

WORLD JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.wjpmr.com

<u>Review Article</u> ISSN 2455-3301 WJPMR

A REVIEW ARTICLE ON: KANCHNARA (BAUHINIA VARIEGATA LINN.)

Dr. Sachin^{*} Dr. Naresh Kumar Garg** and Dr. Omprakash Sharma***

*PG Scholar Deptt. of Dravyaguna, Sriganganagar College of Ayurvedic Science & Hospital, Tantia University, Sriganganagar – 335001, India.

**Associate Professor Deptt. of Dravyaguna, Sriganganagar College of Ayurvedic Science & Hospital, Tantia University, Sriganganagar – 335001, India.

***Professor & H.O.D. Deptt. of Dravyaguna, Sriganganagar College of Ayurvedic Science & Hospital, Tantia University, Sriganganagar – 335001, India.

*Corresponding Author: Dr. Sachin

PG Scholar Deptt. of Dravyaguna, Sriganganagar College of Ayurvedic Science & Hospital, Tantia University, Sriganganagar - 335001, India.

Article Received on 17/04/2021

Article Revised on 07/05/2021

Article Accepted on 27/05/2021

ABSTRACT

The ancient Indian medical system, also known as Ayurveda, is based on ancient writings that rely on a "natural" and holistic approach to physical and mental health. Ayurvedic medicine is one of the world's oldest medical systems and remains one of India's traditional health care systems. Here the present review study is an attempt to provide reported detail information of this drug from various Samhitas.

Kanchnara also called Mountain Ebony in English has been used in Ayurvedic system of Medicine since a long period. Different species of Bauhinia are known and used as Kanchnara in Ayurvedic medicine. It is a moderate sized deciduous tree with greyish colored stem found in Sub Himalayan tract from the Indus eastwards and throughout the forests of India and Burma. Maharishi Charaka and Sushruta have mentioned the properties of Kovidara and Karbudara in their Samhitas (Treatise). Both flower and bark of Kanchnara are used as medicine because of the important chemical constituents present in them which are hentriacontane, octacosanol, b-sitasterol, stigmasterol, lupeol and amino acids. The drug has been described as Grahi, Krimighna, Kushtaghna, Gandamalanashaka, Vranaropaka, Mehaghna and Raktapittashamak. Considerable efforts have been made by researchers to study the chemical and biological potential of the plant. The reported pharmacological activities of Bauhinia Variegata Linn. Are anti-diabetic, anti-ulcer, anti-oxidant, hepato-protective, anti-inflammatory, antimicrobial, anti-bacterial. Kanchanara is one of the major ingredient of many important formulations used in Ayurveda system of medicine such as Kanchanara Guggulu, Kanchan Gutika, Gandamala Kundan Rasa, Gulkand Kanchanara and Kanchanaradi Kwatha, Ushirasava, Chandanasava, Vidangarishta, Kanchanara drava, Kanchnara Varuna Kwatha. So this review paper is an endeavour of the author to provide details of this medicinal plant Kanchnara about its classical references, synonyms, botanical description, phytochemicals, pharmacological activity and classical medicinal uses.

KEYWORDS: Kanchnara, Mountain Ebony, Bauhinia variegata Linn, Gandamalanashaka.

INTRODUCTION

Bauhinia variegata (Leguminosae) is a medium sized deciduous tree, bark dark brown, nearly smooth, young shoots brown pubescent. Leaves 10- 15cm long, broader than long, cleft 1/4 to 1/3 of the way down into 2 obtuse lobes, pubescent beneath when young. Flowers large, fragrant, white or purplish, appearing when the tree is leafless.

