iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 **Issue:** XII **Month of publication:** December 2023

DOI: https://doi.org/10.22214/ijraset.2023.57399

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue XII Dec 2023- Available at www.ijraset.com

Review Article on Calotropis Gigantea

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Abstract: ***Calotropis gigantea (Crown flower) commonly called as 'Madar' is a milkweed available in India,Bangladesh and Sri Lanka. The plant is belonging to Apocynaceae family which includes latex bearing plant. It is an important medicinal plant and widely used in Ayurveda for management of varioushealthhazards. Current study is aimed at the identification of the phytoconstituents present in the plant. It wasobserved that the plant mainly contains phenolics, terpenoids and flavonoids. The plant has also shown antimicrobial activity. The presence of flavonoids in the plant was further evaluated light protection function. The methanol extract of the leaves was observed to show effective UV absorption in the wavelength range of 200 nm to 400 nm using a UV spectrophotometer. This can be helpful in designing UV dermatological applications.***

Keywords: Calotropis gigantea, Pharmacological activity, Phytochemistry, Milkweed, Sweta Arka, Giant Milkweed, CNS activity, Antidiarrheal activity, Potential herb, Crown flower.

I. INTRODUCTION

Plants have been an important part of human health since ancient times. Folk medicine is an important area of focus for health research on poisonous and non-poisonous plants. Ethnobotany is the study of natural and traditional relationships between man, plants and his domesticated animals (P.C Trivedi, 2006). Two species of Calotropis of the family Asclepiadaceae (subfamily Apocinaceae), i.e. Calotropis procera Ait. and Calotropis gigantea (Linn) R.Br. they are considered the botanical equivalents of Arka and Shweta Arka. Both receive extensive therapeutic claims in traditional Indian systems of medicine. The genus Calotropis, consisting of two species, accounts for 90% of the population of South Asian countries. Bangladesh, Burma, China, India, Indonesia, Malaysia, Pakistan, Philippines, Thailand and Sri Lanka (S.Sarkar, 2014). Both species are mostly succulent succulent shrubs found all over India, mostly along roadsides, wastelands and dry areas. Due to their easy and abundant availability, both plants were part of traditional use for economic, health and sacred purposes. Both plants have therapeutic value and are ingredients in various Ayurvedic formulations referred to in classical texts like Charak Samhita, Sushruta Samhita etc. A number of claims have been reported in studies conducted in tribal areas of various Indian states. First-hand knowledge of the ethnomedicinal sacred use of both species of Calotropis, i.e., Arka, is still lacking. Therefore, this article has made a serious effort to bring together scientific journals, research reports, etc. All ethnobotanical uses reported in both botanical sources of Arka are compiled from a total of 22 ethnobotanical books and 20 ethnomedical research articles. [04] Figure 1: Calotropis gigantea Kadiyala et al. (2013) reported phytochemical and pharmacological studies on C. gigantea. However, a comprehensive review of the available literature indicates that the above review of C. gigantea needs to be updated to include ethnopharmacological, phytochemical and pharmacological reports that have not been addressed. References Kadiyala et al. (2013) are not included in this work. [12]



Fig 1 :- Calotropis Gigantea

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II. GRAPHICAL ABSTRACT

Graphic abstract The plant species describes traditional uses, phytochemistry, and reported pharmacological activities

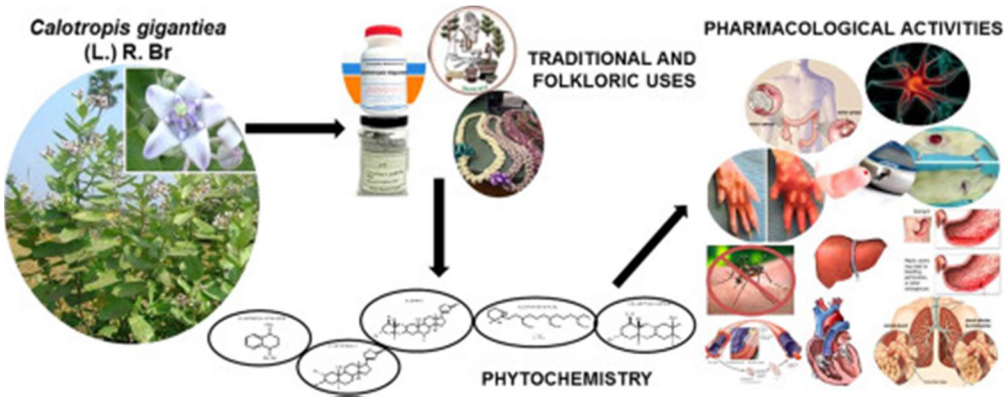


Fig. phytochemistry of calotropius gigentia

III. DESCRIPTION OF THE PLANT

A. Taxonomical Classification

1) *Kingdom:* Planatae
2) *Subkingdom:* Tracheobionta
3) *Class:* Dicotyledones
4) *Sub Class:* Asteridae
5) *Order:* Gentianales
6) *Family:* Apocynaceae
7) *Subfamily:* Asclepidiaceae
8) *Genus:* Calotropis
9) *Species:* Calotropis gigantea [10]

