

A REVIEW ARTICLE ON DIFFERENT VARIETIES OF “ARKA”

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ABSTRACT

Calotropis procera is locally known as Aak or Madar in Hindi, milkweed in English and belongs to the family Apocynaceae and subfamily Asclepiadoideae. Although a wasteland plant, it is of sacred use as its flowers are offered for worshipping Lord Shiva, a Hindu God. This plant can be used all over the world in treatment of various diseases like snake bite, body pain, asthma, epilepsy, cancer, sexual disorders, skin diseases and many more. Through literature searches reveal many reviews about ethnomedicinal uses, chemical composition and pharmacological activities, no recent papers are available that provide an overview on the types of Calotropis procera. Hence, the insight of this review is to provide a systemic summary of different varieties as mentioned in different Nighantus, pharmacology, and

therapeutic potential of Calotropis procera and to highlight the gaps in the knowledge to offer inspiration for future research.

KEYWORDS: Calotropis procera, Varieties of ARKA, Ethnomedicinal uses, Pharmacognosy, Pharmacological activities.

INTRODUCTION: Etymologically 'Arka' term means- **to be worshiped**. According to Krsnayajurvediyas, Arka is born when saint **Angirasa's** sweat drops have fallen on a goat while the great saint was traveling for heavens. The greedy goat touched some leaves which turned to be Arka.

Calotropis procera is a species of flowering plant in the family Apocynaceae that is native to North Africa, Pakistan, tropical Africa, Western Asia, South Asia, and Indochina. The green fruits contain a toxic milky sap that is extremely bitter and turns into a gluey coating which is resistant to soap. **Common names** - Apple of Sodom,^[1] Sodom apple, king's crown,^[2] rubber bush,^[3] and rubber tree.^[2] The names "Apple of Sodom" and "Dead Sea Apple"^[4]. In Hindi, It is commonly known as Madar, Jilledu in telugu, Aakanda in Bengali, Rui in Marathi, Akado in Gujarati, Pelleruku in Tamil, Erriku in Malyalam.

Synonyms^[5]

Alarka, Mandara, Sadapuspa, Tulaphala, Ksrarni, Arkaparna, Vikirana, Asphota,^[6] Sukaphala, Shivapuspak, Ksirakandakah, Vasukah, Ekasthilaev;^[7] Arka, Ksiradala, Pucchi, Pratapa, Ksira-kandaka, Viksira, Ksiri, Bhaskara, kharjughna, Siva-pushpaka, Ksira-parni, Vikirana, Bhanjana, savita, suryayaha, Sada-pushpa, Ravi, asphotaka, Suka-phala, Tula-phala.

Varieties of Arka

1) On the basis of morphological classification

a) **Calotropis gigantea**- Corolla- buds ovoid; corona lobes shorter than the staminal column, with two obtuse auricles just below the apex.

b) **Calotropis procera**- Corolla- buds hemispherical; corona- lobes equalling or longer than the staminal column, without auricles below the apex.

2) According to various Nighantu-(table no.1)

S.No.	Nighantu	Types	Name
a.	Bhav Mishra	2	1) Swet Arka 2) Rakt Arka
b.	Kaidev Nighantu	2	1) Arka 2) Rajarka
c.	Dhanvantari nighantu	2	1) Arka 2) Rajarka
d.	Shodal Nighantu	2	1)Raktarka 2)Swetarka
e.	Raj Nighantu	4	1)Arka

			2)Suklarka 3)Rajarka 4)Sweta- Mandaraka
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Where as; **Arka** is considered as *Calotropis procera*.

^[8]**Rajarka** as *C.gigantea* or *C.procera* growing to greater height. It is pungent, bitter and hot. It cures the vitiated kapha. It effectively used in vata rogas, leprosy and allied skin disorders, oedema, itching, and erysipelas.

Suklarka as *C.gigantea* with pure white flowers.it is pungent, bitter and hot. It purifies the waste products of the body and is indicated in dysuria, blood disorders, oedema, and also the wounds.

Sweta Mandaraka as *C.gigantea* with purple tinged flowers. It is bitter and very hot. This too purifies the waste products of the body. It cures dysuria, wounds, and quite virulent worm infestations.

3) Classical categorisation-(Table no.2)

Charaka	Sushuruta	Vagnhatta
Bhedaniya, Vamanopaga, Swedopaga.	Arkadi varga, Adhobhagahara	Arkadi Varga.

Botanical Description

From: A systematic review on the biological evaluation of *Calotropis procera* (Aiton) Dryand

1.*Calotropis procera*

Habitat- A shrub up to 3mt. High, young shoots, inflorescence and underside of leaves covered with soft, woolly tomentum.