Different species of *Bauhinia* are known and used as *Kanchnara* in Indian system of Medicine. Watt has described *Bauhinia variegata* Linn. as *Rakta Kanchnar* and *Bauhinia racemosa* Linn. As *Shveta Kanchnar*^[1] while in *Bhavaprakash*, besides *Bauhinia variegata*

Linn. *Bauhinia purpurea* Linn., Bauhinia tomentosa is also mentioned under *Peeta Kanchnar*.^[2]

As *Kanchnar* of *Ayurveda*.^[3] *Bauhinia Variegata* Linn. Is an important medicinal plant belonging to family Caesalpiniaceae. It is also known by various names like *Kachanara* (Hindi), *Raktakanchan* (Marathi), Mountain ebony or orchid tree (English) and *Kanchana* means "A glowing beautiful lady" in Sanskrit.^[4] The main chemical constituents of plant are flavonoids, fixedoils, triterpene saponins, tannins, glycosides and polyphenols. Flavonoids like apigenin, rutin, quercetin, and apigenin 7-O-glucoside were isolated from different parts of *Bauhinia variegata* Linn.^[5] The bark is alterative, anthelmintic, astringent and tonic. The juice of the bark

is used in the treatment of amoebic dysentery, diarrhoea and other stomach disorders. A paste of the bark is useful in the treatment of cuts and wounds, skin diseases, scrofula and ulcers. It can also be used in cough conditions, asthma, abdominal distention, also act as a gargle for sore throats, prevent from skin diseases, or internally as a remedy for diarrhea. It is helpful in managing skin discoloration.^[6,7] its powdered bark is traditionally used for tonic, astrain; ulcers. It is also useful in skin disease.^[8]

BOTANICAL ORIGIN

Bauhinia variegata Linn., Bauhinia purpurea Linn., Bauhinia tomentosa Linn.

Family: Caesalpinacea^[9]

The plant is commonly known as *Kanchnara* because of having golden yellow coloured flowers. The stamens of this plant are very few and are light orange in colour (*Swalpakesar*) which grows in clusters resembling chowrie (*Chamri*). It bears fruits which open at maturity i.e. Dehiscent fruits (*Aasfotak*), the leaves of *Kanchnara* are bifid or cleft in nature (*Yugampatraka*) and are similar to the skin of the deer (*Chamrika*). The plant *Kanchnara* is an effective drug for *Gandamala* (*Gaandira*) and protects from diseases (*Kundala*). The plant comes out after breaking the ground (*Kovidara*).^[10]

CLLASICAL REFERENCES

In Brihattravi, there is no mention of Kanchanara, Kovidara and Karbudara have usually been interpreted to be two varieties, what is now known as Kanchanara. Acharya Charak has mentioned both Kovidara and Karbudara in Vamana dravya kalpa sangraha (C.S. Vi. 8/135)^[11] while Sushruta has placed them under Urdhva bhaagahara dravya (Su.S. Su. 39/3)^[12] and he has also placed Kovidara in Kashaya Varga (Su.S. Su. 43/23)^[13] In Bhava Prakash Nighantu, Kanchnara is mentioned in Guduchyadi Varga,^[14] In Kaiyedeva nighantu, it is mentioned in Aushadhi varga;^[15] In Dhanwantari Nighantu, Kovidara is mentioned in Guduchyadi Varga;^[16] In Abhidhana ratnamala (Shadrasa nigantu), *Kovidara* is mentioned in *Kashaya drvya skanda*^[17] and in Raja nighantu, Kanchnara is mentioned in Karviradi varga.^[18]

BOTANICAL DESCRIPTION

Bauhinia variegata Linn. is a small to medium sized tree with hairy branches. Leaves are 4.5-15cm long, cleft one fourth to one third way down, cordate at base with 11-15 nerves. Flowers are white-purplish, variegated, large and appear on leafless branches. Calys 2-2.7cm long, pubescent and toothed at apex while petals are 4-5cm long, ovate obovate, the uppermost darker with purple veins. Pod is 15-30 cm long, flat, glabrous and seeds are 10-15 in number. Flowering occurs in February to April and Fruiting in May to August.^[19] Stem bark of *Bauhinia variegata* Linn. is dark brown, sometimes with silvery patches, rough, compact, exfoliating in woody strips and

scales, outer surface with small transverse and longitudinal cracks, inner surface is white and astringent in taste. *Bauhinia purpurea* L. is a medium sized tree with greyish to dark brown bark and pink red blaze. Leaves are 9-11 nerved, cleft about half way down into two acute or rounded lobes. Flowers are narrow, purple, pink and lavender petals arranged closely to resemble an orchid. These flowers appear on the tree from September through November. Pods are flat, slightly falcate and seeds are 12-15mm, flattened roundish and dark brown. The petals of *Bauhinia purpurea* L. are narrower and do not overlap while in *Bauhinia variegata*, the petals are broad and overlap.

