



A CRITICAL REVIEW OF ARAGVADHA (CASSIA FISTULA LINN.)

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ABSTRACT

Medicinal plants are an significant part of human history, philosophy and practise. The theme of medicinal plants is highly active arena of systematic study all over the world. Medicinal plants and plant derivate are broadly used in traditional cultures globally and they are becoming progressively popular in contemporary society as ordinary alternatives to synthetic chemicals. Normal products and their offshoots represent more than 50% of all drugs in clinical use. Aragvadh (Cassia Fistula Linn) also known as Purging Cassia or Indian Laburnum is an significant medicinal plant used in Indian structure of medicine The Purging Cassia – also called Cassia fistula Linn. is a reasonable to medium sized deciduous tree which is very common in Indian landmass. The fruit pulp comprehends the anthraquinone and rhein.^[1] It is often used as a highly active moderate laxative that is safe even for children. It is suggested for the treatment of Jaundice, Gout, Fatty liver, Liver disorders, Bronchitis, Skin diseases. In Ayurvedic medicine and it pacifies the 3 doshas of vaat, pitta and kapha. It exorcises the pitta and kapha from the body. Medicinally it has been numerous pharmacological activities like antifungal, antioxidants, antimicrobial and anti-inflammatory and hepatoprotective activity. Cassia Fistula is also working as a medicine for tumors of the abdomen, glands, liver, stomach and throat for burns, cancer, constipation, convulsions, delirium, dysuria, epilepsy, hematuria, pimples and glandular tumors.

KEYWORDS: Aragvadha, Cassia fistula Linn, Sampaka, Chaturangula.

INTRODUCTION

Ayurveda, the Indian structure of medicine, practiced since a long time for leading a disease free life. It relies mainly upon the medicinal plants for the management of various disorders. There are a widespread range of the medicinal plants defined in Ayurveda. Some of these plants are inexistent and some are still unidentified. A few plants are still used as the richest source of medicines since the ages. Aragvadha (Cassia fistula Linn.) is one such plant drug which is existence used in the medicines in Ayurveda, Unani and Siddha systems of medicine since ages. These plants are often cultured for its beautiful flowers in the gardens. Apart from the decorative value this drug proves to be one of the plants having good medicinal value. In this regard medicinal assets of Aragvadha (Cassia fistula Linn.) are existence explored to estimate the pharmacological potential of the drug. Cassia fistula Linn. also known as Purging Cassia or Indian Laburnum is an significant medicinal plant used in Indian system of medicine.^[2] The species is natural to the Indian subcontinent and together regions of Southeast Asia. It has varieties from southern Pakistan eastward throughout India to Myanmar and Thailand and south to Sri Lanka. In literature, it is closely related with

the Mullai (forest) region of Sangam landscape. It is the national tree of Thailand, and its flower is Thailand's national flower. It is also the state flower of Kerala in India and of massive importance amongst the Malayali population.^[3] In Vedic Literature, the dried branches of Aragvadha are used for Ritual performances (Ap. Gr. 7/18/7).^[4] Cassia fistula Linn. (Family: Caesalpiniaceous) is a modest to medium sized deciduous tree increasing up to 9 meters height and having dispersion branches. Leaves are 20 – 40 cm long par pinnate. Leaflets are large oblong lanceolate, acute or acuminate tip and pubescent beneath with numerous close slender main nerves. Flowers are bright yellow in colour and are found on long slender pendulous racemes. Fruits are pendulous, cylindrical, nearly straight, dark brown or brownish black, smooth, shining, hard, indehiscent. Seeds are many, broadly ovate, smooth, and light brown to dark brown in colour.^[5] Cassia fistula Linn. has revealed numerous pharmacological activities like antifungal, antimicrobial, antipyretic, larvicidal, analgesic, anti-inflammatory, hepatoprotective, anti-oxidant, antitumour, and hypoglycemic. Ayurvedic medicine recognizes its use in Vibandha, Udavarta, Gulma, Shula, Udararoga, Hridroga and Prameha.^[6,7]

Aragvadha is used in Ayurvedic remedies for therapeutic flatulence, inflammation, skin diseases, abdominal distension, hepato biliary disorders, constipation, intermittent fever, worm infestation and especially for black water fever.^[8] Aragvadha (*Cassia fistula* Linn) & its Gana (Class) Acharya Caraka has included Aragvadha (*Cassia fistula* Linn) in Kusthaghn^[9], Kandughna^[10]

Mahakashaya and Virechana^[11], Tiktaskandha^[12] Gana while Acharya Sushrut included in Aragvadhadi^[13], Shyamadi^[14], Lakshadi^[15], Tiktaskandha^[16], Adhobhagahar^[17] and Kaphasamana Gana.^[18] Acharya Vagbhatta included Aragvadha (*Cassia fistula* Linn) in Virechan^[19], Aragvadhadi^[20] and Shyamadi Gana.^[21]

Table Nu- 1.