B. Cultural Importance

Calotropis gigantea flowers are offered to the Hindu gods Shiva, Ganesha and Hanuman. traditionally [08]

C. Chemical Components:

Plant Parts And Chemical Constituents
Root - : calotroposides A-G calotropnaphthalene, calotrope erpenol.
Root bark: β-amirin, giganteol, isogiganteol and cardenolides
Flower - : α- and β-calotropeol, amyrin, glycosides, mudarin, asclepine, acundarin
Leaves -: Sapogenins, calotropin, uscarin, calotoxin, alkaloids and mudarin
Latex -: Calotoxin, calactin, calotropin, uscarin, α- and β-calotropol and calcium oxalate
Seeds - : palmitic acid, oleic acid, linoleic acid and linolenic acid, stigmasterol, phytosterol,
Stem bark -: α- and β-calotropeol, β-amirin and giant [03]

D. Biological Source, Geographical Source

Calotropis grows untamed up to 900 meters (msl) throughout the country and is quite drought and salt tolerant. Loves disturbed sandy soil with an average annual rainfall of 300-400 mm It grows easily as a weed on degraded roads, lagoon edges and overgrazed natural grasslands with seeds dispersed by wind and animals. It prefers abandoned agricultural areas and often dominates there, especially in areas with degraded sandy soil and low rainfall. It is believed to be a sign of overbreeding C. gigantea is native to South Asia and Indochina, as well as Madagascar, Arabia, West Africa, North and East Africa, Macaronesia and South Asia. In Australia, Central America, North America, South America and the Caribbean, the plant is a native species for all.[10]

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E. Natural habitat

Calotropis tolerates drought with a relatively high salt tolerance, grows wild up to 900 meters (msl) throughout the country [6] and prefers disturbed sandy soil with an average annual rainfall of: 300–400 mm. By seeds spread by wind and animals it quickly establishes itself as a weed along dilapidated roadsides, lagoon shores and overgrazed native pastures. It prefers and often dominates in abandoned cultivated areas, especially disturbed sandy soils with low rainfall. This is assumed to be an indicator of overbreeding [11]

IV. VEGETATIVE CHARACTERS

A. Root



Simple, branched, woody at the base and covered with cracks; corked bark; some branches fleshy and dense white tomentose; early bright All parts of the plant ooze white latex cut or broken. [6]

B. Leaves



Anti-decusate, simple, sessile, exstipulate; blade oblong, ovate to broadly ovate, 5- 30 x 2.5-15.5 cm, apex acute and shortly pointed to the apex, heart, margins intact, fleshy when young, with a white tint, later shiny and glaucous [6]

C. Flowers

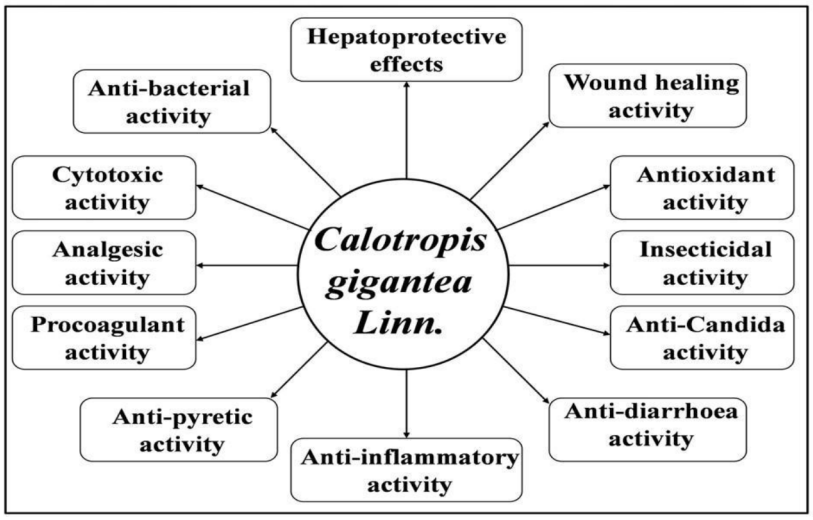


Bracteate, perfect, bisexual, actinomorphic, pentagonal, hypogynous, pedicellate, pedicellate 1-3 cm long

