



Therapeutic Potential of Arka (Calotropis Procera (Ait.) R.Br.): A Review

Bahiram RD^{1*}, Mishra HS², Agarwal AK³, Kumar A⁴, Varshneya AB⁵

DOI:10.21760/jaims.11.1.38

^{1*} Rahul Dhavalu Bahiram, Post Graduate Scholar, PG Department of Dravyaguna, Lalit Hari State Ayurveda College, Pilibhit, Uttar Pradesh, India.

² Hari Shanker Mishra, Associate Professor, PG Department of Dravyaguna, Lalit Hari State Ayurveda College, Pilibhit, Uttar Pradesh, India.

³ Ajay Kumar Agarwal, Professor, PG Department of Dravyaguna, Lalit Hari State Ayurveda College, Pilibhit, Uttar Pradesh, India.

⁴ Akhilesh Kumar, Associate Professor, PG Department of Dravyaguna, Lalit Hari State Ayurveda College, Pilibhit, Uttar Pradesh, India.

⁵ Atul Babu Varshneya, Member, Board of Ayurveda, National Commission for Indian System of Medicine, Government of India, New Delhi, India.

Arka scientifically known as Calotropis procera (Ait.) R.Br. has been used extensively in therapeutics from Vedic period to contemporary Ayurveda practice. Arka has potent therapeutic actions mentioned in Ayurvedic Materia medica. Acharya Charaka marks Arka as one of the drugs of Ksheerivriksha for Shodhana Karma which signifies its therapeutic potency in Ayurveda medicine. Various types of Arka are mentioned throughout ancient Ayurveda texts but Raktarka and Shwetarka are widely accepted. Clinical applications of Arka include dermatological disorders, gastrointestinal conditions, wound healing, and respiratory ailments. These applications are as single drug as well as compounded formulations which include different parts of Arka signifying therapeutic potential lodged in all parts of Arka viz. leaves, latex, roots, flowers, bark and whole plant. Some important dosage forms such are Lepa (topical paste), Taila (medicated oil), Kwatha (decoction), and Varti (suppositories). These wide ranged uses of Arka in the Samhitas underlines its historical and therapeutic significance in Ayurvedic practice. In Modern scientific screening studies, Arka has exhibited activities like antifertility, anti-inflammatory, hepatoprotective, cardiovascular, anti-diarrhoeal, anti-ulcer, anti-pyretic, analgesic, wound healing agent and much more. Present paper is an attempt towards revalidating therapeutic potential of Arka through an intensive literary review of information available in ancient texts and contemporary scientific publications on medicinally useful plant parts of Arka.

Keywords: Arka, Calotropis procera, Ksheerivriksha, Raktarka, Shwetarka

Corresponding Author

Rahul Dhavalu Bahiram, Post Graduate Scholar, PG Department of Dravyaguna, Lalit Hari State Ayurveda College, Pilibhit, Uttar Pradesh, India.
Email: rdbahiram99@gmail.com

How to Cite this Article

Bahiram RD, Mishra HS, Agarwal AK, Kumar A, Varshneya AB, Therapeutic Potential of Arka (Calotropis Procera (Ait.) R.Br.): A Review. J Ayu Int Med Sci. 2026;11(1):252-263.
Available From
<https://jaims.in/jaims/article/view/5322/>

To Browse



Manuscript Received
2025-11-09

Review Round 1
2025-11-27

Review Round 2
2025-12-09

Review Round 3
2025-12-17

Accepted
2025-12-27

Conflict of Interest
None

Funding
Nil

Ethical Approval
Not required

Plagiarism X-checker
10.23

Note



© 2026 by Bahiram RD, Mishra HS, Agarwal AK, Kumar A, Varshneya AB and Published by Maharshi Charaka Ayurveda Organization. This is an Open Access article licensed under a Creative Commons Attribution 4.0 International License <https://creativecommons.org/licenses/by/4.0/> unported [CC BY 4.0].



Introduction

Ayurveda, India's traditional medicine system has a wide range of botanical ingredients to cure and prevent illness. Vast amount of knowledge regarding herbs is available in different *Samhitas*. Among these, *Arka* botanically identified as *Calotropis procera* Ait. R. Br., has been long valued for its wide range of pharmacological actions. *Arka* and its parts like leaves, latex, roots, flowers, bark and whole plant have distinct therapeutic actions which include wound-healing, analgesic, digestive, anti-inflammatory & much more. Though *Arka* has been classified among *Upavisha*[1] (semi-poisonous), it is used as medicine in diseases like *Kushta* (diseases of skin), *Arsha* (piles), *Grahini* (malabsorption syndrome), *Vrana* (ulcer), *Svasa* (asthma) and many more as single drug use as well as an ingredient of various formulations.

Table 1: Classification of Arka in Brihatrayi

SN Group of drugs	Pharmacological properties / indications	Reference
1. Shadashodhana Vriksha (Ksheerashraya)[2]	Emesis and purgation therapy	CS.Su.1.116
2. Bhedaniya Mahakashaya[2]	Group of 10 purgatives	CS.Su.4.(4)9
3. Swedopaga Mahakashaya[2]	Adjuvants in sudation therapy	CS.Su.4.(22)13
4. Vamanopaga Mahakashaya[2]	Adjuvants in emetic therapy	CS.Su.4.(23)13
5. Tikta Skandha[2]	Group of bitter taste drugs	CS.Vi.8.143
6. Arkadi Gana[3,4]	Alleviates disease due to Kapha-Meda-Visha, skin disorder & wound	SS.Su.38.17 AH.Su.15.29
7. Adhobhagahara Shodhan Dravya (Ksheer)[3]	Purgation therapy	SS.Su.39.4
8. Shirovirechak Dravya (Mula)[3]	Group of errhine drugs	SS.Su.39.6
9. Vata Samshamana Varga[3]	Pacifying aggravated Vata Dosha	SS.Su.39.7
10. Shleshma Nashak Gana[4]	Alleviates diseases due to Kapha Dosha	AH.Su.15.7

CS. – Charaka Samhita, SS. – Sushruta Samhita, AH. – Ashtanga Hridayam, Su. – *Sutrasthana*, Vi. – *Vimanasthana*

Therapeutically used Plant Parts of Arka

- A. *Arka Ksheer* (Latex)
- B. *Arka Patra* (Leaves)
- C. *Arka Mula* (Roots)
- D. *Arka Pushpa* (Flower) & *Beej* (Seed)
- E. *Arka Ankur* (Bud)
- F. *Arka Twak* (Bark) & *Shakha* (Branch)
- G. *Arka Panchang* (Whole Plant)

Therapeutic indications of Arka & its formulations in Brihatrayi

Table 2 which is further sub-categorized into Table 2(a) to Table 2(g) incorporates therapeutic formulation of *Arka* plant parts mentioned in *Brihatrayi* viz. Charak Samhita, Sushruta Samhita and Ashtanga Hridayam.

