



ISSN 2456-3110

Vol 8 · Issue 6

June 2023

Journal of
**Ayurveda and Integrated
Medical Sciences**

www.jaims.in

JAIMS

An International Journal for Researches in Ayurveda and Allied Sciences



Maharshi Charaka
Ayurveda

Indexed

Medicinal use of poisonous plant *Arka* its pharmacological study

Mamta¹, Ritu Kapoor², Manoj Adlakha³

¹Post Graduate Scholar, P.G. Department of Agad Tantra, PGIA, Dr. S. R. Rajasthan Ayurved University, Jodhpur, Rajasthan, India.

²H.O.D. & Associate Professor, P.G. Department of Agad Tantra, PGIA, Dr. S. R. Rajasthan Ayurved University, Jodhpur, Rajasthan, India.

³Associate Professor, Department of Dravya Guna, PGIA, Dr. S. R. Rajasthan Ayurved University, Jodhpur, Rajasthan, India.

ABSTRACT

A poisonous plant is one that, when touched or consumed in large enough quantities, can be hazardous or lethal to humans or other animals. These plants can be utilized as herbal medicines with therapeutic effects when used in the right proportions and in small doses. One of the herbs listed in all of the old *Ayurvedic* texts is *Calotropis procera*. In *Ayurveda*, it is referred to as *Arka*. In many traditional medical systems, the various portions of the plant are used to cure a wide range of illnesses, including worm infestation, strangury, and ulcers. Ascites, anasarca, intestinal worms, skin diseases, and cough have all been treated with the root bark. The root-powered can treat cancer, scrotal enlargement, piles, boils, dyspepsia, gastroenteritis, dysentery, and dyspepsia. Science-based pharmacological screens have been used by researchers to confirm the effectiveness of the compound. According to pharmacological studies, *Calotropis procera* Linn. exhibits a wide range of biological activities, including those that are hepatoprotective, cytotoxic, anti-diabetic, analgesic, anti-inflammatory, anti-arthritis, antioxidant, anthelmintic, wound healing, and anti-tumor. Details regarding the plant are documented in *Ayurvedic* botanical literature such as *Dhanwantari Nighantu*, *Madana Pala Nighantu*, and *Bhavaprakash* and therapeutical literature in *Charak Samhita*, *Sushrut Samhita*. This review presents pharmacognostic, pharmacological, and traditional uses of *Calotropis procera*.

Key words: *Arka*, *Calotropis procera*, *Nighantu*, pharmacology.

INTRODUCTION

Medicinal plants have been used to treat various ailments of the population of the world. The *Ark* plant with white flowers is a superior variety and is referred to as *Calotropis procera*. In India, it is found from the Rajasthan to Assam and Kanyakumari up to an altitude of 1050 meters. It grows abundantly in Rajasthan *Calotropis procera* belong to the family Asclepiadaceae,

locally known as “aak” is being used as herbal medicine. *Asthma*, colds, coughs, piles, ulcers, diarrhoea, heart disorders, leprosy, rheumatism, and ailments of the skin, spleen, liver, and abdomen have all been treated with this herb in the traditional Indian medical system. *Calotropis procera* has a wide range of biological properties, including those that are hepatoprotective, cytotoxic, anti-diabetic, analgesic, anti-inflammatory, anti-arthritis, anti-oxidant, anthelmintic, wound healing, and anti-convulsant. The plant *Calotropis procera*, also known as milkweed, produces latex, which is a milky substance. When the plant's green portions are injured, a significant amount of latex is removed. Rubber, which is the primary component of latex, is sometimes used locally to treat fungus infections.

Synonyms

Alarka, *Sadapushpa*, *Tulphala*, *Asphota*, *Aak*, *Akvan*, *Madar*

Address for correspondence:

Dr. Mamta

Post Graduate Scholar P.G. Department of Agad Tantra, PGIA, Dr. S. R. Rajasthan Ayurved University, Jodhpur, Rajasthan, India.