Leaves- 10-15cm long, sessile or subsessile, obovate-oblong, base cordate.

Flowers- in axillary pedunculate corymbose, purplish-lilac or white.



(Fig.1)

Fruits- Follicles, 8-10cm long, recurved turgid.

Seeds- numerous with silky hair.

2. *Calotropis gigantea*



(Figure 2)



(Figure 3)

Habitat- A shrub up to 2.5mt high.

Leaves- 10-18cm long, ovate-obovate or obovate-oblong, acute, inflorescence covered with white woolly- tomentum.

Flowers- In terminal and axillary corymbose cymes, purplish-red.

Fruits- Follicles, 10-14 cm long, recurved.

Seeds- numerous with silk hair.

Major Chemical Constituents^[9]

In **roots** of *Calotropis*, Cardiacglycoside, Calotropin Uscharin, Calactin, Uscharadin, Gigantin, Taraxasterol, Taraxateryl are found where as in **Leaves**, D-arabinose, D-glucose, D-glucosamine, L-rhamnose and Beta-amyrin are found.

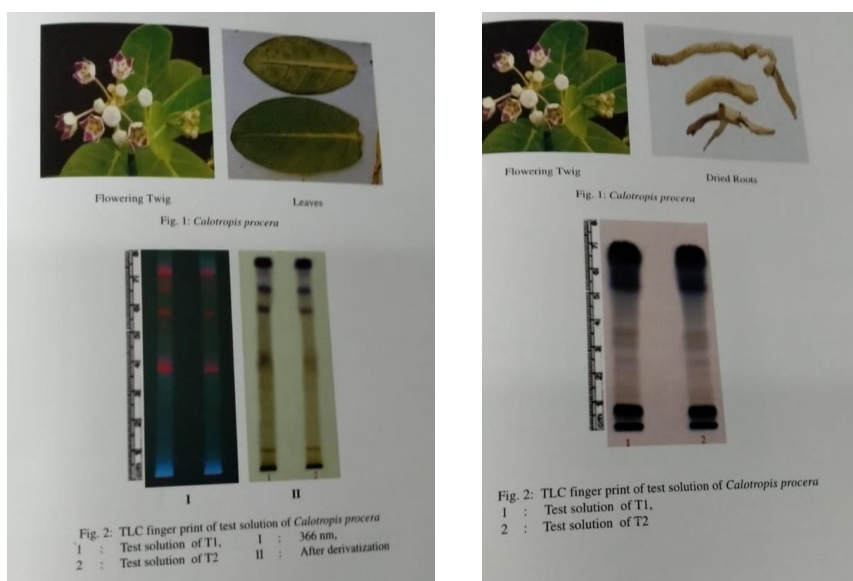


Figure 4: Thin Layer Chromatographic Atlas of Pharmacopoeial Drugs; Part-I, Vol. I.

Pharmacognosy

Rasa - Katu-Tikta, **Guna** -Laghu, ruksha, tiksna, **Veerya** –Usna, **Vipaka** –Katu. **Karma**- Vatahara (antacid), Rechana (purgative), Vishagana (anti poisonous), Deepana (Digestive).

Properties of Arka^[10]

1) **Arka** is considered as *Calotropis procera*. Arka is pungent (katu) and hot (ushna), quells vata and stimulates the digestive system. It cures oedema, wounds, itching, leprosy, and allied skin disorders and worms.

2) **Rajarka** as *C.gigantea* or *C.procera* growing to greater height. It is pungent, bitter and hot. It cures the vitiated kapha. It is effectively used in vata rogas, leprosy and allied skin disorders, oedema, itching, and erysipelas.

3) **Suklarka** as *C.gigantea* with pure white flowers.it is pungent, bitter and hot. It purifies the waste products of the body and is indicated in dysuria, blood disorders, oedema, and the wounds.

4) **Sweta Mandaraka** as *C.gigantea* with purple tinged flowers. It is bitter and very hot. This too purifies the waste products of the body. It cures dysuria, wounds, and quite virulent worm infestations.

Unique Features of Arka

Arka has the ability to survive under extreme climatic conditions. It is used for Commercial perspective as biofuel, as biopesticide etc. In Industrial prospective it works as cheese making agent, as a surfactant, as a corrosion inhibitor & as a dehairing agent of leather.

Indications

Arka has qualities of cure in various rogas as- Sopha, Vrana, Kustha, Arsas, Krimi, Kandu, Pliharoga, Medoroga, Visaroga, Udara, Gulma, Graharoga.

Table 3: Ethnomedicinal applications of *C. procera*.

