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Review Article

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A REVIEW ARTICLE ON ARAGWADHA (CASSIA FISTULA LINN.)

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ABSTRACT

Ayurveda is an ancient health care tradition that sprouted in the pristine land of India some 5000 years ago. It is based on ancient writings that rely on a natural and holistic approach to physical and mental health. Here the present review study is an attempt to provide reported detail information on the drug from various *Samhitas.Aragwadha* has been used in the Ayurvedic system of Medicine for a long period. *Aragwadhais* identified as *Cassia fistula* Linn. and belongs to the Fabaceae family. It is a tree of moderate size, indigenous to India, and often cultivated as an ornamental plant. The property of the drug is immensely praised in *Dhanwantari Nighantu, Raja Nighantu, Kaiyadeva Nighantu, Bhavaprakasa Nighantu,* etc. *Aragwadha (Cassia fistula* Linn.) possesses *Madhura, Tikta Rasas, and SeetaVirya,* and has *gunas*like *Guru* and *Mridu.* It alleviates *Tridosha.* Parts used were Root Bark, Leaf, Flower, and Fruit Pulp. *Parpatamritadi Kashayam, Trivritadi Kashayam, Maharasnadi Kashayam, Aaviltholaadi Kashayam, Aragwadhamrithadi Kashayam, Tamizhamadi Kashayam, Manasamitra Vatakam* etc are some formulations that contain *Aragwadha* as one ingredient. Furthermore, *Aragwadha (Cassia fistula* Linn.) has got a diverse range of *Karmas*, for which it is used in *Kusha, Kandu, Vatarakta, Gulma, Udara, Upadamsa,* etc. Various experimental studies of the drug *Aragwadha (Cassia fistula* Linn.) had

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also proved its Anti-ulcer, Anti-inflammatory, Wound healing, and Hypolipidemic properties. So, this review paper is an endeavour of the author to provide details of this medicinal plant *Aragwadha* its classical references, synonyms, botanical description, phytochemicals, pharmacological activity, and classical medicinal uses.

Keywords: Aragwadha, Cassia fistula Linn., Tridoshanasaka

INTRODUCTION

Aragwadha (Cassia fistula Linn.) is an important drug that is widely used in the Ayurvedic system of medicine. References of *Aragwadha (Cassia fistula* Linn.) are available in Vedic literature and all the main *Samhitas.Brihattrayi* has quoted *Aragwadha*extensively in their works. From the descriptions, *Aragwadha*is identified as *Cassia fistula* Linn. and belongs to the Fabaceae family. It is a tree of moderate size, indigenous to India, andoftencultivatedasanornamentalplant. In the Ayurvedicsystemofmedicine, thistree is used formany ailments. According to The Ayurvedic Pharmacopeia of India, the source plant of *Aragwadha* is*Cassiafistula*Linn¹.

TAXONOMICPOSITION

The botanicalName is *Cassiafistula*Linn. belongs to the familyFabaceaeand sub-family Caesalpiniaceae. BotanicalSynonyms include *CassiarhombifoliaRoxb* and *Cathartocarpusfistula*².

TAXONOMICALCLASSIFICATION

Aragwadha (*Cassia fistula* Linn.) included in the **Kingdom** – *Plantae*, **Sub kingdom** –*Tracheobionta*, **Super Division**-*Spermatophyta*, **Division**- *Mangoliophyta*, **Class**-*Magnoliopsida*, **Sb Class**- *Rosidae*, **Order**-*Fabales*, **Family**-*Fabacae*, **Genus**-*Cassia*, **Species**-*fistula*³

CLASSICAL REFERENCES

In CharakaSamhitha, Aragwadha (Cassia fistula Linn.) is included in KushtaghnaDasaimani, Kandughna Dasaimani^{4,} and Tikta Skandha⁵. Susruta mentioned it under Aragwadhadi Gana⁶ and SleshmaSamsamana varga⁷. In Ashtanga Hridaya, the drug included in NikumbhadiGana, AragwadhadiGana, and Syamadi Gana⁸. In Dhanwanthari Nighantu⁹ and Sodhala Nighantu¹⁰, the drug comes under GuduchyadiVarga. In Madanapala Nighantu, the drug included in Abhayadi Prathama Varga¹¹. In Raja Nighantu and Kaiyadeva Nighantu, the drug is included in *Prabhadradi Varga*¹²and *Oshadhi Varga*¹³ respectively. In *Bhavaprakasa Nighantu*, it is mentioned under *Haritakyadi Varga*¹⁴. In *Saligrama Nighantu* it is included under *Ashtavarga*¹⁵.