Bauhinia racemosa Larnk. is a small tree with spreading crown and its bark is grayish black with vertical cracks. Leaves are broader than long and divided one third to half way down into two halves. Flowers are white, in terminal, long recimes. Pods are 10 - 25 cm long, falcate; seeds are 10 - 20, oblong, compressed black. Flowering and fruiting from April to August.^[20, 21]

MICROSCOPIC CHARACTERS

A freshly cut bark is grayish brown externally and cream colored internally. The internal surface, however, gradually turns red and on drying becomes brown and smooth. The external surface remain greyish brown and rough due to large number of exfoliations and transverse cracks and fissures. A few longitudinal ridges are also seen here and there. On drying, the bark becomes curved and chanelled. The fracture is short outside and fibrous within.^[22]

DRUG SUBSTITUTED IN THE NAME OF KANCHNAR

Different species of Bauhinia viz. *B. variegata, B. purpura, B. malabarica, B. racemosa, B.tomentosa* resemble morphologically as well as in their medicinal properties. The bark of other species are also sold in the market under the name of *Kanchnara*.^[23,24]

DIAGNOSTIC CHARACTERS

Bark is gravish brown externally and cream colored internally, channeled or curved. Fracture is short outside and fibrous within. Microscopically, the stem shows four ridges. Glandular and non glandular trichomes are present. Stem bark is of 3-4mm. Thickness shows 10-20 layers of cork cells, a wide zone of phelloderm, pericycle and phloem regions. Lignified fibres and stone cells are scattered in the phelloderm region. Phloem consists of Ceratenchyma, strands of fibres and a few stone cells. The stone cells are distributed in radial rows and tangential bands are relatively more in the inner region. Stone cells are also present in the medullary rays. Associated within the fibres are frequently found crystal fibres of 10-25 chambers, each filled with a prism of Calcium oxalate. Tannin, starch grains, resinous mass, sterols, reducing sugars and glycosides are present.^[25]

DISTRIBUTION

The tree is found in Sub Himalayan tract from the Indus eastward and throughout the forests of India and Burma. It is common everywhere preferring the low hills of India but largely cultivated as ornamental tree throughout the plains. So, it occurs almost throughout India ascending to about 5000 ft. elevation.^[26] This is a very popular ornamental tree in subtropical and tropical climates, grown for its scented flowers and also used as food item in South Asian cuisine. In the Neotropics, it can be used to attract hummingbirds.^[27]

CHEMICAL CONSTITUENTS

Root: Flavanone. dihydrodibenzoxepin. flavanol glycoside-5. 7. 3'. 4' – tetrahydroxy – 3 – methoxy – 7 – O – alpha – L – rhamnopyranosyl (1 – 3) – O – betagalactopyranoside (Mopuru *et al.*, 2003). (2S) - 5. 7-dimethoxy- 3' 4' –methylenedioxyflavanone. dihydrodibenzoxepin. 5. 6 – dihydro - 1. 7 - dihydroxy-3. 4 -dimethoxy-2-methyldibenz [b, f] oxepin (Reddy *et al.*, 2003).

Stem: 5, 7-Dihydroxy flavanone - 4'-O-a- Lrhamnopyranosyl b-D- glucopyranoside (Gupta et al., 1979), 5, 7 - dihydroxy and 5, 7 dimethoxy flavanone-4-O-a-L-rhamnopyranosyl-b-D-glucopyranosides (Gupta et al., 1979), hentriacontane, octacosanol, sitosterol. Stigmasterol (Prakash and Khosa. 1978), neringenin-5,7dimethylether-4'-rhamnoglucoside, lupeol (Gupta et al., 1980), 5, 7, 3', 4'-tetrahydroxy-3-methoxy-7-O-alpha-Lrhamnopyranosyl (1->3)-O-beta-galactopyranoside (Yadava et al., 2003), 2, 7-dimethoxy-3-methyl-9,l0dihydrophenanthrene -1,4-dione named as bauhinione (Zhao et al., 2005).