E-mail: mamta1995dhinghani@gmail.com

Submission Date: 12/04/2023 Accepted Date: 19/05/2023

Access this article online

Quick Response Code



Website: www.jaims.in

DOI: 10.21760/jaims.8.6.17

Rasa Panchaka**Rasa** - Katu, Tikta**Virya** - Ushna**Guna** - Laghu, Ruksha, Tikсна**Vipak** - Katu**Karma** - Vatahara, Rechan, Dipana ,**Classical categorisation****Charaka** - Bhedaniya, Vamnopaga, Swedopaga**Sushruta** - Arkadi, Adhobhagahara**Vagbhata** - Arkadi**Phytochemicals**

Phytochemical components like alkaloids, flavonoids, tannins, saponins, anthraquinone, sesquiterpene, steroids, terpenes, and cardiac glycosides are abundant in *Calotropis procera*, according to a study on the phytochemical examination of the plant. Additionally, the plant's latex contains amino acids, lipids, lipid-soluble vitamins, carbonates, resins, alkaloids, anthocyanins, tannins, saponins, triterpenoids, and proteins. α and β -Amyrins, cyanidin-3-rhamnoglucoside, procersterol, B-sitosterol, calactin, calotoxin, calotropenin, calotropin, calotrotropain, proceroside, and proceragenin enzymes.

Parts used - leaf, roots, root bark, flower and latex.**Formulations of *Calotropis procera****Mahavishagarbha Tail, Dhanvantaraghrta, Arkadi Churan, Ekangvir Ras and Arkalavana.***Ayurvedic Uses**

It is a thermogenic, laxative, anthelmintic, anticarcinogenic, expectorant, and good tonic. It is used in worms and ulcers. The root bark has been used for cutaneous disease, intestinal worms, cough, ascites and anasarca. The root powder is useful in bronchitis, dyspepsia, gastroenteritis, dysentery, piles, boils, scrotal enlargement, filariasis, and cancer. The latex is thermogenic and used as blistering agent. In large dose it is purgative and emetic. The powdered leaves are used for the fast healing of wounds, as a purgative and

to treat indigestion. They are also used to treat skin disorders and liver problems. The dried leaves are used to promote sexual health including penile dysfunction and are reputed to be an aphrodisiac. Hot poultices are made from the leaves and to the stomach to relieve pain, and stop headaches and also applied to sprains to ease the swelling and pain. The flowers are used as a milk drink to treat a variety of complaints including coughs and catarrh, asthma and indigestion, as well as cholera. Fumigation with powder of Arka for hemorrhoids Arka leaves are dried and burnt. Pile masses are exposed to the fumes. It reduces pain, itching and size of the pile mass. (Charaka Samhita Chikitsa Sthana 14th chapter).

Traditional Use

India is the most popular tropical country in the world, which is enriched with numerous natural resources and traditional knowledge regarding the utilization of such resources. In several traditional remedies, people use of dried latex and *Calotropis procera* roots as snake anti-venom. The plant is also used as an abortifacient. Western Madhya Pradesh tribal people treat jaundice using *Calotropis procera* root bark and leaves. Some folk remedies include the use of roots as a carminative to treat dyspepsia. The tender leaves of *Calotropis procera* are traditionally used to treat migraines in Ujjain, Madhya Pradesh. In addition, they employ root bark powder to cure *Asthma* and diarrhea. The Sonaghati tribe of Sonbhadra district, Uttar Pradesh, uses root powder to treat rheumatism, elephantiasis, and complaints of the spleen. They use the roots of this plant along with black pepper in protracted labor. They use latex to get relief from stings, toothache, ringworm, and leprosy. They apply leaves to treat sores, skin diseases, and rheumatic joints. Flower powder is used as a remedy to treat cough, cold, and *Asthma*. Bhotia tribal of Pithoragarh, uses leaf powder in a mixture with gur to treat migraine. People in the Gwalior Forest Division in Madhya Pradesh, use latex to cure arthritis and floral stigma in some formulations to treat cholera. They use floral bud pills in formulation with black pepper seeds as a remedy to treat malaria. The plant is utilized as a curative agent in numerous ailments, according to the ethnobotanical study report

on the use of *Calotropis procera* in the Cholistan Desert, Punjab, Pakistan. To treat illnesses like scabies, cough, asthma, pains, jaundice, swellings, malaria, pneumonia, scorpion stings, fever, stomach pain, piles, cholera, paralysis, chest diseases, diabetes, women diseases, wound, and against snakebite, they use the entire plant or its parts, such as leaves, flowers, root bark, and latex.

Pharmacological Activities

Anti-oxidant

According to the stated research by Yesmin et al. to assess the anti-oxidant capacity of *Calotropis procera*, the plant's methanolic extract has a good correlation with anti-oxidant activities. During the investigation, it was discovered that methanolic extract was effective at scavenging 1,1-diphenyl-2-picryl hydrazyl (DPPH) free radicals. According to the study, *Calotropis procera* may be a reliable source of anti-oxidant medications.

Antifertility Activity

In order to investigate the hormonal and anti-fertility effects of an ethanolic extract of the roots of *Calotropis procera* Linn., albino rats were used in the study. At a dose of 250 mg/kg (1/4 of LD50), significant anti-implantation (inhibition 100%) and uterotropic activity was seen. There was no evidence of anti-estrogenic action.