Sr.Nu.	Nighantu	Gana	Guna	Rasa	Veerya	Vipaka	Doshghantha
1.	Bhav Prakash Nighantu	Haritakyadi	Guru	Madhura	Sheeta	-	Pittahara, Kaphahara
2.	Raj Nighantu	Prabhadradi	-	Madhura	Sheeta	-	Kaphahara
3.	Shaligrama Nighantu	Astavarga	Guru, Snigdha, Mrudu	Madhura	Sheeta	Madhura	Pittahara, Kaphahara
4.	Dhanvantri Nighantu	Guduchyadi	Laghu, Sara	Madhura	Sheeta	-	Vatahara, Pittahara
5.	Kaiyadev Nighantu	Haritakyadi	Guru, Mrudu	Madhura, Tikta	Sheeta	Madhura	Vatahara, Pittahara
6.	Madanpal Nighantu	Haritakyadi	Guru, Mrudu	Madhura	Sheeta	Madhura	Vatahara, Pittahara
7.	Adarsha Nighantu	Putikarnajadi	Guru, Mrudu	Madhura	Sheeta	Madhura	Pittahara, Kaphahara

Botanical depiction

Habit: It is moderate to medium sized deciduous tree, 8 to 15 m in height with a straight trunk and spreading branches. The stem bark is greenish pale gray, smooth and slender when young and dark brown, rough when old.

Habitat: Plant scattered throughout the greater part of India, arising upto and altitude of 1220m in the sub-Himalayan tract and outer Himalaya, in Kumaon, chiefly in Haridwar, Narendra Nagar, Dehradun, Kashipur and abundant in deciduous forest tracts throughout upper gangetic plain of Bengal, Central India and deciduous forests of South India. It is a favourite garden, avenue and ornamental tree being planted commonly. Found also in Ceylon, Malaya, China and other regions.

Root: Root is reddish brown and rough externally with numerous horizontal lenticels. The outermost tissue of bark can be peeled off easily. The inner surface of fresh bark is smooth and light pink in colour. The wood is absorbent, light yellow in colour and fibrous, irregular, woody fracture.

Stem: When new the outer surface of stem is compact, about 0.2 inch thick, smooth and greenish to pale gray in color but olden stem are dark brown to greyish white with rough surface; wood is porous, yellowish white in colour; fracture tough rough.

Leaf: Paripinnately, compound and alternate, stipules 20-40cm long, leaf base pulverous, ovate.

Leaflets: With 3-8 pairs of opposite leaflet, acute or shortly acuminate, ovate-lanceolate, base cuneate; 2-5

inch by 1.5-3.75 inch, subcoriaceous, glabrous and bright-green above, pale and more or less silver pubescent below, particularly on the novation beneath; lateral nerves numerous, branching; petioles 0.25-0.5 inch long, stipules minute, pubescent.

Inflorescence: Axillary or extra axillary pendent, lax, branched racemes.

Flower: Flowers big, fragrant, bright yellow, in lax, pendulous racemes, 12-20 inch long; pedicels 1.5-2.5 inch long, pubescent; bracts minute, caduceous.

Calyx: 0.4 inch long, alienated to base; segments oblong, obtuse, puberulous.

Corolla: 1.5 inch across; petals obviate, veined, shortly clawed.

Androecium: 10 Stamens, in two whorls of 5 each, all antheriferous; 3 lower chief with curved filaments and oblong anthers, dehiscent longitudinally; 4 with short filaments, the anthers dehiscent by basal pores; remaining 3 short, the anthers without pollen.

Gynoecium: Monocarpellary, marginal placentation.