Table 2 (a): Therapeutic Formulations of Arka Ksheer in Brihatrayi[2],[3],[4],[5]

SN	Formulation	Therapeutic indications	References
1.	Manasheeladi Lepa	Diseases of skin	CS.Su.3.12; AH.Ci.19.70
2.	Markawadi Pupalika	Worm infestation	CS.Vi.7.21
3.	Chitrakadi Lepa	Non-lepromatous lesion	CS.Ci.7.85

4.	Shirishbeejadya Lepa	Piles	CS.Ci.14.53
5.	Arkasheeradi Lepa	Piles	CS.Ci.14.57; AH.Ci.8.24
6.	Dantyadi Lepa	Kaphaj erysepales	CS.Ci.21.126
7.	Krimighnadi Varti	Worm infestation	CS.Ci.26.13
8.	Ghontafaladi Varti	Sinus	SS.Ci.17.35; AH.U.30.38
9.	Arka Ksheer	Purgation in rabies	SS.Ka.7.51; AH.U.38.36
10.	Dantyadi Lepa	Cyst due to Kapha Dosha	AH.Ci.18.26
11.	Kushtadi Tail	Diseases of skin	AH.Ci.19.83
12.	Kutajadi Kwath	Therapeutic emesis	AH.Ka.1.46

Table 2 (b): Therapeutic Formulations of Arka Patra in Brihatrayi[2,3,4,5,6]

SN	Formulation	Therapeutic indications	References
1.	Varunadi Kwath	Tube sudation	CS.Su.14.31
2.	Dantyadi Pradeha	Diseases of skin	CS.Ci.7.57
3.	Vaasadi Kwath	Inflammation	CS.Ci.12.67
4.	Mulakadi Kwath	Sitz bath in piles	CS.Ci.14.45
5.	Kshar Gutika	Malabsorption and asthma	CS.Ci.15.183
6.	Nyagrodhadi Kwath	Ulcer healing	CS.Ci.25.87
7.	Kadambadi Patra Aaschadan	Ulcer	CS.Ci.25.95
8.	Sunishnakaadi Shaak	Stiffness in thigh muscles	CS.Ci.27.27
9.	Sarshapaadi Lepa	Gout due to Kapha Dosha	CS.Ci.29.148
10.	Kushtadi Varti	Cervical erosion	CS.Ci.30.109
11.	Arkadi Kalka	Medicated oil for earlobe disease	SS.Su.16.21
12.	Mulakadi Tail	Tetanic convulsions	SS.Ci.5.18
13.	Tutthadi Lepa	Vitiligo	SS.Ci.9.27
14.	Putikadi Lepa	Vitiligo, ulcer, piles, sinus	SS.Ci.9.40; AH.Ci.20.9
15.	Arkadi Kwath	Worm infested diseases of skin	SS.Ci.9.51
16.	Karveeradi Kwath	Ulcer in syphilis	SS.Ci.19.39
17.	Arka Patra	Conjunctivitis	SS.U.11.5
18.	Nimbadi Vari Snan	Inflammation	AH.Ci.17.25
19.	Arka Patra Tail Basti	Aamdatta Sneha Chikitsa	AH.Ka.5.45
20.	Arka Patra Putapak	Otalgia due to Vata Dosha	AH.U.18.2

Table 2 (c): Therapeutic Formulations of Arka Mula in Brihatrayi[3,4,5,6]

SN	Formulation	Therapeutic indications	References
1.	Kushtadya Tail	Diseases of skin	CS.Ci.7.102
2.	Shwetkarveer Pallavadya Tail	Diseases of skin and itching	CS.Ci.7.106
3.	Kanak Kshiri Tail	Non-lepromatous lesion, itching	CS.Ci.7.112
4.	Arkamuladi Dhuma	Fumigation therapy in piles	CS.Ci.14.49 AH.Ci.8.18
5.	Muktadi Churna	Hiccup, asthma, cough, cataract	CS.Ci.17.125
6.	Amrita Ghrita	All types of poisoning	CS.Ci.23.244
7.	Ashwagandhadi Utsadan	Stiffness in thigh muscles	CS.Ci.27.50
8.	Vatsakadi Lepa	Stiffness in thigh muscles	CS.Ci.27.54
9.	Koshatakadi Niruha Basti	Dyspepsia, Kaphaj Rog	CS.Si.3.56
10.	Arkadi Basti	Disease due to Kapha dosha	CS.Si.10.23
11.	Samshodhan Ghrita	Detoxification	SS.Su.36.17
12.	Shodhan Tail / Ghrita	Detoxification in non-healing ulcer	SS.Ci.2.91
13.	Trivrittadya Tail	Fistula-in-ano	SS.Ci.8.48
14.	Samudraphenadi Lepa	Non-lepromatous lesion	SS.Ci.9.10
15.	Vajrak Tail	Diseases of skin, non-healing ulcer	SS.Ci.9.54 AH.Ci.19.79
16.	Mahavajrak Tail	Piles, diseases of skin	SS.Ci.9.58 AH.Ci.19.82
17.	Taalpatryadi Tail	Earlobe disorder	SS.Ci.25.18 AH.U.18.45
18.	Arka Mula	Non-lepromatous lesion, scorpion sting	SS.Ka.8.102
19.	Mandukyadi Avaleha	Abdominal lump, tastelessness	SS.U.57.12
20.	Aparajita Dhuma	Fumigation in all types of fever	AH.Ci.1.63
21.	Kshar Vatika	Cough, asthma, piles	AH.Ci.10.59
22.	Dashmuladi Ghrita / Pramehanashak Ghrita / Dhanvantar Ghrita	Increased frequency and turbidity of urine, carbuncle, poison, anaemia, abscess, abdominal lump	AH.Ci.12.20