Flowers: Quercitroside. Isoquercitroside, rutoside, taxifoline rhamnoside, kaempferol-3-glucoside, myricetol glycoside (Duret and Paris, I977), apigenin-7-O-glucoside, quercetin, rutin, quercetrin (Abd-El-Wahab et al.,1987), apigenin, ascorbic, aspartic, glutamic, octadecanoic acid, keto acids, amino acid, tannins (Chowdhury et al., 1984), cyaniding-3-glucoside, malvidin-3-glucoside, malvidin-3-diglucoside, peonidin-3-glucoside, 3-galactoside and 3-rhamnoglucoside of kaempferol (Saleh and Ishak. 1976).

Seed: Carbohydrates, proteins, amino acids, ascorbic acid, flavonoids, alkaloids, leucoanthocyanines, (Niranjan et al., I985), aspartic acid, glutamic acid, arginine, glycine, alanine, histidine, isoleucine, lysine, methionine, phenylalanine, proline, serine, threonine, tyrosine, valine (Wassel et al., 1989), 5-hydroxy7,3',4',5'-tetra-methoxyflavone 5-O-beta-D-xylopyranosyl- (1~->2)-alpha-L-rhamnopyranoside (Yadava and Reddy, 2001)^[28]

PHARMACOLOGICAL ACTIVITY

- Anti-tumour activity
- Hypolipidemic effects

- Antioxidant effects
- Antiulcer effects
- Immunomodulatory effect
- Antimicrobial effects
- Anti-inflammatory effects
- Nephroprotective effect
- Hepatoprotective effect
- Effect on wound healing
- Anti-diabetic action
- Anti-cancer activity
- Anti tubercular activity

AYURVEDIC PROPERTIES AND PHARMACOLOGICAL EFFECT

According to Ayurveda Literature, Kanchnara is Kashaya (astringent) in taste (Rasa), light (Laghu), dry (Ruksha) in properties (Guna), pungent (Katu) in metabolism (Vipaka); cold (Sheeta) in potency (Veerya); Gandamala naashak in Specific action (Prabhava). Due to these properties, it pacify Kapha and Pitta dosha while aggravate vata dosha.^[29] Twak of Kanchanara is highly beneficial in curing ailments like Gandamala, Krimi, Kushtha, Kasa, Vranavikara, Atisara, Apachi and Shwasa.^[30] Charak has mentioned about the use of flower of both Kovidara and Karbudara as Grahi and Raktapitta shamaka (C.S. Su. 27/104)^[31]

Sushruta mentioned about the properties of Kovidara pushpa as they are sweet (Madhura) in taste (Rasa) and metabolism (Vipaka) and can cure bleeding disorders (Raktapitta shamaka) (Su.S. Su. 46/ 281)^[32] while the Karbudara is sweet (Madhura) in taste (Rasa) and metabolism (Vipaka) and Vata pitta shamaka (Su.S. Su. $45/120)^{[33]}$

PART USED

Stem bark, flower bud, flower, tender pod;^[34] roots and bark.^[35]

FORMULATIONS

Kanchanara Guggulu, Kanchan gutika, Gandamala kundan rasa, Gulkand Kanchanara and Kanchanaradi Kwatha.^[36] Ushirasava, Chandanasava, Vidangarishta, Kanchanara drava, Kanchnara Varuna Kwatha^[37]

DOSAGE

Bark powder: 3-6 gm, Decoction: 40-80ml, Flower juice: 10-20ml.^[38]

CONCLUSION

This paper is an attempt of the author to give a detail review on this important medicinal plant used in Indian system of medicine - *Kanchnara (Bauhinia variegate* Linn.). In this article, we had discussed about the classical references, phytochemicals, pharmacognostical and pharmacological properties of *Bauhinia variegata*. The various phytochemical present in it are flavonoids, glycosides, alkaloids, tannins and terpenoids which act as active biological constituents and are responsible for different pharmacological actions of *Bauhinia variegata* Linn. The present paper also revealed that *Bauhinia variegata* Linn. act as anti-diabetic, anti-oxidant, anti-ulcer, immunomodulator, nephroprotective, anti-microbial, anti-bacterial and hepatoprotective agent.