SYNONYMS: Aragwadha, Aarevata, Karnikara, Kritamala, Chaturangula, Mukuta, Rajavriksha, Syamaka, Samaaka, Suvarnaka¹⁶ VERNACULAR NAMES

In English the drug *Aragwadha* (*Cassia fistula* Linn.) called as Indian laburnum, purging fistula, purgingcassia, In Hindi it is called as Amaltas, Bandarlauri, sonhali, Girimala. Its Kannada name is Kakke, Kakke-Mara and in Malayalam called as Konna, Kanikkonna. Its Tamil Name is Konnai, Arakkuvadam, Sarakkonnai, Konrath kay, Sharak-Konraik. In Telugu it is called as Rela, Kondrakaya, Aragvadamu.In Urdu called as Amaltas¹⁷.

BOTANICAL DESCRIPTION

Habit-Moderatetomedium-

sizeddeciduoustree.6to9meterstallwithastraighttrunk andspreadingbranches. Leaves-alternate, 20-40 cm. long, paripinnate, long-stalked, stipulate, petioles 6to 9 mm. long, vernicular. Leaflets- Large5 to 12 by 3.5 to 9 cm. the lower broadlyovate, oblong, and the upper oblong or oblong-lance olate, coriaceous, acute, acuminate, obtuse or emarginated, cuneate at base, the midrib densely pubescentbeneath with numerous close slender, main nerve that is prominent beneath. Theleavesgenerallydrop offduringthecoldseason. Flowers-Pedicelled, bracteates, showy, brightyellow, bisexual, fragrant, bornedivergingonaxillarylongsimplependulousracemes 30-50 cms. Long. Pedicelsslender, bracts minute caducous. calyx 9mm. long, greenish, pubescent, five partite ordividedtonearthebase. Sepals5, shorterthanthepetals, ovateoroblong, obtuse imbricate. Corolla3.8cm across, yellow, fivefreesubequalshortlyclawed, obovate, veinedascendingly, imbricatepetals. Stamens10, filamentsfree, yellowish. Pistilmonocarpellary, ovarystalked, freeatthebaseof theshorthypanthium, ovulesmany. **Fruit-** Pendulous, cylindric, nearly straight, dark brown or brownish black, smooth,



Figure No: 1.1 Cassia fistula Linn. Tree



Figure No: 1.3 Leaves of *Cassia fistula Linn*.



Figure No: 1.5 Pods of *Cassia fistula Linn*.

HABITAT

Throughout the greater part of India, ascending up to an altitude of 1220 m in theSub Himalayan tract and outer Himalaya, in Kumaon, abundant in forest tractsthroughout upper Gangetic plain of Bengal, Central India, and deciduous forests ofSouthIndia¹⁹. **PARTSUSED** shining, hard, indehiscent, seeds many, broadly ovate, smooth, light to dark or reddish brown. The tree flowers once a year when the whole tree is covered with drooping bunches of golden yellow flowers¹⁸.



Figure No: 1.2 Bark of *Cassia fistula Linn*.



Figure No:1.4 Flower of *Cassia fistula Linn*.



Figure No: 1.6 Seeds of Cassia fistula Linn. RootBark, Leaf, Flower, FruitPulp²⁰

Bhavaprakasa Nighantu-Twak, Patra, Moola²¹. Raja Nighantu- Moola Twak, Beeja, Majja²². Dhanwanthari Nighantu- Phalamajja, Patra, Pushpa, Moola Twak²³. Kaiyadeva Nighantu- Patra, Pushpa, Phala, Phala Majja²⁴. Madhava Dravyaguna-Phala²⁵. Madanapala Nighantu-Pushpa, Phalamajja²⁶. Saligrama Nighantu - Patra²⁷. Sodhala Nighantu-Phala, Phala majja²⁸

FLOWERING&FRUITINGSEASON

Thetreeshedsitsleavesduringearlysummer (March-May) and is infull bloom during this period.

Flowering&Fruiting-ApriltoDecember^{29,30}.

PROPAGATIONANDCULTIVATION

The plant is often cultivated as an ornamental plant in gardens and on roadsides. It is cultivated through direct sowing or transplanting the nurseryraisedseedlings or stump-planting. The seeds should be sown in March or April, andregularly watered. The seeds take 6-52 days to germinate, and a few germinate only inthesecondyear. MicropropagationofCassia *fistula*Linn. has beenreported³¹.