Fruit: Pods are cylindrical, 40-70cm long and 3-4cm in diameter, straight or slightly curved, pendulous, smooth, shining dark brown, indehiscent, finely striated transversally; seeds numerous, horizontal, in black, sweet pulp and completely separated by thin, transverse dissepiments, each compartment filled with black pulp and containing one seed.

Seed: Seeds, numbering 25 to 100 in each pod, are small, ovoid, slightly compressed, parallel with dissepiments, smooth shining and yellowish brown with a well-marked raphe; cotyledons flat; albumen horny.

Wood Sapwood: wide, white or pale dirty white in colour; perishable.

Chart-2 Aragvadha (Cassia fistula Linn) Ayurvedic Yoga as per Acharya Charaka.

Sr.Nu.	YOG	ROGADHIKAR	REFERENCE
1.	Sheet Kasaya	Jwara	Ch.chi.3/205
2.	Jwaraghan rasa	Jwara	Ch.chi.3/233
3.	Patoladiniruha	Jwara	Ch.chi.3/242-244
4.	Aragvadhadiniruha	Jwara	Ch.chi.3/245-246
5.	Virechanayoga	Raktapitta	Ch.chi.4/57-58
6.	Darviadikwatha	Kustha	Ch.chi.7/46
7.	Kanakbinduarshita	Kustha	Ch.chi.7/76-79
8.	Krutmal kwatha	Kustha	Ch.chi.7/80
9.	Siddhartakkwatha	Kustha	Ch.chi.7/91 -92
10.	Sirishadilepa	Kustha	Ch.chi.7/96
11.	Mahatiktakghritum	Kustha	Ch.chi.7/144-150
12.	Mahakhadirghritum	Kustha	Ch.chi.7/152-156
13.	Edgajadilepa	Kustha	Ch.chi.7/161
14.	Kusthghanlepa	Kustha	Ch.chi.7/164
15.	Mahapanchgavyaghritum	Unmaad	Ch.ch.10/18-20
16.	Vachadhighritum	Unmaad	Ch.ch.13/68-72
17.	Virechan yoga	Grahani	Ch.chi.15/178
18.	Kaphajpandughanyoga	Pandu	Ch.chi.16/58
19.	Pushkarmuladihima	Kasa	Ch.chi.18/111
20.	Sthiradighritum	Trimarma	Ch.chi.26/23
21.	Saptachchhadadiprayoga	Trimarma	Ch.chi.26/57
22.	Shatavahadhoomvart	Trimarma	i Ch.chi.26/135
23.	Urustambgha yoga	Urusthamba	Ch.chi.27/27
24.	Shangeshtadichurna	Urusthamba	Ch.chi.27/34-35

Chart 3 Aragvadha (Cassia fistula Linn) Ayurvedic Yoga as per Acharya Sushrut.

Sr.Nu.	YOGA	ROGADHIKAR	REFERENCE
1.	Patra lavan	Vat vyadhi	Su.chi.4/30
2.	Drakshadhikwatha	Vatrakta	Su.chi.5/8
3.	Aragvadhadikasaya	Vatrakta	Su.chi.5/10
4.	Vrananashakyoga	Bhagandhar	Su.chi.6/30
5.	Priyaaladikwatha	Kustha	Su.chi.9/7
6.	Mahatiktakghritum	Kustha	Su.chi.9/8
7.	Kusthaharanyoga	Kustha	Su.chi.9/10
8.	Dadrunashaklepa	Kustha	Su.chi.9/14
9.	Shvitraghanlepa	Kustha	Su.chi.9/28
10.	Neelaghritum	Kustha	Su.chi.9/29-33
11.	Mahaneelaghritum	Kustha	Su.chi.9/34-36
12.	Putikadilepa	Kustha	Su.chi.9/40
13.	Kusthghna sarpi	Kustha	Su.chi.9/49
14.	Mahavajrakghritum	Kustha	Su.chi.9/56-63
15.	MahaKusthghna Kwatha	MahaKustha	16 Su.chi.10/4
16.	Khadiradikwatha	MahaKusth	Su.chi.10/5
17.	Arishtaprayoga	MahaKustha	Su.chi.10
18.	Asavaprayoga	MahaKustha	Su.chi.10/7
19.	Suraprayoga	MahaKustha	Su.chi.10/8
20.	Lehaprayoga	MahaKustha	Su.chi.10/9
21.	Kwathaprayoga	MahaKustha	Su.chi.10/9
22.	Churna kriyaprayoga	MahaKustha	Su.chi.10/10
23.	Ayaskriti	MahaKustha	Su.chi.10/12