REFERENCES

- 1. Watt G., Dictionary of Economic products of India, Vol. I, Delhi: Periodical experts, 1972; p. 425-426.
- Shri Bhavamisra, Bhavaprakasha Nighantu, Commentary by Prof. K.C. Chunekar, Edited by Late Dr. G.S. Pandey, Varanasi: Chaukhambha Bharati Academy, Reprint, 2006; p. 338.
- Sharma Priyavrat, Dravyaguna Vijnanam, Part II, Varanasi: Chaukhambha Bharati Academy, Reprint, 2006; p. 235.
- Patil JK, Patel MR, Sayyed HY, Patel AA, Pokal DM, Suryawanshi HP, Ahirrao RA: Pharmacognostic and phytochemical investigation of Bauhinia variegata (linn.) benth. stem bark. Int J Pharma Sci, 2012; 3(1): 1-12.
- 5. Cechinel FV, Chemical composition and biological potential of plants from the genus Bauhinia. Phytother Res, 2009; 23(10): 1347-1354.
- Gordon M.C., David J.N. Natural Product Drug Discovery in the next millennium, Pharm Blol, 2001; 39; 8-17.
- Vileges J.H., DeMarchi E., Lancas E.M. Phytochemical activity of Natrural plant (Anal), 1997; 8: 266-270.
- Manandhar, N.P. Plants and People of Nepal Timber Press. The Text book Oregon, 2002; 88(6): 192-227.
- Kirtikar K.R. and Basu B.D., Indian Medicinal Plants, Edited by E. Blatter, J.F. Caius and K.S. Mhaskar, Vol. 2, Dehradun: International book distributors, 1994; p. 892.
- 10. Dr. J.L.N. Shastry, Ayurvedokta Oushadha Niruktamala, Varanasi: Chaukhambha Orientalia, First Edition, 2001; p.32.
- Agnivesha, Charaka Samhita, Commentary by Pt. Kashinatha Shastri and Dr. Gangasahaya Pandeya, Part 1, Varanasi: Chaukhamba Sanskrit Sansthan, Reprint, 2006; p. 786.
- 12. Shastri-Ambikadatta Sushruta Samhita part I, Varanasi: Chaukhamba Sanskrit Sansthan - Sutra sthan chapter 39, Reprint edition, 2005; p. 147.
- 13. Shastri-Ambikadatta Sushruta Samhita part I, Varanasi: Chaukhamba Sanskrit Sansthan - Sutra sthan chapter 43, Reprint edition, 2005; p. 159.
- Bhavamishra, Bhavaprakasha Nighantu, commentary by Prof. K.C. Chunekar, edited by Late Dr. G.S. Pandey, Chaukhambha Bharati Academy, Varanasi, 194.
- 15. Acharya Priyavrat Sharma and Dr. Guru Prasada Sharma, Kaiyadeva Nighantu, Varanasi: Chaukhambha Orientalia, Second Edition, p.173.
- 16. Acharya Priyavrat Sharma and Dr. Guru Prasada Sharma, Dhanvantari Nighantu, Varanasi: Chaukhambha Orientalia, Fourth Edition, p. 52.