23.	Bhallatakadi Lepa	Diseases of skin, vitiligo	AH.Ci.20.16
24.	Arkadi Lepa	Kaphavritta Medayukta Vayushman	AH.Ci.21.52
25.	Madanphaladi Kwath	Therapeutic emesis in obesity	AH.Ka.1.17
26.	Koshatakadi Kwath	Therapeutic emesis in Kapha Dosha	AH.Ka.4.17
27.	Hingvadi Yoga	Psychotic syndrome, mania, epilepsy	AH.U.5.2
28.	Shigruadi Lepa	Goitre due to Vata Dosha	AH.U.22.67
29.	Jyotishmatiadi Tail	Fistula-in-ano	AH.U.28.34

Table 2 (d): Therapeutic Formulations of Arka Pushpa & Beej in Brihatrayi[3],[4],[5]

SN	Formulation	Therapeutic indications	References
1.	Udar Rog Nashak Lepa	Diseases of abdomen	CS.Ci.13.108
2.	Mritsanjivan Agad	All types of poisoning	CS.Ci.23.56
3.	Kareeradi Kwath	Cleansing of female genitalia	CS.Ci.30.82
4.	Raktavrikshadi Pushpa	Diseases of skin	SS.Su.46.284
5.	Mahasugandhi Agad	Fracture of shoulder, Vasuki snake bite	SS.Ka.6.20
6.	Karveeradi Agad	Vyantar snake bite	AH.U.36.70
7.	Kapitthadi Lepa	Poisoning due to lizard	CS.Ci.23.216

Table 2 (e): Therapeutic Formulations of Arka Ankur in Brihatrayi[3,4,6]

SN	Formulation	Therapeutic indications	References
1.	Eladi Churna	Bloodletting	SS.Su.14.35
2.	Arkankur Swaras	Otalgia	SS.U.21.23
3.	Yavasaktu Tarpan	Asthma	SS.U.51.37; AH.Ci.4.26
4.	Arkankura Putapak	Otalgia due to Kapha Dosha	AH.U.18.13

Table 2 (f): Therapeutic Formulations of Arka Twak & Shakha in Brihatrayi[2,3,4]

SN	Formulation	Therapeutic indications	References
1.	Saptaparnadi Lepa	Worm infestation in ulcer	SS.Ci.1.121; AH.Su.29.76
2.	Devdaryadi Lepa	Diseases of abdomen	AH.Ci.15.48
3.	Karanjadi Dantapavan / Arkadi Dantapavan	Dental hygiene	CS.Su.5.73 AH.Su.2.2

Table 2 (g): Therapeutic Formulations of Arka Panchang in Brihatrayi[3,4]

SN	Formulation	Therapeutic indications	References
1.	Kutajadi Kshar	Kshar making	SS.Su.11.12
2.	Kalyanak Lavan	Disease due to Vata Dosha	SS.Ci.4.32
3.	Kshar Agad	Calculus, piles, Takshak snake bite	SS.Ci.6.3
4.	Kaalmushkadi Kshar	Kshar making	AH.Su.30.9
5.	Arkadi Jal Bhavit Saktu	Excessive salivation	AH.Ci.5.61
6.	Dashmuladi Leha	Abdominal lump	AH.Ci.8.151

CS. – Charaka Samhita, SS. – Sushrut Samhita, AH. – Ashtanga Hridayam, Su. – Sutrasthana, Vi. – Vimanasthana, Ci. – Chikitsasthana, Ka. – Kalpasthana, Si. – Siddhisthana, U. – Uttartantra, U. – Uttarsthana

Description of Arka in Nighantu

Synonyms

In classical texts of *Ayurveda*, various synonyms of the Arka have been mentioned with their etymological derivation. Synonyms are *Raktarka*[7], *Arkaparna*[7], *Raktapushpa*[7], *Vikirana*[7,8,9,11,12], *Shuklaphala* [7,10], *Aasphota*[7,11,12], *Arka*[8,9,10,12,13], *Kshiradala*[8,10], *Pucchi*[8], *Pratapa*[8], *Kshirkandak*[8], *Shivapushpak*[8], *Bhanjan*[8], *Savita*[8], *Aasphotaka*[8], *Shukaphala*[8], *Vikshira*[8,12], *Bhaskar*[8,12], *Kshirparni* [8,11,12], *Suryahva*[8,9,11,12], *Sadapushpa*[8,9,11], *Ravi*[8,12], *Tulaphala*[8,10], *Rupika*[11], *Suryapushpa*[11], *Kshatkshiri*[11], *Dugdhinika*[11], *Kirtanuphala*[11], *Jambhala*[11,12], *Pushpi*[11,12], *Kshiri*[9,11], *Sadasuma*. [10]

Therapeutic properties of Arka

Arka is *Katu*[7,8,10,12,14] (pungent), *Tikta*[7,10,11,12,14,15,16] (bitter) in *Rasa* (taste), *Katu*[7,8,10,12,14] in *Vipaka* and *Ushna*[7,8,10,11,12,14] in *Veerya*. *Sara*[7,9,10,14,16], *Deepana*[12], *Manda*[16] and *Ushna* [7,8,10,11,12,14] in *Guna*.

Shophahara, Vranahara, Kandu, Kushtha, Pleeha, Krimee, Shakritakrimee, Visha, Gulma, Arsha, Yakritodara, Shleshmodara, Raktavikara, Grahabadha, Kaphaja Roga, Visuchika, Shirovaata, Shankhavata. [7,8,11,12,14]

Flowers - *Madhura*[7,10,11,14,15] (Sweet), *Tikta* [7,10,11,14,15] (Bitter) in *Rasa* (Taste); *Laghu* [7,10,14] and *Atiruksha*[15] in *Guna*. *Kushta, Krimi, Kapha Nashak, Arsha, Mushak Visha, Raktapitta, Gulma, Shvayathu, Shula, Udar Nashak & Sangrahi* in nature.[7,10,11,15]

