

REVIEW ARTICLE

KADAMBA IN AYURVEDA - A CRITICAL REVIEW

BRIJESH KUMAR*¹, SATYA PRAKASH CHAUDHARY², ANIL KUMAR SINGH³

¹PhD Scholar, Department of Dravyaguna IMS BHU, India.

²PhD Scholar, Department of Dravyaguna IMS BHU, India.

³Professor, Department of Dravyaguna IMS BHU, India.

(Received on: 14-08-15; Revised & Accepted on: 18-09-15)

ABSTRACT

The Kadamba tree was considered a holy tree by the Kadamba dynasty. In the Ayurveda medicinal effect of Kadamba is described in the different Samhitas like Charaka Samhita, Sushruta Samhita, Astangahridaya, Harit Samhita, Chakaradatta etc. Kadamba is used as anti-hepatotoxic, antimalarial, antimicrobial, wound healing, antioxidant, anthelmintic, analgesic, anti-inflammatory, antipyretic, diuretic and laxative. The major constituents of the plant are triterpenes, triterpenoid glycosides, flavanoids, saponins, indole alkaloids; cadambine, cadamine, isocadambine, isodihydrocadambine.

Keyword: Kadamba, charaka samhita, Analgesic, Alkaloids.

INTRODUCTION

Ayurveda is the life science and indicates knowledge of appropriate and inappropriate, happy or sorrowful conditions of living, what is auspicious or inauspicious for longevity as well as measure of life itself. It has so many treasures of life that make man disease-free, healthy and long living. Sadvritta, Svasthavritta, Ritucharya, Dinacharya, Rasayana, are few of those. Main objective of this science is to maintain the health of healthy & curing the ailments of the ailing. Ayurveda gives to the maintenance of health rather than cure of the ailment.

The diverse culture of our country is a rich source of traditional medicines, many of which are of plant origin. Scientific data on such plant derivatives could be of clinical use¹. *Anthocephalus cadamba* (Roxb.) Miq. Syn. *Neolamarckia cadamba* var. *A. chinensis* (Family: Rubiaceae) commonly known as Kadam is a large tree up to 37.5 m high and 2.4 m in girth with straight cylindrical bole. The bark is gray, smooth in young trees, rough and longitudinally fissured in old trees. Leaves opposite, simple, elliptic-oblong; Flowers in solitary globose head, orange or yellow; Fruits pseudo carps, found all over India^{2,3}. In folk medicine it is used in the treatment of fever, uterine complaints, blood diseases^{4,5}, skin diseases⁶, eye inflammation, diarrhoea⁷, anaemia, leprosy, dysentery and stomatitis⁸. The reported uses of this are anti-hepatotoxic⁹, antimalarial¹⁰, antimicrobial, wound healing, antioxidant¹¹, anthelmintic¹², analgesic, anti-inflammatory, antipyretic¹³, diuretic and laxative¹⁴. The major constituents of bark are triterpenes, triterpenoid glycosides, saponins, indole alkaloids cadambine, 3 α -dihydrocadambine, cadamine, isocadamine and isodihydrocadambine¹⁵⁻¹⁷. Chlorogenic acid isolated from the leaves. The tribes of Ganjam district of Orissa drink the root paste duly suspended in water in reducing blood sugar in the patients with diabetes mellitus. Studies substantiating its use in diabetes are lacking. In the present study was undertaken to evaluate the hypoglycemic properties of the root in experimental animal models to provide a scientific support to the folklore claims.

Corresponding Author: Brijesh Kumar*¹

¹PhD Scholar, Department of Dravyaguna IMS BHU, India.