D. Calyx

Sepals 5, polysepal, 5-lobed, root part with a few seconds, glabrous, vicidous aestivation Androecium: stamens five, pink, stamens, entire.[9]

V. PHARMACOLOGICAL PROFILE CALOTRIUS GIGENTIA



[Fig. Pharmacological Profile of C. Gigantea[10]

1) *Anticonvulsant Effect:* The anticonvulsant activity of various root extracts of Calotropis procera was studied in rats to evaluate the traditional use of this plant. The anticonvulsant activity of different extracts of Calotropis procera roots was investigated using maximal electric shock seizures (MES), pentylenetetrazol (PTZ), lithium pilocarpine and electroconvulsive seizures. In the MES test, the chloroform extract of Calotropis procera roots showed the most significant [07
2) *Antipyretic Effect:* Calotropis gigantea roots have been used in traditional Indian medicine to treat eczema, leprosy, syphilis, ulcers, elephantiasis and cough. Pyrexia induced by TAB (typhoidal) vaccine in rats and rabbits. In both yeast and TAB vaccine-induced fever, fever was reduced and body temperature normalized with intraperitoneal doses of 200 and 400 mg/kg.[2]
3) *Characteristics of Pregnancy Capture:* Various C organic solvents. gigantea root has been reported to have anti-pregnancy activity in rats. The extract showed 100% anti-pregnancy activity at a dose of 100 mg/kg. The extract also showed 100% efficacy at a dose of 12.5 mg/kg when administered on days 1-5. and 1-7 on the day after surgery [5]

VI. PHARMACOLOGICAL PROPERTIES OF DIFFERENT PART OF *C. GIGANTEA* PLANT

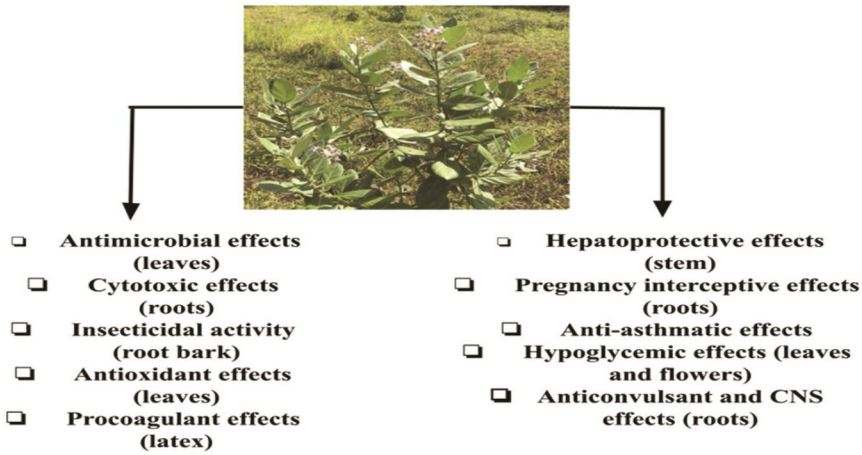


Fig. Pharmacological properties of different part of *C. gigantea* plant

VII. USES

Asthma, abortion, cancer treatment, drugs, central nervous system, epilepsy, eczema, heartburn, fever, leprosy, migraine. Finally, the result of these useful ethanol extracts of Calotropis giganteani. The plant is purgative, anthelmintic, alexifharma, cures leprosy, leucoderma, ulcers, tumors, piles, diseases of the spleen, liver and stomach; juice is anthelmintic and leucoderma, tumors, ascites, stomach diseases. The leaves are applied to paralyzed parts, painful joints, swellings; heal wounds A tincture obtained from the leaves is used as an antiperiodic for fever.[35-37] Inflammations, tumors, rat bites, good for ascites. Milk is bitter, warming, cleansing; laxative; fix piles. The bark of the root is diaphoretic; cures asthma and syphilis. Flower is sweet, bitter, antiparasitic, analgesic, astringent[18]

VIII. TOXICITY STUDIES

The plant is poisonous and one of the few plants that is not eaten by grazing animals. The latex extracted from the stem was traditionally used to make poison darts due to its toxicity. Latex is highly toxic to human eyes and causes sudden, painless blurring of vision and photophobia. Calotropis procera latex was investigated for its anti-inflammatory effects using pedal edema and airbag models of inflammation in rats. Subcutaneous injection of an aqueous solution of dry latex (DL) (0.1 ml 1%) into the sole of the foot caused significant inflammation. Phenylbutazone was found to be more effective than prednisolone in a pedal edema model, while mepyramine and cyproheptadine caused almost complete inhibition. On the other hand, in the airbag model, prednisolone was more effective than phenylbutazone in preventing inflammation. Thus, dry latex-induced inflammation in various models can be used to evaluate anti-inflammatory drugs [7]

IX. CONCLUSION

The plant Calotropis gigantean is a plant with many medicinal principles and other economic values, with the following characteristics: a perennial shrub that spreads in tropical and subtropical regions up to 900 meters in height, grows in all types of soil and environmental conditions, and does not require cultivation practices Since the plant is rich in hydrocarbons, this plant needs further research from the point of view of energy conversion.