Latex - *Katu*[11] (pungent), *Tikta*[7,10,11,14,15] (bitter) and *Lavana*[7,10,11,14,15] (salty) in *Rasa* (taste). *Snigdha*[7,10,11,14,15], *Laghu*[7,10,11,14] and *Ushna*[7,10,11,14,15] in *Guna*. *Kushta, Gulma, Udar Nashak* and eminent in *Virechan*.[7,10,11,15] *Priya Nighantu* stated *Arka Ksheer* to be used in *Vaman* and *Virechan* and *Lepa* made from the latex can be applied on *Twak-Vikar* and *Shvitra* disease. [13]

Roots - *Ushna* in *Guna*. *Swedkari, Svasa, Upadansh nashak*. *Bhavprakash Nighantu* quoted use of root bark of *Arka* in *Deepan, Pachan, Swedajanan, Pittasravi, Kaphaghna, Vamak, Virechak, Balya* and *Rasayan*.[7]

Leaves - *Sara, Bhedan, Tikshna* and *Kapha-Vata Shamak*. *Tvaka Dosha, Gulma, Arsha, Svasa, Yakrit-Pleeha Vriddhi* and *Krimiroga, Shvayathu Hara, Vran Shodhak, Vrana Ropak, Anulomak, Udar Nashak, Pachak*.[7,13,15]

Varieties of Arka

1. Arka and Alarka - *Saushruta Nighantu*[17], *Ashtanga Nighantu*[18], *Paryay Ratnamala*[19], *Madanadi Nighantu*[16], *Madanpal Nighantu*[9], *Kaiyadeva Nighantu*[11], *Bhavprakash Nighantu*[7], *Abhidhan Manjari*[20]111

2. Arka and Rajarka - *Dhanvantari Nighantu*[12], *Nighantu Shesha*[21]

3. Arka and Shwetarka - *Saraswati Nighantu*[22], *Shaligram Nighantu*[10]

4. Shwetarka & Raktarka - *Nighantu Kalpadruma*[15], *Nighantu Adarsha*[14], *Priya Nighantu*[13]

5. Arka, Shwetarka and Rajarka - *Shodhala Nighantu*[23]

6. Arka, Shuklarka, Rajarka & Shweta Mandar - *Raj Nighantu*[8]

7. Taxonomically two different species of *Calotropis* are reported which are – *Calotropis procera* (Ait.) R. Br. & *Calotropis gigantea* (Linn.) R. Br.[24]

Botanical specifications of Arka

Calotropis procera (Ait.) R. Br. has been unanimously accepted as official botanical source for *Arka* (API). Another common species *Calotropis gigantea* (Linn.) R. Br. has been equated with classical variety *Alarka*.[25]

Morphology - *C. procera* is a large, erect, hoary tomentose shrub. Leaves are sessile, ovate-oblong, cordate, acute, and 13 x 8 cm in size. Flowers are purplish-red, arranged in axillary and terminal corymbose cymes. Corolla lobes erect and acute. Follicles 6-12 cm long, recurved and smooth. Fruits are long and 3.5 x 13 cm in size. Seeds are flat with a silky white coma. Stem (Bark) is around 0.1 - 0.5 cm thick, external surface yellowish brown having longitudinal cracks, internal surface greenish, smooth, with an occasional wood tissue attached. Roots are rough, fissured longitudinally, corky and soft, externally yellowish-grey while internally white.

Flowering and Fruiting - March - July[24]

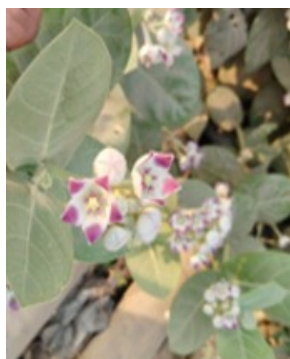
Habitat and Distribution - Mostly found in arid areas and tropical regions all over India. Commonly in open waste places and along canal banks. Commonly grow most abundantly in India, Bangladesh, Burma, Pakistan & in Sub-Himalayan tract.[7,24]

Vernacular names - Sanskrit: *Ravi, Bhanu, Tapana*; Assamese: *Akand, Akan*; Bengali: *Akanda, Akone*; English: *Madar Tree*; Gujarati: *Aakado*; Hindi: *Aak, Madar, Akavana*; Kannada: *Ekka, Ekkadagida, Ekkegida*; Kashmiri: *Acka*; Malayalam: *Erikku*; Marathi: *Rui*; Oriya: *Arakha*; Punjabi: *Ak*; Tamil: *Vellerukku, Erukku*; Telugu: *Jilledu*; Urdu: *Madar, Aak*.[25]

Image 1 (a) & (b): *Calotropis procera*



(a)



(b)

Image 2 (a) & (b): *Calotropis gigantea*



(a)



(b)

Phytochemistry of parts of *Arka*

1. Flowers - The flowers of *procera* constitute with α - amyryns & β -amyryns, Cyanidin-3-rhamnoglucose, triterpene calotropenyl acetate, cyaindin-3-rhamnogluco-side, cycloart-23-en-3 β , 25-diol, cyclosadol, multiflorenol, procestrol, quercetin-3- rutinoside, β -sitosterol, β -sitost-4en-3one, stigmasterol, an alka-line phosphate.[26]

2. Leaves - The leaves of *procera* contain ascorbic acid, calactin, calotoxin, calatropagenin, calotropin, polysaccharide containing D-arabinose, D-glucose, D-glucosamine and L-rhamnose, calotropagenin, and 3-proteinase.[27]

3. Roots - The root-bark of *procera* contains calactinic acid, choline and O-pyrocatechuic acid, β -sitosterol, taraxasterol, its isomer like taraxasteryl isovalerate and taraxasteryl acetate, benzoliso-leneolone, benzol-lineolone, long-chain fatty acids. [28]

4. Latex - Latex contains calotropin, α -calotropeol, 3-epimoretenol, gigantol, giganteol, isogiganteol, α -lactuceryl acetate, α -lactuceryl isovalerate, lupeol, proceroside, proceragenin, syriogenin, taraxast-20 α (30)-en-(4-methyl-3-pentenoate), 3'-thiazoline car-denolide uscharidin, uzarigenin, voruscharin and β -sitosterol, bacteriolytic enzyme.[27]

5. Stem - Stem contains 5-Hydroxy-3,7-dimethoxy-flavone-4'-O- β -glucopyranoside, Desglu-couzarin, Uzarigenone. Stem bark contains Luteolin, Epica-techin and Oleanolic acid.[29,30]