MATERIAL AND METHODS

SAMHITA GRANTHA

CHARAKA SAMHITA (1000 BC- 4th Cent. AD)¹⁸

It is considered one of the oldest scriptures among the existing classics of *Ayurveda*. *Kadamba* is also found by different synonyms in Charaka Samhita with its properties, action, useful part, therapeutic uses and dosage forms. The same has been presented in tabular form, which is as follows

2. SUSHRUTA SAMHITA (1000 BC- 5th Cent.AD)¹⁹

Sushruta Samhita is another scripture of similar period of Charaka Samhita. In Sushruta Samhita also various synonyms of Kadamba, properties, action, therapeutic uses, useuse useful part and dosage forms are seen at various places, which are as follows **Table 2:**

S.N.	Dosages Form	Name	Indication	Reference
1.	Kasaya	Kadamba	Shukrashodhan Mahakasaya	C.S.Su.4/20
2.	Kasaya	Nipa	Vamnopaga Mahakasaya	C.S.Su.4/23
3.	Kasaya	Kadamba	Vednasthapan Mahakasaya	C.S.Su.4/47
4.	Shaka	Kadamba		C.S.Su.27/114
5.	Phala	Nipa	Tridoshara ,Gara vish hara	C.S.Su.27/145
6.	Svarasa	Nipa	Krimi Roga	C. S.Vi 7/21
7.	Kasaya	Kadamba	Kasaya skandha	C. S.Vi 8/144
8.	Taila	Kadamba	Chandanadi Taila-Dah janya jwara	C. S.Ci 3/258
9.	Kvatha	Kadamba	Kaphaj Prameha	C. S.Ci 6/27
10.	Kvatha	Kadamba	Kshayaja kasa-Mutravivarnta	C. S.Ci 18/154
11.	Kvatha	Kadamba	Nyagrodhadi Ropan	C. S.Ci 25/87
12.	Patra	Kadamba	Vrna acchadana	C. S.Ci 25/95
13.	Kalka	Kadamba	Sukumarak Taila-Vatrakta	C. S.Ci 29/99
14.	Kvatha	Kadamba	Vamana vidhi	C. S.Ka.1/14
15.	Kalka	Kadamba	Parkartika	C. S.Si.6/66
16.	Kalka Vasti	Nipa	Parkartika	C. S.Si.10/34

Table-1.2

S.N.	Dosages Form	Name	Indication	Reference
1.	Puspa	Kadamba ,Nipa	Pravrda ritu	S.S.Su.6/32
2.	Kasaya	Kadamba	Rodhradi gana	S.S.Su.38/14
3.	Kasaya	Kadamba	Nyagrodhadi gana	S.S.Su.38/48
4.	Phala	Nipa	Phala varga	S.S.Su.46/139
5.	Phala	Nipa	Gardosha hara	S.S.Su.46/158
6.	Tvak	Nipa		S. S.Ci. 4/32
7.	Mula	Kadamba	Sharkara nashak	S. S.Ci. 7/18
8.	Patra	Kadamba	Utpat pali roga	S. S.Ci. 25/17
9.	Tvak	Kadamba	Aalavisha	S. S.K. 8/108
10.	Bija	Kadamba	Kash roga	S. S.Ut. 51/40

3. ASTANGA HRIDAYA (7th Cent. AD)²⁰

It is one of the important Samhitas & is included among Brihatrayi. All other references are presented below

S.N.	Dosages Form	Name	Indication	Reference
1.	Kasaya	Kadamba	Haritkyadi varga	A.H.Su.10/32
2.	Kasaya	Kadamba	Nyagrodhadi gana	A.H.Su.15/41
3.	Kvatha	Kadamba	Vrna ropan	A.H.Su.29/72
4.	Ghrta sidha	Kadamba	Kshayaj kasa	A.H.Ci.3/154
5.	Mula Kvatha	Kadamba	Ashmari nashak	A.H.Ci.11/29
6.	Kvatha tail	Kadamba	Mahavajra taila	A.H.Ci.19/79
7.	Churna	Nipa	Krimi roga	A.H.Ci.20/3
8.	Phala	Kadamba, Nípa		A.H.K.1/7
9.	Tvak	Kadamba	Balgraha pratisheda	A.H.U.3/46
10.	Phala	Kadamba	Utpat roga	A.H.U.27/14
11.	Kvatha	Nipa	Asthi bhagna	A.H.U.34/2