Plant part	Disease	Preparation / Administration	REFERENCES
Root/ root bark	Amoebic Dysentery	Paste with/without opium taken orally	[11-13]
	Cholera	Powder orally taken or paste along with black pepper and ginger juice	[11]
	Dysentery	Powder orally taken	[14]
	Elephantiasis and Hydrocele	Paste mixed with fermented rice water applied on the affected area	[15-17]
	Epilepsy	Grounded with goat milk and used as nasal drops.	[13]

	Indigestion	Powder orally taken	[14]
	Jaundice	Taken with rice in grounded form	[18]
	Neuritis	Orally administered with cow butter	[13]
	Rheumatism	Powder taken with milk and sugar	[15]
	Snake bite	Powder orally taken. Paste applied on wounds and internally taken with ghee	[15 & 19]
	Spider and Snake bite	Powdered and taken with vinegar	[15]
	Syphilis	Root bark powder taken orally	[13]
Latex	Boils	Applied externally	[13]
	Black scar on face	Applied along with turmeric paste	[11]
	Ascites	Applied externally	[14]
	Liver and spleen disorder	Taken after dilution	[14]
	Leprosy	Applied on the affected area	[14]
	Migraine	Applied on the affected side vein of forehead	[11]
	Piles (haemorrhoids)	Applied externally	[11]
	Dog /Jackal bite	Applied on wound	[11 & 13]
	Ringworm	Applied externally	[13]
	Scabies	Applied externally	[13]
	Snake bite	Applied on wounds or taken orally (20–30 drops for adults and 15–20 for infants) Five drops with 50 drops of distilled water injected hypodermal	[13]
	Syphilis, edema, leprosy	Applied externally with sesame oil	[13]
	Toothache	Applied on affected tooth	[15 & 17]
	Vertigo	Applied on affected parts	[20]
Leaf	Cold, cough, asthma and bronchitis	Warmed along with ghee and bandaged on the chest of infants	[11]
	Calculus, liver and spleen disorder	Powder taken orally	[15]
	Earache or ear troubles	Juice along with fermented boiled rice water used as ear drops	[17]
	Eczema and skin eruptions	Applied externally along with turmeric and sesame oil	[15,17 & 20]
	Enlargement of abdominal viscera and spleen	Oral administration of powder	[15 & 18]
	Gonorrhoea	Decoction used for washing and taken orally	[18]
	Inflammatory	Covered on affected part after	[18]

	swellings	warming	
	Joint Pain	Powder taken	[14]
	Malaria and intermittent fever	Oral administration of fresh juice	[13,16 & 18]
	Body pain	Paste applied after warming	[18]
	Paralysis and sciatica	Massage after preparing decoction with sesame oil	[14]
	Snake bite	Oral administration of fresh juice	[17]
	Ulcers, wounds, sores	Powder orally administered or external application	[14,16 & 18]
Flowers	Health tonic	Oral administration of powder	[14]
	Cough	Burnt to produce ash, then taken with honey	[11]
	Rat bite	Oral administration of powder	[14 & 16]
	Dog/ Jackal bite (Rabies)	Seven sepals chewed with fine rice on seventh day of biting, continued for seven days decreasing one tepal everyday	[11]
	Feet pain	Decoction used for fomentation	[13]
	Epilepsy	Oral administration of paste with black pepper	[13]
	Asthma and bronchitis	Fruit taken with jaggery	[5]
	Liver and spleen disorders	Administered along with milk	[13]
Fruit	Eye disorder	Decanted ash water applied on eyelids	[11]
Whole plant	Anaemia	Mixed with same quantity of red chilli, mineral salt and taken with mil	[13]
	Rheumatic pain and hyperacidity	Paste directly taken	[11]
Young twigs	Purgative	Juice taken	[21]

Therapeutic Uses

a) Pliha roga- Arka leaves and salt are burnt by closed heating. This is given with curd water.^[22]

b) Netra roga- Seeds of Arka processed in milk are useful.

c) Arsas -Fumigation with roots of Arka and Sami will be beneficial.

d) Gandmala- Paste made from Arka Kshira, Japa Pushpa oil and Laksarasa may be applied externally for a week.

Useful Parts- Root bark, flower, leaf, latex, Seeds.

Dosage- Root bark powder - 0.5-1 gram

Flower powder - 1-3 gram

Important Preparations - Arka tailam, Arka lavana, Arka vati

CONCLUSION

Calotropis procera and *Calotropis gigentia* are undesirable weeds in some regions but have the economical importance as a fuel source and chemical feedstock also. Their extracts are widely used as natural pesticides was discussed, also.

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