X. ACKNOWLEDGEMENT

I am very happy for the complition of this project. I would like to express my special thanks of gratitude to my guide Miss. Ashwini Bhivsane Ma'am. Who gave me the golden opportunity to do this wonderfull project and have valuable guidelines and constant support with all necessary help in my work. I am also thankfull to all my teachers and collage staff who helped me to complete this project.

Secondly, I would also like to thank my parents who helped alot by encouraging me to finish this project in a given time. And the lastly, thanks to all my friends and those who directly or indirectly helped me during this project

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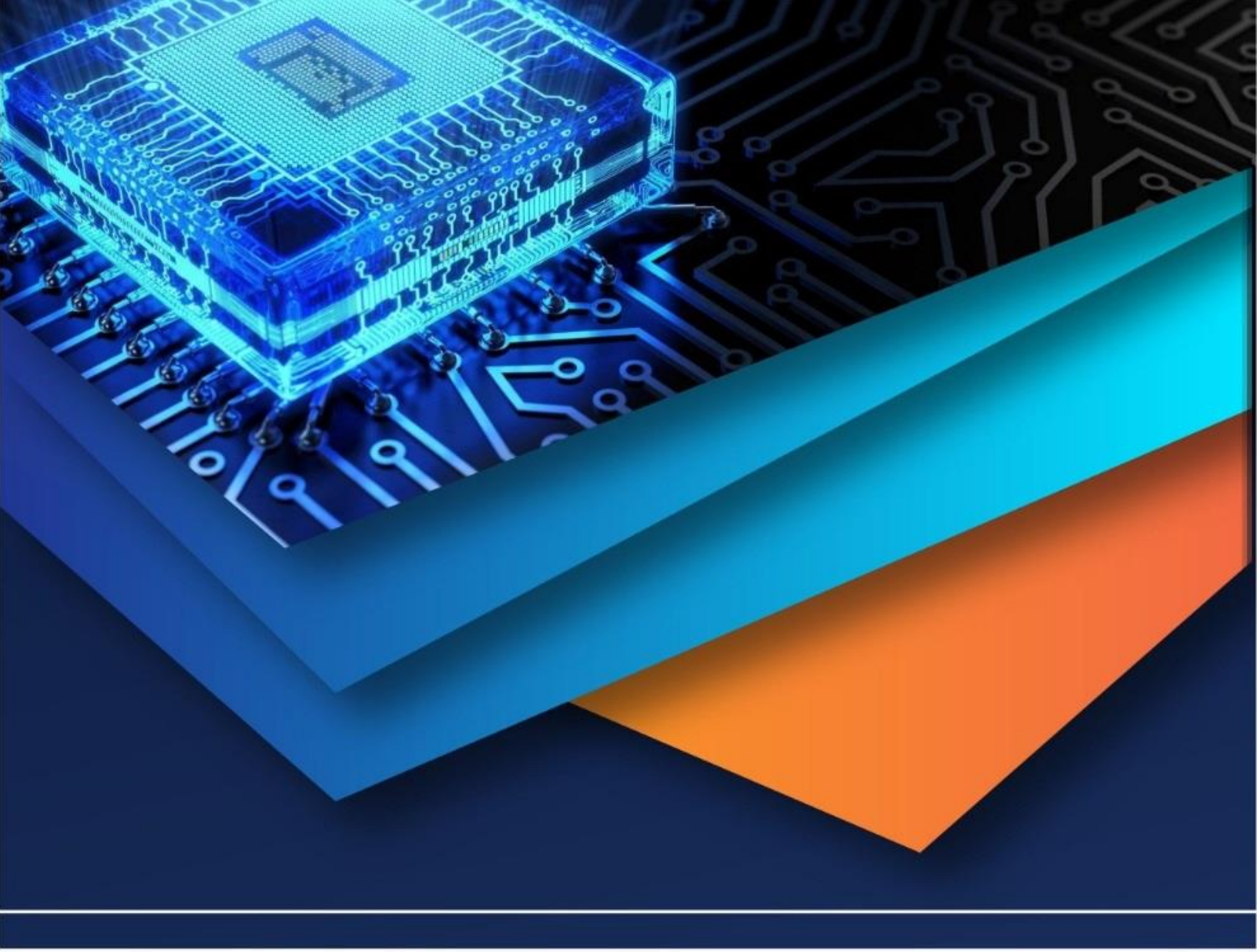
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