COLLECTION

The fruits are collected when ripe and then they are kept under the soil for sevendays and dried in the sun. The pulp is to be separated after this and stored in air-tight containers³².

CHEMICALCONSTITUENTS

Bark & Heart wood -Fistucacidine, Barbaloin, Rhein, Fistucacidin, 3,4,7,8,4'-pentahydroxy flavan. Sap wood - Leucoanthocyanidin-,4'-dihydroxy flavan-3,4-diol, Dimeric proanthocyanidin along with (-) epiafzelechin, +catechin, Kaempferal, Dihydrokaempferol, 1,8-dihydroxy-3 methyl anthraquinone. Stem bark - Lupeol, Beta-sitosterol, Hexacosanol tannin. Pod - Rhein glycoside & Fistulic acid. Flowers -Ceryl alcohol, Fistulin, Rhein dianthraquinone glucoside, Kaempferol, Leucopelargonidin tetramer having free glycol unit, Kaempferol-3-Betaglucoside, Kaempferol-3neohesperidoside, Clitorin. Fruit pulp - Proteins, Carbohydrates, Arginine, Leucine, Methionine, Phenylalanine, Tryptophan, Aspartic acid, Glutamic acid, Glucose, Sucrose, Fructose. Seeds - Galactomannan. Plant - 7 biflavonoids, 2 triflavonoids, Clitorin, Chrysophanic acid. Emodin, Epicatechin, (-)-epiafzelechin, Kaempferol-3-Beta-glucoside, Kaempferol-3neohesperidoside, Phlobaphene, Procyanidin. Leaves - Rhein and its Glucoside Sennosides A & B³³.

COMMONADULTERANTSANDSUBSTI-TUTES

OtherspeciesofCassiaaresometimesused as the substitute for the drug. Pods of *Cassia grandis* Linn. are sometimes used as a substitute. The pods arelonger, thicker, and heavier than those of *Cassia fistula* Linn. They are laterally compressed, surfacerough, with one prominent ridge on the dorsal and two on the ventral suture. The odour ofpulp is disagreeable, tastes bitter, and is astringent³⁴.

VARIETIES

In*RajaNighantu*³⁵, *DhanwanthariNighantu*³⁶, *SaligramaNighantuBhushana*³⁷, twovarieties of *Aragwadha* (*Cassia fistula* Linn.) arementioned - *Aragwadha and Karnikara*.

DOSE

According to the API, the doses mentioned are *PhalaMajja*:5-10gms, *MulaTwakKwath*:50-100 ml, *Churna*:5-10 gms, *PushpaKalka*:5-10gms³⁸

FORMULATIONS

ParpatamritadiKashayam, TrivritadiKashayam, MaharasnadiKashayam, Rasnasaptakam, ManjishtadiKashayam, TriphaladiKashayam, HareetakyadiKashayam, KatukamaladiKashayam, AaviltholaadiKashayam, AragwadhamritadiKashayam, TamizhamadiKashayam, ManasamitraVatakam. BrihadagnimukhaChoornam, KachoradiTailam, SwasariTailam, AmrithadyamGhritam, ArdrakadiGhritam, Brahmi Ghritam, MahatPanchaga-SarvaamayaantakaGhritam, vyaGhritam, Mahamarichyaditaila, Mahamanjishtadyarishta, Rasnadikwathayoga, Aragwadhadikwatha, AragwadhadiTaila, AragwadhadiLeha, Aragwadharishta are some formulations that contains Aragwadha (Cassia fistula Linn.) as one ingredient^{39,40}.

THERAPEUTICUSES

In*Kushta*, the leaves of *Aragwadha* are pounded with sour gruel and applied in the part in case of ringworm, *Kitibha*, andSidhma.And alsoleavesof*Aragwadha*, *KakamachiandKaranjaarepoundedwithbuttermilkand* applied as an ointment after smearing with oil in leprosyor skindiseases. In *Amavata, the leaves* of*Aragwadha*arefriedinmustardoilandtakeninthe evening followed by a meal. ItalleviatesAma. *In Urustambha*

the tender leaves of *Sunishannaka, Nimba, Arka, Vetasa*, and *Aragwadha* should be used as a vegetable cooked with water and oil and without salt. In *Upadamsa*

thedecoctionofleavesof*Karaveera*, *Jati*, *Aragwadha*, *Tarkari*, and*Arka* should beusedfor washing venerealwounds⁴¹.