- 17. Prof. Priyavrat Sharma, Abhidhana ratnamala, Varanasi: Chaukhamba Orientalia, First Edition, 1977; p. 42.
- Dr. Indradev Tripathi, Raj Nighantu of Pandit Narahari, Varanasi: Chaukhambha Krishnadas Academy, Fourth Edition, 2006; p. 301.
- Rawat Raghubir Singh and Bhatt Vinod Kumar, Natures Pharmacoepia – Medicinal plant diversity in Doon Valley, Navdanya 105 – Rajpur road, Dehradoon; Print, 2002.
- 20. Dr. Gyanendra Pandey, Dravyaguna Vijnana, Part II, Varanasi: Chaukhambha Krishnadas Academy; Reprint, 2004; p. 60.
- 21. http://flowersofindia.net/catalog/slides/Kachnar.html (Accessed on 16/6/2015)
- 22. Prakash, Anand, Prasad, S. and Wahi Pharmacognostical study of Bauhinia variegata Linn. Jour. Res. Indian Med. Yoga and Homeo, 1978; 13(I): 84 – 89.
- Prasad S; Prakash A Pharmacognostical study of Bauhinia variegate, Indian J. Pharm, 1972; 34(6): 170.
- 24. Garg S Substitute and Adulterant Plants, Periodical Experts Book Agency, New Delhi, 1992; p. 29-30.
- 25. Raghunathan K. and Mitra Roma, Pharmacognosy of Indigenous drugs, Volume I, CCRAS New Delhi, Reprint: 1999; p. 475.
- 26. Dr. Ram Sushil Singh, Vanaushadhi Nirdeshika, Uttar Pradesh Hindi Sansthana, 6 Mahatma Gandhi Marg Lucknow, IIIrd Edition, Reprint, 2002; p. 61.
- 27. https://en.wikipedia.org/wiki/Phanera_variegata (Accessed on 17/6/2015)
- Kailash Chandra, B.G. Chaudhari, B.P. Dhar, G.V.R. Joseph, A.K. Mangal, Rajesh Dabur, Tushar K. Mandal, S.P. Singh, Database on medicinal plants used in Ayurveda, Volume 8, CCRAS, Dept. of Ayush, Ministry of Health and Family welfare, Govt. of India, Print, 2007; p. 160.
- 29. Sharma Priyavrat, Dravyaguna Vijnanam, Part II, Varanasi: Chaukhambha Bharati Academy, Reprint, 2006; p. 235.
- Dr. Prakash L. Hegde and Dr. Hurini A., A Text book of Dravyaguna Vijnana, Volume II, New Delhi: Chaukhamba Publications, Ist Edition, Print, 2014; p. 442.
- Agnivesha, Charaka Samhita, Commentary by Pt. Kashinatha Shastri and Dr. Gangasahaya Pandeya, Part 1, Varanasi: Chaukhamba Sanskrit Sansthan, Reprint, 2006; p. 538.
- 32. Shastri-Ambikadatta Sushruta Samhita part I, Varanasi: Chaukhamba Sanskrit Sansthan - Sutra sthan chapter 46, Reprint edition, 2005; p. 206.
- Shastri-Ambikadatta Sushruta Samhita part I, Varanasi: Chaukhamba Sanskrit Sansthan - Sutra sthan chapter 45, Reprint edition, 2005; p. 179.
- 34. Kirtikar KR and Basu BD. Indian Medicinal Plants, 3rd Edition, 1991; pp. 898-900.
- 35. P.K. Warrior, VPK Nambiar & C Ramankutty, Indian medicinal plants: A compendium of 500

species by Dr. P.K. Warrior: Volume 1; Orient Blackswan, 1993; p.256.

- Dr. Ram Sushil Singh, Vanaushadhi Nirdeshika, Uttar Pradesh Hindi Sansthana, 6 Mahatma Gandhi Marg Lucknow, IIIrd Edition, Reprint, 2002; p. 62.
- 37. Kailash Chandra, B.G. Chaudhari, B.P. Dhar, G.V.R. Joseph, A.K. Mangal, Rajesh Dabur, Tushar K. Mandal, S.P. Singh, Database on medicinal plants used in Ayurveda, Volume 8, CCRAS, Dept. of Ayush, Ministry of Health and Family welfare, Govt. of India, Print, 2007; p. 162.
- Sharma Priyavrat, Dravyaguna Vijnanam, Part II, Varanasi: Chaukhambha Bharati Academy, Reprint, 2006; p. 236.

I

L