation of anti-tussive, anti-asthmatic and expectorant activities of *Calotropis gigantea* R.Br. in experimental animal [9].

Conclusion

This review the paper is explained the botanical character of the plant, cultivation based upon the soil nature, identical based of the plant of *calotropis gigantea* and the pharmacological potential like antitussive, febrifuge, epilepsy, asthma, central nervous system stimulant and expectorant etc.,

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