4. HARITA SAMHITA (10-12th Cent AD)²¹

S.N.	Dosages Form	Name	Indication	Reference
1.	Twak Kvatha	Kadamba	Prameha pitika	H.S.3/28/27
2.	Kvatha	Kadamba	Kaphaj Mushka Vrdhi	H.S.3/32/8
3.	Lepa	Kadamba	Vataj Shlipada	H.S.3/36/5
4.	Kvatha	Kadamba	Kustha	H.S.3/39/37
5.	Mula Kvatha	Kadamba	All Kustha	H.S.3/39/3 9
6.	Lepa	Kadamba	Vataj Vrna	H.S.3/35/15
7.	Kvatha dhawan	Kadamba	Kaphaj Visharpa	H.S.3/33/8
8.	Lepa	Kadamba	Raktaj Visharpa	H.S.3/33

5. CHAKRADATTA (11th cent AD)²²

S.N.	Dosages Form	Name	Indication	Reference
1.	Kshar jal	Nipa	Gulma	C.D.Gulma 48
2.	Kalka ghrta	Nipa, Kadamba	Prameha	C.D. Prameha 36
3.	Kvatha sinachan	Kadamba	Nimbadi Churna Updansa	C.D. Updansa 6

Botanical description of *Anthocephalus indicus* Miq.²³

Scientific classification:

Kingdom	<i>Plantae</i>
Subkingdom	<i>Tracheobionta</i>
Superdivision	<i>Spermatophyta</i>
Division	<i>Magnoliophyta</i>
Class	<i>Magnoliopsida</i>
Subclass	<i>Asteridae</i>
Order	<i>Gentianales</i>
Family	<i>Rubiaceae</i>
Genus	<i>Anthocephalus</i>
Species	<i>Anthocephalus indicus</i> Miq.

syn.: *Anthocephalus cadamba*

Vernacular Name

Assam	:	Roghu
Bengali	:	Bol-kadam
Gujarati	:	Kadamba
Hindi	:	Kadamba
Kannada	:	Kadawala
Khasi	:	Diengsohlang-pathi
Garro	:	Mi-bol
Marathi	:	Kadamba
Oriya	:	Kadambo
Mundari	:	Kadamba
Sanskrit	:	Kadamba
Tamil	:	Kalaoyila
Telegu	:	Kadambamuchettu, pedda kambo

THE WEALTH OF INDIA RAW MATERIAL

Vol. VI: L-M CSIR New Delhi 1962.

ANTHOCEPHALU (*Rubiaceae*)²⁴

A genus of tree, distributed throughout the IndoMalaysian region. One species occurs in India.

Anthocephalus indicus Miq.

Habitat. – A large, deciduous tree, occasionally buttressed, up to 37.5 cm in height and 2.4 cm in girth, with a clear bole of 9 m, and horizontal branches, found all over India and also cultivated.

Bark grey, fissured; leaves coriaceous, broadly ovate, elliptic-oblong, 7.5-18 cm and 4.5-16 cm; flower heads globose, yellow, solitary, terminal, 3.7 cm in diam. Consisting of small, yellow or orange-coloured, scented flower; fruit a fleshy, orange, globose pseudocarp of compressed angular capsule with persistent calyx; seeds small, muriculate.

The tree is frequently found in moist, warm type of deciduous and evergreen forest. It is found in the sub-Himalayan tract from Nepal eastwards on the lower hills of Darjeeling terai in West Bengal where it is common; in Chota Nagpur (Bihar), Orissa and Andhra Pradesh, in Karnataka and Kerala on the West coast, and the western ghat. In the Andamanas, it is very common in the damp places along large streams. It is also frequently cultivated for ornament, and as a shade-tree plantation throughout the country. It prefers deep, well-drained, moist alluvium; the growth is poor in stiff, badly drained soil. In the natural habitat, the absolute maximum shade temp. varies from 32 to 43.3°C. (Troup, II, 614; Parkinson, 185; Fox, loc. cit.; Cowan & Cowan, 75; FI Assam III, 18; Benthall, 275; FI Madras, II, 412; Talbot, II, 88; Indian For, 1952, 78, 284; Krishnaswamy, 1956, 57).