RASAPANCHAKA OF ARAGWADHA (CASSIA FISTULA LINN.)

According toBhavaprakasha Nighantu, Aragwadhahasmadhura-Tikta rasa, Guru guna, SeetaVirya, andMridurechana karma⁴². InKaiyadeva Nighantu, it is mentioned that the drug possesses Madhura-Tikta rasa, Guru guna, Tridoshahara, and Mridurechana karma⁴³. According toDhanwantari Nighantu, the drug possessesTikta rasa, Guru guna, UshnaVirya, andTridoshahara karma⁴⁴. According to Raja Nighantu, the drug possesses Madhura rasa, Seeta Virya⁴⁵.

*ROGAGHNATA*ACCORDINGTOVARIOUSA-*CHARYAS*

Jwara, Hridroga, Vata, Udavarta, Soola, Gulma, Udara, Kachu, Raktapitta, Prameha, Krimisoola, Mutrakrichra, Kapha, Kandu, Kushta, Vishtambha, Vataraktha, Twakdosha, Dadru, Pama.

PROPERTIES OF SPECIAL PARTS EX-PLAINED BY VARIOUS ACHARYAS

InBhavaprakasaNighantu, Phala of Aragwadha (Cassia fistula Linn.) has Sramsanam, Ruchyam, Kushtahara, and Pittakaphaharaproperties.It isindicatedinJwaraandKoshtashudhi. Moolaisteevravi*rechaka*innature.*Beeja*(5to7seeds) isVamaka⁴⁶. In KaiyadevaNighantu, Pathra has Kaphamedovisoshana and Maladoshavirechana properties. PushpaisMadhura-Kashaya-TiktainRasa, SeethaViryaandhaveGrahi Guna⁴⁷. In MadhavaDravyaguna, PhalahasMadhuraRasa, and it is*Sara*, BalyaandVatapittaharainnature⁴⁸. In MadanapalaNighantu, PushpaisTikta, Vatala, Grahi, andPittakaphahara⁴⁹. In SaligramaNighantu, Pathrahas thepropertyof Kaphamedovishoshanam.Itisindicatedin Jwara⁵⁰. In SodhalaNighantu,

PhalaisRadhurainrasa. ItisBalya, AmaharaandVatapittahara. MajjahaveSwaduVipakaand SeetaVirya.Ithaspropertiessuch as Snigdha, Vatahara, Balakara, Agnikaraand Pittahara⁵¹.

TRADITIONALUSES

The flowers of *Aragwadha (Cassia fistula* Linn.) areeatenas a vegetabletoincrease digestivefire. Its freshstembarkiswarmedongentlefireandthejuiceex-

tractedfromit is given instomach-achedueto *Krimi* (Dose20-30ml). The burningendofthe driedfruit isbrandedonthenecktoalleviatemumpsin cattle. Water extract of stem bark is given internally as a laxative (Dose 15 ml made of 5 g of bark). Pulpofripefruitis appliedonboilsforcure^{52,53,54}.

TOXICITYSTUDIES

An oralacutetoxicitystudyonSwiss AlbinoMiceexhibitedthatalltheextractswere found safeup to dose3gm/kgbodyweight⁵⁵.

PHARMACOLOGICALSTUDIES

Various experimental studies proved that the drug *Aragwadha (Cassia fistula* Linn.) has Antiinflammatory Activity, Antiulceractivity, Woundhealingactivity, Antitussiveactivity, Clastogeniceffect, Antioxidantactivity, Hepatoprotectiveactivity, Antifungalactivity, Larvicidal, and ovicidalactivity etc^{56,57}.

CONCLUSION

This paper is an attempt by the author to give a detailed review of this important medicinal plant used in the Indian system of medicine – *Aragwadha (Cassia fistula* Linn.). In this article, we discussed the classical references and pharmacognostical and pharmacological properties of *Aragwadha*. Also mentioned about the various phytochemicals present in it which act as active biological constituents and are responsible for different pharmacological actions of *Cassia fistula* Linn. The present paper also revealed that *Cassia fistula* Linn. possesses Antiinflammatory, Antiulcer, Wound healing, Antitussive, Clastogenic effect, Antioxidant, Hepatoprotective, Antifungal, Larvicidal, and ovicidal activities.

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