24.	Kasaya	Prameha	Su.chi.11/6
25.	Utsaadankasaya	Pramehapidika	Su.chi.12/9
26.	Churnaprayoga	Pramehapidika	Su.chi.12/9
27.	KshalanarthaKasaya	Vidradh	Su.chi.16/24
28.	AragvadhadiKasaya	Visarpanaadistanarog	Su.chi.17/40
29.	Kshalanarthakasaya	Granthpacharbudaganda	30 Su.chi.18/6
30.	Kaphagranthilepa	Granthpacharbudaganda	Su.chi.18/13
31.	Pittajarbudalepa	Granthpacharbudaganda	Su.chi.18/33
32.	Updandshaharkwatha	Vruddhiudanshshalipada	Su.chi.19/35
33.	UpdandshaharPrakshaalan	Vruddhiudanshshalipada	Su.chi.19/39
34.	PadminikantakghanUtsaadan	Ksudraroga	Su.chi.20/39
35.	Vaalmikharalepa	Ksudraroga	Su.chi.20/51
36.	Aragvadhadi sarpi	Shopha	Su.chi.23 /11

Chart- 4: Aragvadhya (Cassia fistula Linn) Ayurvedic Yoga as per AcharyaVagbhata:

Sr.Nu.	Aushadhi Yoga	Rogaadhikar	Reference
1.	Vishamjawarharkwatha	Jwara	A.H.Chi.1/105
2.	Kasaharkwatha	Kasa	A.H.Chi.3/44
3.	Kasaharasayan	Kasa	A.H.Chi.3/131 -139
4.	Shamyaakadighritum	Kasa	A.H.Chi.3/151
5.	Virechana kalpa	Rajyakshma	A.H.Chi.5/34
6.	Doshaharapaan	Rajyakshma	A.H.Chi.5/52
7.	Mutraghataharakwatha	Mutraghata	A.H.Chi.11/12
8.	Udvartan	Prameha	A.H.Chi.12/40
9.	Pathadhichurna	Prameha	A.H.Chi.12/41-42
10.	Kshalnarthjala	Vidradhi	A.H.Chi.13/5
11.	Panduharasarpi	Pandu	A.H.Chi.16/10
12.	Siddhataila	Shvayathu	A.H.Chi.17/32
13.	Visarpaharlepa	Visarpa	A.H.Chi.18/32
14.	Mahatiktaghritum	Kustha	A.H.Chi.19/8-10
15.	Nimbadi ghritum	Kustha	A.H.Chi.19/11
16.	Aragvadhya ghritum	Kustha	A.H.Chi.19/13
17.	Mahavajrakghritum	Kustha	A.H.Chi.19/19-20
18.	Kutajadikwatha	Kustha	A.H.Chi.19/37
19.	Siddharthakkwatha	Kustha	A.H.Chi.19/45-60
20.	Karveeradyalepa	Kustha	A.H.Chi.19/61
21.	Shairishadilepa	Kustha	A.H.Chi.19/63
22.	Vataghna yoga	Vatvyadi	A.H.Chi.21/34
23.	Kshalnarthjala	Balgrahapratishedh	A.H.U.3/41 -44
24.	Brahmighritum	Unmaadpratishedh	A.H.U.6/23-24
25.	Mahapanchgavyaghritum	Apasmarpratishedh	A.H.U.7/19-22
26.	Parilehinashak yoga	Karnarogapratishedh	A.H.U.18/45-50
27.	Nasaroghna yoga	Nasarogapratishedh	A.H.U.20/7-9
28.	Mukharoghna yoga	Mukharogapratishedh	A.H.U.22/103
29.	Kshalnarthjala	Vrana vidyanaan	A.H.U.25/41
30.	Mishrak yoga	Vrana vidyanaan	A.H.U.25/65
31.	Ksudrarogalepa	Kshudrarogapratishedh	A.H.U.32/8-9
32.	Yonirogaghankasaya	Guhyarogapratishedh	A.H.U.34/56
33.	Sarpavishaghan yoga	Sarpavishapratishedh	A.H.U.36/88

Phytochemistry^[22]

Root bark: An imperative chemical called fistucacidin, a hydroxy anthraquinone kind complex and its antibacterial conclusion was reported from the root bark.