The tree is a typical light-demander. The young seedlings are sensitive to drought, but liable to damp-off with an excess of moisture in the soil. They withstand shade from same time and are very sensitive to frost. The seedlings are subject to attack by insects, and cattle and deer browse on it. The tree coppices vigorously. *Dendrophthoe falcate* has been recorded on this tree in Andhra Pradesh. The larvae and beetles of several insect-pests have been recorded to bore the wood. Some larvae defoliate the tree. *Gloeosporium anthocephali* Lal & Tandon has been recorded on various aerial parts (Troup, II, 615; Rao & Ravindranath, Bull bot Surv India, 1964, 6, 103; Bhasin & Roonwal, Indian for Bull, n s, Entomol, No. 171 (1), 1954, 77; Lal & Tandon, Indian Phytopath, 1950, 3, 140).

The leaves are shed in the hot season, and flowers chiefly appear from May to July; or as on the West coast, during Dec-March. The fruit ripens and falls during Aug-Oct., but the Dooars (West Bengal), during Jan-Feb. The fruit contains several small seeds (wt, 935 seeds/gm). The fruit is collected and heaped under shade and allowed to rot for three or four days. The pulp is washed in water, and the seed collected at the bottom are separated, thoroughly dried, and stored in dry places. The percentage of germination is fair (Troup, II, 614; Browne, 310; Macalpine, Tocklai exp Stn Memor, No. 24, 1952, 53; Benthall, 275).

Chemical constitution and uses²⁵

Parts	Phytochemicals
Flower	Linalool, geraniol, geranylacetate, linalyl acetate, Selinone, 2-nonanol,
Leaves	Cadambine, Cadamine, Isocaamine, 3 dihydrocadambine, 3 isodihydrocadambine, 3 dihydrocadambine, 3 isodihydrocadambine, Cinchotannic acid
Stem bark	Sapogenins, Cadambogenic acid, quinonic acid, Saponin A,B,C,D, Tannins
Wood	Cellulose, Lignin, Cadambine, dihydrocadambine, isodihydrocadambine,

Used in Folk Medicine

Part	Used
Fruits	Gastric irritability, Fever with persistent thirst, Blood purifier
Leaves	Gargling in aphthae or stomatitis
Stem bark	Antibacterial, Inflammation of eye

CONCLUSION

Ayurvedic medicinal plants have gained a renewed focus recently. The main reason is that the other system of medicine associated with number of side effects that often cause serious problems. Though ancient time Kadamba has various medicinal activities but it is time to explore its medicinal values at molecular level with the help of various biotechnological techniques. The work could also be done in this direction to ensure free utility of the plant.

REFERENCES

1. Gupta SS, Prospects and perspectives of natural plants products in medicine. Indian J Pharmacol, 26: 1-12, (1994).
2. Naithani HB and Sahni KC, Forest Flora of Goa, Edn. 1, International Books distributors, Deharadun, India: 318, (1997).