6. Seeds - Seeds contain Caroglaucigenin, Frugo-side, Carotoxigenine and Calotropin.[31]

Ethnomedicinal uses

1. Leaves

A. Leaves are used with mustard oil by applying on inflamed parts of body in inflammations due to blunt injuries by Tharu tribes of Kheri District (U.P.).[32]

B. Ash of leaves combining with sugar is used in asthma and bronchitis by Tharu tribes of Kheri District (U.P.).[32]

C. People of Dang (Gujarat) boil *Arka* leaf with groundnut oil and used in earache.[33]

D. Leaf tied over injured area by locals of Dumka district, Samthal Pargana division in Bihar for healing worm infested wounds.[34]

2. Latex - Latex is applied on affected tooth in tooth caries, leprosy, wound in rabies.[35,36]

3. Root

A. Ash of root is used in the form of tooth powder in pyorrhoea by Tharu tribes of Kheri District (U.P.). [32]

B. Root bark is used in dysentery and elephantiasis in Andhra Pradesh.[37]

4. Stem - Infusion of the stem powder is used to cure fever and abdominal pain and diluted stem powder is taken to cure diarrhoea in Singhbhum district of Bihar.[38]

5. Flower and seeds

A. Flower buds powdered with salt is used in constipation by Tharu tribes of Kheri District (U.P.). [32]

B. Flower paste mixed with black piper and barley is orally used in dog bite by Tharu tribes of Kheri District (U.P.). [32]

C. Powder of flowers with jaggery is taken to cure cough in Ghatigaon forest of Gwalior in Madhya Pradesh. [39]

D. Flower & Seeds are used to cure sexual diseases by tribals in North Bengal. [40]

6. Whole Plant - Ash of whole plant is taken to cure dyspepsia by tribals in North Bengal. [40]

Biological Activities Reported in parts of Arka

A) Latex

1. Anti-inflammatory - Oral administration of dried latex (DL) from the aerial parts exhibited anti-inflammatory activity against various acute and chronic models of inflammation in rats. DL inhibited carrageenan-induced paw oedema (50 and 500 mg/kg), Freund's adjuvant-induced oedema (500 mg/kg), cotton pellet granuloma (100 mg/kg), carrageenan-induced air pouch inflammation (500 mg/kg), vascular permeability (500 mg/kg) and UV-induced erythema (200 mg/kg). [41]

2. Pro-inflammatory - Aqueous solution (0.1 ml of 1%) of dry latex (DL) of *procera* injected s.c. into the plantar surface of paw produced significant inflammation. Maximum inflammatory response was obtained 1 hr after the injection and was maintained for a further 1 hr. The inflammatory response was followed by an increase in vascular permeability that reached its maximum within 15 min. [42]

3. Cardiovascular - The alcoholic extract of the latex obtained from *procera* was evaluated for protection against isoproterenol (20 mg/100g body wt., s.c.) - induced myocardial infarction in albino rats. Pretreatment with an ethanolic latex extract of *C. procera* at a dose of 300 mg/kg body wt., administered orally thrice a day for 30 days, reduced significantly the elevated marker enzyme levels in serum and heart homogenates in isoproterenol-induced myocardial infarction. Histopathological observation revealed a marked protection by the extract in myocardial necrotic damage. [43]

4. Anti-diarrhoeal - A single oral dose of DL (500 mg/kg) produced a significant decrease in frequency of defecation, severity of diarrhoea and afforded protection from diarrhoea in 80% rats treated with castor oil. DL produced a decrease in intestinal transit (27-37%) as compared to both normal and castor oil treated animals. Unlike atropine, DL significantly inhibited castor oil induced enteropooling. However, it did not alter electrolyte concentration in the intestinal fluid as compared to castor oil treated rats. [44]

5. Anti-pyretic - Administration of dry latex (from the twigs) of *procera* in a dose of 250 and 500 mg/kg showed antipyretic effect. The antipyretic effect as compared to aspirin, was found to be more potent suggesting that action of dry latex was like aspirin. [45]

6. Analgesic - The analgesic activity of dry latex (DL) of *procera* was evaluated by administering a single oral dose of DL ranging from 165 to 830 mg/kg which produced a significant dose dependent analgesic effect against acetic acid induced writhing. The effect of DL at a dose of 415 mg/kg was more pronounced as compared to a 100 mg/kg oral dose of aspirin. On the other hand, DL (830 mg/kg) produced marginal analgesia in a tail-flick model which was comparable to aspirin.

The analgesic effect of DL was delayed by 1 hr by naloxone at a dose of 0.5 mg/kg, which completely blocked the analgesic effect of morphine (10 mg/kg). The effect of aspirin was not blocked by naloxone. The 830 mg/kg oral dose of DL did not produce toxic effects in mice & the LD₅₀ was found to be 3 g/kg. [46]

7. Anti-microbial - Latex serum extracts (ethanol, methanol, chloroform and aqueous) of *procera*, exhibited a varying degree of inhibition against all tested pathogenic strains of bacteria and fungi. The aqueous and ethanolic extracts were more effective antimicrobials against tested strains, while chloroform extract showed antibacterial activity. Synthesized nanoparticles exhibited a variable growth inhibition against the tested strains. [47]

8. Insecticidal Activity - The latex from the *procera* plant was tested for ovicidal, larvicidal and adulticidal activity against *Anopheles stephensi*, *Culex fatigans* and *Aedes aegypti* larvae at various concentrations. The latex was 100 per cent ovicidal and larvicidal but not adulticidal at 10,000 ppm. [48]

B) Roots

1. Antifertility Activity - In animal studies Calotropin was found to inhibit spermatogenesis in male and induced abortion in pregnant females.[49]

2. Anti-ulcer Activity - Role of chloroform fraction of *procera* root extract demonstrated significant anti-ulcer activity against aspirin, indomethacin, ethanol, indomethacin + ethanol, or stress-induced ulcerations. Significant inhibition of gastric secretory volume and total acidity in pylorus ligated rats were observed to occur with the extract. It was also observed that the root extract significantly inhibited arachidonic acid metabolism induced by soyabean lipoxygenase. The results suggest that the anti-ulcer activity of the extract might be attributable to the inhibition of 5-lipoxygenase.[50]