Antimicrobial activity

In the disc method, the zone of inhibition produced by the crude ethanol and aqueous extracts against sensitive bacteria showed both, ethanolic and aqueous extracts of *Calotropis procera* Linn, and it had an inhibitory effect on the growth of isolates. The effect exhibited by ethanolic extract of leaves and roots was significantly greater than the aqueous extract of leaves and roots. The results provide support for the use of *Calotropis procera* Linn, in traditional medicine and suggest its further advanced investigation.

Anti-cancer

Choedon et al. tested the anti-cancer potential of dried latex (DL) of *Calotropis procera* against hepatocellular

carcinoma in an investigative study using the X15-myc transgenic mice model. The mice were strongly protected against hepatocarcinogenesis by oral administration of aqueous suspension of (DL) at the dosage of 400 mg/kg for 5 days each week for 15 days. Additionally, it decreased the serum levels of VEGF (vascular endothelial growth factor).

Wound Healing

In an in-vivo investigation, Rasik et al. investigated the anthelmintic potential of *Calotropis procera*. Excisional wounds 8.0 mm in diameter were made in the backs of the guinea pigs. Topical application of a 1.0% sterile latex solution dramatically reduced the size of the wound by enhancing the production of collagen, DNA, and proteins as well as epithelization.

Adverse Effects

The adverse effects of *Calotropis procera* Linn. consumption are reported to cause blisters, lesions and eruptions when taken by patients for the treatment of joint pains and gastrointestinal problems. Under the close supervision of a qualified medical professional, *Calotropis procera* Linn. preparations must be utilized. Despite having a number of medical benefits, *Calotropis procera* Linn. has been found to be potentially harmful when used repeatedly or for an extended period of time. One investigation found that the flower extract led to widespread testicular necrosis.

Toxicity

Root bark - In higher doses root bark causes Nausea, vomiting, and diarrhea. Prolonged higher doses cause headaches, burning micturition, and Leucorrhoea.

Latex - It has a caustic effect on mucous membranes and tender skin. Accidental splashing of latex into the Eye causes congested eyes with tears.

Antidote

Chincha Patra Swaras, Swarangairik, Nilini Patra Swaras.

CONCLUSION

Popular tribal shrub *Calotropis procera* is widely utilized in the conventional medical system to treat a

number of illnesses. This review's primary goal was to demonstrate *Calotropis procera's* therapeutic potential. It is clear from the literature review that the *Calotropis procera* plant has a number of medicinal qualities, including those that are anti-microbial, anti-inflammatory, anti-asthmatic, anti-ulcer, wound-healing, and antioxidant. Exploratory studies conducted by scientists and researchers utilizing a variety of animal models point to the plant's extreme importance. To better understand the plant's pharmacological and therapeutic qualities, which will help in the creation of significant therapeutic medications from *Calotropis procera's* active phytochemical ingredients, more experimental investigations and clinical research are required. It is best to use the classical approach in the search for new molecules to manage a variety of diseases.