3. Anonymous. The Wealth of India, Vol. I, CSIR, New Delhi, India: 305-307, (1985).
4. Kiritikar KR and Basu BD, Indian Medicinal Plants, Vol- II, Lalit Mohan Basu, Allahabad, India: 1251-1252, (1933).
5. Majumdar A, Home Remedies in Ayurveda, Edn. 1, Amar granth publication, Delhi: 296-297 (2002).
6. Bhandary MJ, Chandrashekar KR and Kaveriappa KM, Medical ethnobotany of the siddis of Uttara Kannada district Karnataka. J. Ethnopharmacol, 47(3): 149-158, (1995).
7. Pal DC and Jain SK, Tribal Medicine, Naya Prakash, New Delhi: 52 (2000).
8. Sikar IV, Kakkar KK and Chakre OJ, Glossary of Indian Medicinal Plants with Active principles, Part 1, CSIR, New Delhi: 75, (1992).
9. Kapil A, Koul IB and Suri OP, Antihepatotoxic effects of chlorogenic acid from *Anthocephalus cadamba*. Phytother. Res, 9(3): 189-193, (1995).
10. Sianne S and Fanie RVH, Antimicrobial activity of plant metabolite. Nat. Prod. Rep, 19: 675-692, (2002).
11. Sanjay PU, Kumar GS, Jayaveera KN, Kishore Kumar DV, Ashok Kumar CK and Rhanapal D, Antimicrobial, wound healing and antioxidant activities of *Anthocephalus cadamba*. African Journal of Traditional, Complementary and Alternative Medicines, 4(4): 481-487, (2007).
12. Gunasekharan R and Divyakant A, Anthelmintic activity of leaf alcoholic extract of *Neolamarckia cadamba* (Roxb.) Bosser. Indian Journal of Natural Products, 22(1): 11-13, (2006).
13. Mondal S, Dash GK and Acharyya S, Analgesic, anti-inflammatory and antipyretic studies of *Neolamarckia cadamba* barks. Journal of Pharmacy Research, 2(6): 1133-1136, (2009).
14. Mondal S, Dash GK, Acharyya A, Acharyya S and Sharma HP, Studies on diuretic and laxative activity of bark extracts of *Neolamarckia cadamba* (Roxb.) Bosser. Drug Invention Today, 1(1): 78-80, (2009).
15. Sahua NP, Koike K, Zhonghua J, Banerjee S, Mondal NB and Nikaido T, Triterpene glycosides from the bark of *Anthocephalus cadamba*. J. Chem. Res, 1(1): 22-23, (2000).
16. Brown RT and Chapple CL, *Anthocephalus* alkaloids: cadamine and isocadamine. Tetrahedron Letters, 19: 629-1630, (1976).
17. Rastogi RP and Mehrotra BN, Compendium of Indian medicinal plants, Vol. II, Central Drug Research Institute, Lucknow, Publications and information directorate, New Delhi India: 56-57, (1993).
18. Caraka Samhita, of Agnivesa, elaborated by Caraka and Dridhabala, Edited with 'Caraka-Candrika' Hindi commentary along with special deliberation by Dr. Brahmanand Tripathi, Chaukambha Surbharati Prakashan, Varanasi, 3rd Edition 1994.
19. Sushruta Samhita, Edited with Ayurveda Tattva-Sandipika by Kaviraja Ambika Dutta Shastri; Chaukambha Sanskrit Sansthan, Varanasi, 5th edition, 1982.
20. Astanga Hridaya, of Vagbhata, Edited with the Vidyotini Hindi commentary, by Kaviraja Atrideva Gupta, Chaukambha Sanskrit Sansthan, Varanasi, 13th Edition, 2000.
21. Harita Samhita, Text with Asha Hindi commentary, Prachya Prakashan, Varanasi, 1st Edition, 1985.
22. Cakradatta with the 'Vaidayaprabha' Hindi commentry, by Indradeva Tripathi, Chaukambha Sanskrit Sansthan, Varanasi, 2nd Edition, 1994.
23. Glossary of Indian Medicinal Plants by R.N. Chopra, S.L. Nayar, I.C. Chopra, Council of Scientific and Industrial Research, New Delhi, 1956.
24. Flora of the Upper Gangetic Plain and the adjacent Siwalik and sub-Himalayan Tracts vol. – I, p.268, by JF Duthie, B.A., F.L.S. Reprinted under the authority of the Government of India. Botanical survey of India Reprinted edition 1960.
25. Database on Medicinal Plants Used in Ayurveda, Vol-2, by PC Sharma, MB Yelne and TJ Dennis, Central Council For Reseach In Ayurveda & Siddha, Reprint 2005, Janakpuri, New Delhi.

Source of support: Nil, Conflict of interest: None Declared

[Copy right © 2015. This is an Open Access article distributed under the terms of the International Journal of Pharmaceutical Archive (IIPA), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.]