C) Flowers

1. Hepatoprotective - Hydro-ethanolic extract (70%) of *procera* flowers was tested for its hepatoprotective effect against paracetamol-induced hepatitis in rats. Paracetamol (2 gm/kg/bd.wt) has enhanced the SGPT, SGOT, ALP, bilirubin and cholesterol levels and reduced the serum levels of HDL and tissue level of GSH. Treatment with hydro-ethanolic extract of *C. procera* flowers (200 mg/kg and 400 mg/kg) has brought back the altered levels of biochemical markers to the near normal levels in the dose dependent manner.[51]

2. Anti-inflammatory - An ethanolic extract of the flowers of *procera* showed anti-inflammatory activity in carrageenan by 37%.[52]

3. Antipyretic activity - An ethanolic extract of flowers of *procera* was investigated for antipyretic. Plant extracts reduced fever in rats by 40%.[52]

D) Leaves

1. Anti-hyperbilirubinemic activity - Aqueous extract of *procera* leaves showed a significant decrease in concentrations of serum total bilirubin in hyperbilirubinemic rats. Bilirubin lowering property of *C. procera* leaves was evaluated using phenylhydrazine and paracetamol as inducing agents followed by measuring the concentration of serum total bilirubin in hyperbilirubinemic rats.[53]

2. Wound healing activity - Wound healing property was evaluated in aqueous extract of *procera* leaves through significant increase in breaking strength and percentage wound contractions with decreased epithelization.[53]

Toxicological Studies

1. Flowers - Oral administration of ethanolic extract of *procera* flower, administered acutely, did not cause any mortality or notable changes at the dose of 2000 mg/Kg. Therefore, the approximate lethal dose in mice was higher than 2,000 mg/kg.[54]

2. Latex

A. A study was done to assess the toxic effect of abamectin and latex of *procera* administrations on kidney function and histological integrity in male albino rats. *C. procera* latex could induce marked toxicity in kidney and these toxic effects may be more or less similar to those of abamectin.[55]

B. The milky white latex of plant *procera* produces inflammation of the skin and mucous membranes on accidental exposure. When administered locally, it causes oedema due to it releases prostaglandins and histamine.[56]

3. Leaves

Oral administration of the aqueous extract of *C. procera* leaves did not produce any sign of toxicity/mortality in rats up to 5000 mg/kg. The extract did not result in any significant change in the level of Na⁺, K⁺, Cl⁻, HCO₃²⁻, Alanine transaminase (ALT), Aspartate transaminase (AST), Alkaline phosphatase (ALP), total protein, direct bilirubin, albumin, and globulin in the serum, when compared with that of the control group. The result of the study explains the continual usage of *C. procera* for therapeutic purposes, as it showed no much potential toxic effect.[57]

Discussion

Arka botanically identified *C. procera* (Ait. R.Br.) has been utilised long since ancient times in *Ayurvedic* practices and further valued to humankind through ethnomedicinal practices. Different tribes have been using *Arka* for different remedies by undertaking careful consideration of its toxicological behaviour.

Arka has been traditionally used as potent anti-inflammatory drug by means of different formulae used internally as well as externally. Ethnomedicinal usage of leaves of *Arka* for inflammatory remedies has also been noted. Anti-inflammatory activity exhibits by *Arka* parts establish plant's therapeutic efficacy in inflammatory conditions. Likewise, compounded formulations of *Arka* viz.

Kshar Gutika and *Muktadi Churna* have been mentioned in *Ayurvedic* texts for asthma and cough, which is also been utilising by different tribes for asthma and bronchitis. Usage of *Arka* for wound healing and worm-infested wound has been long practiced in ancient *Ayurvedic* medicine and ethnomedicinal practices. Modern pharmacological studies establish these claims by showing wound healing activity, anti-ulcer activity, anti-microbial activity, and anti-insecticidal activities. These activities also establish and validate traditional usage of *Arka Ksheer* for rabies and utilisation of *Arka Ksheer* in ethnomedicinal practice for dog bite by different tribal communities. Though, this indication requires thorough investigation regarding clinical efficacy of *Arka Ksheer*.

Conclusion

Ayurveda has emphasized the potency of *Arka* through single usage of plant parts as well as in the form of various formulations. Due usage of *Arka* plant parts as mixture formulations has also been noted in ethnomedicinal practices. With the support of modern pharmacological studies, *Arka* remarks as one of the potent drugs that can be used for several diseases. In *Ayurveda*, *Arka* is mentioned among *Upavisha* (semi-poisonous drugs) and toxicological studies on leaves, latex and flower mentioned in modern pharmacology also suggest toxicity of the drug. *Ayurveda* advocates rationalized use of poisonous substances for therapeutic purposes. Similar is the case of *Arka*, which on rationalized use in therapeutic dose is beneficial like nectar and otherwise may cause toxic effects. There appears a need of more intensive researches for screening clinical utility of this abundant plant.