REFERENCES

1. *Calotropis* R. Br., The wealth of India - a dictionary of Indian raw materials and industrial products (Publications and Information Directorate, CSIR, New Delhi), 3rd Volume, 1992, p.78.
2. Gupta S M, Plants in Indian temple art (BR Publishing Corp., New Delhi) 1996, p.56.
3. Kartikar K R and Basu N, Indian Medicinal Plants (Lolit Mohan Basu, Allahabad), 1935, p. 1606.
4. Verma R, Satsangi G P and Shrivastava J N, Ethno-medicinal profile of different plant parts of *Calotropis procera* (Ait.) R. Br., Ethnobotanical Leaflets, 2010, 14, 721-742.
5. Yelne MB, Sharma PC, Dennis TJ. Database on Medicinal Plants used in Ayurveda, Central Council for Research in Ayurveda and Siddha, New-Delhi, 2000, 2(1): 69- 73.
6. Sharma P.C, Yelne M.B. and Dennis T.J.- Database on Medicinal Plants used in Ayurveda, Vol-3, Published by CCRAS, Reprint-2005,p-69.
7. Sharma P.C, Yelne M.B. and Dennis T.J.- Database on Medicinal Plants used in Ayurveda, Vol-3, Published by CCRAS, Reprint-2005,p-70.
8. Ayurvedic uses and Pharmacological activities of *Calotropis procera* Linn. / Asian Journal of Traditional Medicines, 2011, 6 (2).
9. Kumar VL, Sangraula H, Dewan S. Preliminary studies on the analgesic activity of latex of *Calotropis procera*. Journal of Ethnopharmacology, 2000, 73(1-2): 307-311.
10. Ranab AC, Kamatha. Jagadish V. Preliminary study on antifertility activity of *Calotropis procera* roots in female rats. Fitoterapia, 2002, 73 (1): 111-115.
11. Basak K Samar, Bhaumik Arup, Mohanta Ayan, Singhal Prashant. Ocular toxicity by latex of *Calotropis procera* (Sodom apple). Indian J Ophthalmol, 2009, 57 (3): 232-234.
12. Jalalpure SS. Anticonvulsant effects of *Calotropis procera* root in rats. Pharmaceutical biology, 2009, 47 (2): 162-167.
13. Madigan MT, Martinko JM and Parker J, Brock Biology of Microorganisms. 9th ed. Prentice-Hall, Inc. New Jersey. 783 - 784, (2000).
14. G. A. Mako, A. H. Memon, U. R. Mughal, A. J. Pirzado and S. A. Bhatti, antibacterial effects of leaves and root extract of *Calotropis procera* linn. Pak. J. Agri., Agril. Engg., Vet. Sci., 2012, 28 (2): 141-149.
15. Bhatt, D., Joshi, G. C., & Tiwari, L. M. (2009). Culture, habitat and ethno-medicinal practices by Bhotia Tribe people of Dharchula Region of Pithoragarh District in Kumaun Himalaya, Uttarakhand. Ethnobotanical Leaflets, 2009(8), 975-983.
16. Anis, M., Sharma, M. P., & Iqbal, M. (2000). Herbal ethnomedicine of the Gwalior forest division in Madhya Pradesh, India. Pharmaceutical Biology, 38(4), 241-253.
17. Mossa, J. S., Tariq, M., Mohsin, A., Ageel, A. M., Al-Yahya, M. A., Al-Said, M. S., & Rafatullah, S. (1991). Pharmacological studies on aerial parts of *Calotropis procera*. The American journal of Chinese medicine, 19(03n04), 223-231.
18. Azhar, M. F., Siddiqui, M. T., Ishaque, M., & Tanveer, A. (2014). Study of ethnobotany and indigenous use of *Calotropis procera* (Ait.) in cholistan desert, Punjab, Pakistan. J Agric Res, 52(1), 117-126.
19. Choedon, T., Mathan, G., Arya, S., Kumar, V. L., & Kumar, V. (2006). Anticancer and cytotoxic properties of the latex of *Calotropis procera* in a transgenic mouse model of hepatocellular carcinoma.
20. Rasik AM, Raghubir R, Gupta A, Shukla A, Dubey MP, Srivastava S, Jain HK, Kulshrestha DK. (1999). Healing potential of *Calotropis procera* on dermal wounds in

- Guinea pigs. Journal of ethnopharmacology, 68(1-3), 261-6. World Journal of Gastroenterology: WJG, 12(16), 2517.
21. Misra, M. K., Mohanty, M. K., & Das, P. K. (1993). Studies on the method-ethnobotany of *Calotropis gigantea* and *C. procera*. Ancient science of life, 13(1-2), 40.
 22. Basu, A., Sen, T., Ray, R. N., & Chaudhuri, A. N. (1992). Hepatoprotective effects of *Calotropis procera* root extract on experimental liver damage in animals. Fitoterapia, 63(6), 507-514.
 23. Samvatsar, S., & Diwanji, V. B. (2000). Plant sources for the treatment of jaundice in the tribals of Western Madhya Pradesh of India. Journal of Ethnopharmacology, 73(1-2), 313-316.
 24. Kumar, V. L., & Arya, S. (2006). Medicinal uses and pharmacological properties of *Calotropis procera*. Recent progress in medicinal plants, 11, 373-388.
 25. Singh, V. P., Sharma, S. K., & Khare, V. S. (1980). Medicinal plants from Ujjain district Madhya Pradesh part II. Indian Drugs Pharm Ind, 1980(5), 7-12.
 26. Singh, A. K., Raghubanshi, A. S., & Singh, J. S. (2002). Medical ethnobotany of the tribals of Sonaghati of Sonbhadra district, Uttar Pradesh, India. Journal of ethnopharmacology, 81(1), 31-41.

How to cite this article: Mamta, Ritu Kapoor, Manoj Adlakha. Medicinal use of poisonous plant Arka its pharmacological study. J Ayurveda Integr Med Sci 2023;06:100-104.

<http://dx.doi.org/10.21760/jaims.8.6.17>

Source of Support: Nil, **Conflict of Interest:** None declared.