Stem Bark and heart wood

The bark and the heart wood comprehend fistucacidin an optically inactive leucoanthracyanidin 3, 4, 7, 8, 4'-

pentahydroxyflavan along with barbaloin and rhein. N-Butanol extract of the powdered stem bark confined tannins. The benzene extracts yielded lupeol, β -Sitosterol and hexacosanol.

Leaves: Leaves encompass anthraquinone spinoffs, tannins, free rhein, rhein glycoside, Sennoside-A and Sennoside-B. They also contained kaempferol glycosides.

Flowers: Other complexes isolated were: sitosterol, n-triancontanol, leucopelargonidin and a mixture of flavonoids and glucosides. Ceryl alcohol, kaempferol, rhein and new bianthraquinone glycosides, fistulin isolated from the ethanol extract of the flowers.

Pods: An anthraquinone fistulic acid is attained from the alcoholic extract.

Pharmacological Actions

Anti-Inflammatory: Dry fruits of *Cassia fistula* L. presented anti-inflammatory activity at 500 mg/kg dose. 1:1 combination of the dried fruit extracts of *Solanum xanthocarpum* and *Cassia fistula* showed synergetic action at 500 mg/kg showed maximum inhibition of 75% compared to the 81% inhibition in diclofenac sodium treated positive control group.

The aqueous extract of the leaves, stem bark, root bark and fruit pulp in a dose of 1gm/100 gm body weight created significant anti-inflammatory effect on albino rats. The aqueous extract of the fruit caused an inhibitory effect on the isolated hearts of the frogs and rabbits. At a dose of 80mg and above, it showed stimulant effect on the smooth muscle of rabbit duodenum and guinea pig ileum in vitro. The extract had a relaxant effect on the dog's intestine in vitro. On isolated rat uterus, the extract had slight stimulant action in dose 25mg- 1 gm.

Purgative activity: The aqueous extract of the fruit pulp had significant purgative action; the activity is due to the presence of anthraquinones present.

Antioxidant activity: The investigation suggest that the antioxidant properties of 90% ethanol extracts of leaves, and 90% methanol extracts of stem bark, pulp and flowers from *Cassia fistula*. The antioxidant action power was in the declining order of stem bark, leaves, flowers and pulp and was well correlated with the total polyphenolic content of the extracts. The motive for low antioxidant activity in the flower and pulp portions could be the presence of some pro oxidants, such as chrysophanol and reducing sugars which dominate the antioxidant compounds existing in the extracts. Thus, the stem bark had extra antioxidant activity in terms of reducing power, inhibition of per oxidation and DPPH radical scavenging ability.

Anti-leishmaniatic activity: The effectiveness of *Cassia fistula* in the action of leishmaniasis, the effectiveness of concentrated boiled extract and hydroalcoholic extract of *C. fistula* on leishmaniasis was compared with intralesional injection of Glucantime [meglumine antimonate] in this study. Outcomes indicate that the *C. fistula* fruit gel rises the efficacy of intralesional meglumine antimonate for the treatment of cutaneous leishmaniasis. Combination therapy with intralesional meglumine antimonate and *C. fistula* fruit gel should be considered for the treatment of acute cutaneous leishmaniasis.

Anti ulcer activity: The ethanol leaf extract (ELE) of *Cassia fistula* Linn. (Caesalpinaceae) was evaluated for anti ulcer activity touching pylorus ligation Induced gastric ulcer.

Wound healing activity: *C.fistula* treated rats showed better wound closure, improved tissue regeneration at the wound site, and supporting histo pathological parameters relating to wound healing.

CONCLUSION

In the current era, persons everywhere the world pursue a healthier and supplementary natural life style that leads to herbs are existence rediscovered and *Aragvadha* (*Cassia fistula* Linn) is one of the imperative herbal drug. This extensive fictional survey revealed that *Cassia fistula* Linn. is an imperative medicinal plant which can be used for curing different ailments. From the above it can be concluded that the drug *Aragvadha* (*Cassia fistula* Linn.) proved to have extensive medicinal value in the treatment of diseases like fever, skin disorders, abdominal disorders etc. It also has antitumor, hepato-protective, anti-inflammatory, antibiotic, anti-fertility, antifungal, hypoglycemic etc., activities.

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