References

- Shastri K. Rasatarangini. 11th ed. New Delhi: Motilal Banarsidass; 1979. *Taranga* 4, p.675 [Crossref][PubMed][Google Scholar]
- Tripathi B. Charaka-Samhita of Agnivesha. Vol I. With Hindi commentary Caraka-Chandrika. Varanasi: Chaukhambha Surbharati Prakashan; 2009 [Crossref][PubMed][Google Scholar]
- Shastri AD. Sushruta Samhita. Part I. Reprint ed. Varanasi: Chaukhambha Sanskrit Sansthan; 2024 [Crossref][PubMed][Google Scholar]
- Tripathi B. Ashtanga Hridayam (Srimad Vagbhaṭa; Hindi commentary). Revised ed. Varanasi: Chaukhambha Sanskrit Pratishthan; 2022. [Crossref][PubMed][Google Scholar]
- Tripathi B. Charaka-Samhita of Agnivesha. Vol II. With Hindi commentary Caraka-Chandrika. Varanasi: Chaukhambha Surbharati Prakashan; 2009 [Crossref][PubMed][Google Scholar]
- Shastri AD. Sushruta Samhita. Part II. Reprint ed. Varanasi: Chaukhambha Sanskrit Sansthan; 2024 [Crossref][PubMed][Google Scholar]
- Chunekar KC. Bhavaprakash Nighantu (Indian Materia Medica of Acharya Bhav Mishra). Reprint ed. Varanasi: Chaukhambha Bharati Academy; 2024. p.289–90 [Crossref][PubMed][Google Scholar]
- Sankhyadhar SC. Raj Nighantu. Reprint ed. Varanasi: Chaukhambha Orientalia; 2017. p.486–7 [Crossref][PubMed][Google Scholar]
- Vaidya PRP. Madanpal Nighantu. Mumbai: Khemraj Shrikrishna Das; 1990. p. 60 [Crossref][PubMed][Google Scholar]
- Vaishya S. Shaligram Nighantu. Mumbai: Khemraj Shrikrishna Das; 1953. p. 222 [Crossref][PubMed][Google Scholar]
- Sharma PV, Sharma GP. Kaiyadeva Nighantu Pathyaapathya Vibodhakah. Reprint ed. Varanasi: Chaukhambha Orientalia; 2017. p.630 [Crossref][PubMed][Google Scholar]
- Pandey J, Mishra U. Dhanvantari Nighantu. 1st ed. Varanasi: Chaukhambha Orientalia; 1985. p.183–4 [Crossref][PubMed][Google Scholar]
- Sharma PV. Priya Nighantu. 2nd ed. Varanasi: Chaukhambha Surbharati Prakashan; 1995. p.87 [Crossref][PubMed][Google Scholar]
- Vaidya BG. Nighantu Adarsa. 2nd ed. Vol 2. Varanasi: Chaukhambha Bharati Academy; 1999. p.12–3 [Crossref][PubMed][Google Scholar]
- Trivedi SL. Nighantu Kalpadruma. Varanasi: Chaukhambha Krishnadas Academy; 2006. p. 308–9 [Crossref][PubMed][Google Scholar]
- National Institute of Indian Medical Heritage. Madanadi Nighantu [Internet]. Verse 22. 1–4. Available from: [Accessed 2025 Oct 4, 11:45 am] [Article][Crossref][PubMed][Google Scholar]

17. National Institute of Indian Medical Heritage. Sushruta Nighantu [Internet]. Verse 8. 111–12. Available from: [Accessed 2025 Oct 4, 11:00 am] [Article][Crossref][PubMed][Google Scholar]
18. National Institute of Indian Medical Heritage. Ashtanga Nighantu [Internet]. Verse 15. 121. Available from: [Accessed 2025 Oct 4, 11:15 am] [Article][Crossref][PubMed][Google Scholar]
19. National Institute of Indian Medical Heritage. Paryayaratnamala [Internet]. Verse 1. 316–7. Available from: [Accessed 2025 Oct 4, 11:30 am] [Article][Crossref][PubMed][Google Scholar]
20. National Institute of Indian Medical Heritage. Abhidhanamanjari [Internet]. Verse Madanadiganavarga – Arkadivarga – 294–5. Available from: <https://niimh.nic.in/ebooks/e-Nighantu/abhidhanamanjari/?mod=read> [Accessed 2025 Oct 4, 12:00 pm] [Crossref][PubMed][Google Scholar]
21. National Institute of Indian Medical Heritage. Nighantushesha [Internet]. Verse 1. 48–9. Available from: [Accessed 2025 Oct 4, 12:15 pm] [Article][Crossref][PubMed][Google Scholar]
22. National Institute of Indian Medical Heritage. Sarasvati Nighantu [Internet]. Verse 2. 7–8. Available from: [Accessed 2025 Oct 4, 12:30 pm] [Article][Crossref][PubMed][Google Scholar]
23. National Institute of Indian Medical Heritage. Shodhala Nighantu [Internet]. Verse 4. 492–4. Available from: [Accessed 2025 Oct 4, 12:45 pm] [Article][Crossref][PubMed][Google Scholar]
24. Singh KK. Flora of Dudhwa National Park: Kheri Distt. , Uttar Pradesh. Illustrated ed. Dehradun: Bishen Singh Mahendra Pal Singh; 1997. p.275 [Crossref][PubMed][Google Scholar]
25. Government of India, Ministry of Health and Family Welfare, Department of ISM&H. The Ayurvedic Pharmacopoeia of India. Part I, Vol 1. New Delhi: Government of India; 2001. p.11 [Crossref][PubMed][Google Scholar]
26. Carruthers IB, Griffiths DJ, Home V, Williams LR. Hydrocarbons from Calotropis procera in northern Australia. Biomass. 1984;4(4):275–82. [Crossref][PubMed][Google Scholar]
27. Parihar G, Balekar N. Calotropis procera: A phytochemical and pharmacological review. Thai J Pharm Sci. 2016. [Crossref][PubMed][Google Scholar]
28. Chatterjee A, Pakrashi SC. The Treatise on Indian Medicinal Plants. Vol 4. New Delhi: Publications and Information Directorate, CSIR; 1995. p.1–3 [Crossref][PubMed][Google Scholar]
29. Tour NS, Talele GS. Phytochemical studies of Calotropis procera stem bark. Chem Nat Compd. 2012;48:708–9. [Crossref][PubMed][Google Scholar]
30. Wadhvani BD, et al. A review on phytochemical constituents and pharmacological potential of Calotropis procera. RSC Adv. 2021;11(57):35854–78. [Crossref][PubMed][Google Scholar]
31. Ranjit PM, et al. An overview of phytochemical and pharmacological activities of Calotropis procera. FS J Pharm Res. 2012;1:18–25. [Crossref][PubMed][Google Scholar]
32. Mishra HS. Studies on herbal drugs used as ethnomedicine by the Tharu tribe of Kheri District (U. P. , India). MD (Ay) Dravyaguna Thesis. Pilibhit: L.H.S.P.G. Ayurvedic College and Hospital; Awarded by CSJM University, Kanpur; 2007. p.69 [Crossref][PubMed][Google Scholar]
33. Joshi MC, Patel MB, Mehta PJ. Some folk medicines of Dang (Gujarat). Bull Medico-Ethnobot Res. 1980; p. 8–24 [Crossref][PubMed][Google Scholar]
34. Chandra K, Pandey BN. Medicinal plants of Samthal Pragana district, Dumka (Bihar). Sachitra Ayurveda. 1985; p. 307–14 [Crossref][PubMed][Google Scholar]
35. Pathak RR. Therapeutic guide of Ayurvedic medicines. Patna: Baidyanath Ayurveda Bhawan; 1970. . [Crossref][PubMed][Google Scholar]
36. Kirtikar KR, Basu BD. Indian Medicinal Plants. Vol 3. Dehradun: Bishen Singh Mahendra Pal Singh; 1933. p.1606–11 [Crossref][PubMed][Google Scholar]
37. Venkateswarulu J, Bhairavamurthy PV, Rao N. The Flora of Visakhapatnam. Hyderabad: Andhra Pradesh Academy of Sciences; 1972. p. 128 [Crossref][PubMed][Google Scholar]

38. Chandra K, Pandey UN. Some folk medicines of Singhbhum (Bihar). Sachitra Ayurveda. 1984;37:253-57. [\[Crossref\]](#)[\[PubMed\]](#)[\[Google Scholar\]](#)
39. Bhatnagar LS, Singh VK, Pandey G. Medico-botanical studies on the flora of Ghatigaon forests, Gwalior (MP). J Res Indian Med. 1973; p. 67 [\[Crossref\]](#)[\[PubMed\]](#)[\[Google Scholar\]](#)
40. Misra MK, Mohanty MK, Das PK. Studies on the method-ethnobotany of Calotropis gigantea and C. procera. Anc Sci Life. 1993 Jul 1;13(1-2):40-56 [\[Crossref\]](#)[\[PubMed\]](#)[\[Google Scholar\]](#)
41. Sangraula H, et al. Evaluation of anti-inflammatory activity of latex of Calotropis procera in different models of inflammation. Inflammopharmacology. 2001;9:257-64. [\[Crossref\]](#)[\[PubMed\]](#)[\[Google Scholar\]](#)
42. Singh H, et al. Inflammation induced by latex of C. procera – a new model to evaluate anti-inflammatory drugs. J Pharmacol Toxicol Methods. 2000;43(3):219-24 [\[Crossref\]](#)[\[PubMed\]](#)[\[Google Scholar\]](#)
43. Mueen Ahmed KK, et al. Effect of Calotropis procera latex on isoproterenol-induced myocardial infarction in albino rats. Phytomedicine. 2004;11(4):327-30. [\[Crossref\]](#)[\[PubMed\]](#)[\[Google Scholar\]](#)
44. Kumar S, Dewan S, Sangraula H, Kumar V. Anti-diarrhoeal activity of the latex of Calotropis procera. J Ethnopharmacol. 2001. [\[Crossref\]](#)[\[PubMed\]](#)[\[Google Scholar\]](#)
45. Dewan S, Kumar S, Kumar VL. Antipyretic effect of latex of Calotropis procera. Indian J Pharmacol. 2000;32(3):252. [\[Crossref\]](#)[\[PubMed\]](#)[\[Google Scholar\]](#)
46. Dewan S, Sangraula H, Kumar VL. Preliminary studies on the analgesic activity of latex of C. procera. J Ethnopharmacol. 2000;73(1-2):307 [\[Crossref\]](#)[\[PubMed\]](#)[\[Google Scholar\]](#)
47. Hassan MH, et al. Phytochemical and antimicrobial activity of latex serum of C. procera and its silver nanoparticles against some reference pathogenic strains. J Ecol Health Environ. 2017;5(3):65-75 [\[Crossref\]](#)[\[PubMed\]](#)[\[Google Scholar\]](#)
48. Girdhar G, et al. Mosquito control by Calotropis latex. Pesticides. 1984;18(10):26-9. [\[Crossref\]](#)[\[PubMed\]](#)[\[Google Scholar\]](#)
49. Gupta R, Sharma N, Dixit V. Calotropin – a novel compound for fertility control. Anc Sci Life. 1990;9:224-30. [\[Crossref\]](#)[\[PubMed\]](#)[\[Google Scholar\]](#)
50. Sen T, et al. Studies on the possible mechanism of the gastric mucosal protection by C. procera – involvement of 5-lipoxygenase pathway. Fundam Clin Pharmacol. 1998 Jan 2;12(1):82-7 [\[Crossref\]](#)[\[PubMed\]](#)[\[Google Scholar\]](#)
51. Ramachandra Setty S, et al. Hepatoprotective activity of C. procera flowers against paracetamol-induced hepatic injury in rats. Fitoterapia. 2007;78(7-8):451-4 [\[Crossref\]](#)[\[PubMed\]](#)[\[Google Scholar\]](#)
52. Mascolo N, Sharma R, Jain SC, Capasso F. Ethnopharmacology of Calotropis procera flowers. J Ethnopharmacol. 1988 Feb-Mar;22(2):211-21. [\[Crossref\]](#)[\[PubMed\]](#)[\[Google Scholar\]](#)
53. Patil RA, et al. Anti-hyperbilirubinemic and wound healing activity of aqueous extract of C. procera leaves in Wistar rats. Indian J Pharmacol. 2015;47(4):398-402 [\[Crossref\]](#)[\[PubMed\]](#)[\[Google Scholar\]](#)
54. Kumar A, et al. Acute and subacute toxicity study of ethanolic extract of C. procera (Aiton) Dryand flower in Swiss albino mice. Phytomedicine Plus. 2022;2(2) [\[Crossref\]](#)[\[PubMed\]](#)[\[Google Scholar\]](#)
55. Fahim HE, et al. Nephrotoxic effects of abamectin and Calotropis procera latex and leaf extract in male albino rats. Am J Med Med Sci. 2016;6(3):73-86. [\[Crossref\]](#)[\[PubMed\]](#)[\[Google Scholar\]](#)
56. Sehgal R, Kumar VL. C. procera latex-induced inflammatory hyperalgesia – effect of anti-inflammatory drugs. Mediators Inflamm. 2005;2005(4):216-20 [\[Crossref\]](#)[\[PubMed\]](#)[\[Google Scholar\]](#)
57. Mohammed A, et al. Toxicological investigation of aqueous leaf extract of C. procera (Ait.) R. Br. in Wister albino rats. Afr J Biochem Res. 2012 Apr 15;6(7):90-7 [\[Crossref\]](#)[\[PubMed\]](#)[\[Google Scholar\]](#)

Disclaimer / Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of Journals and/or the editor(s). Journals and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.