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A REVIEW ARTICLE ON CASSIA FISTUL LINN

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ABSTRACT

Cassia Fistula Linn. is an plant in the family Caesalpinaceae. It is also called Pudding Pipe tree. In *Ayurved* system of medicine, different parts (leaves, flowers, Roots, and Fruit pulp) of *Cassia fistula* Linn have been recommended for the treatment of Jaundice, Gout, Fatty Liver, Liver Disorder, Bronchitis, Fever, Skin disease, and so on. The *Cassia Fistula* Linn. has also suggested to posses, anti-diabetic, abortifacient, hepatomegaly, rheumatic disorder, pruritus, leprosy, diuretics. It also has blood purifier action. The active chemical constitute of *Cassia Fistula* Linn. is Carbohydrates, arginine, leucine, glutamic acid, glucose, sucrose, and fructose. These active chemical constitute are largely responsible for the therapeutic potentials. The main aim of this article is to highlight the latest review of scientifically proved medicinal activity against various diseases.

Keywords- Anti-cancer, Anti-diabetic *Cassia fistula*, *Cassia grandis Linn*.

INTRODUCATION:

Cassia fistula Linn. (family-caesalpinaceae) commonly known as the Golden Shower Indian Laburnum[1] and diffused in various countries including Mexico, Mauritius, South Africa, East Africa, West Indies, China. Medicinally it has been various pharmacological activities like antimicrobial, antifungal, antipyretic, analgesic, larvicidal, anti-inflammatory, antioxidant, anti-tumor, hepatoprotective, hypoglycemic activities. *Cassia fistula* is a moderate sized deciduous tree, distributed throughout India. It is 8-15 m to 24 m in height, with greenish grey smooth bark when young & rough, dark brown when mature. Leaflets 8.12 pair, flowers yellow, long drooping racemes. Pod cylindrical & pulpy. Seeds light brown, hard & shiny. Ayurvedic medicine recognizes the seeds as anti-bilious aperitif, carminative and laxative, hard reddish wood, growing up to 40 feet tall [3.]

DESCRIPTION

The natural habitat of *Aragvadha* varies from throughout the greater part of

India, ascending up to and altitude of 1220 m in the sub-Himalayan tract [4]. It can grow on poor, shallow soil as well as on trap, granite and stone soil nearly all over the globe [5]

Aragvadha is a moderate sized tree. It attains a height of about 8 to 15 m when mature. It leaves are up to 5.1 to 12.2 cm long, paripinnate with 4-8 pair of leaflets, coriaceaous when fresh and papery on drying. Midrib densely pubescent beneath. *Aragvadha* flower are bright yellow in axillary lax pendulous racemes [6]. Fruit (Pods) cylindrical, pendulous, smooth, dark brown or black, 30 to 60 cm long internally the pod is divided by transverse dissepiments, each compartment filled with black pulp and one seed. The pulp has sweetish taste and number of seed is 25-100 in each pod. Stem is smooth and greenish to pale grey in colour when young but older stem are dark brown to grayish white with rough surface. Root is reddish brown and rough externally with numerous horizontal lenticels. The inner surface of bark is smooth and light pink in color. Among the plants known for medicinal value, the plant of genus Cassia belonging to family Caesalpiniaceae is very important for their therapeutic potential. *Cassia fistula L.*,(*Aragvadha*) *Cassia grandis L,(Horse cassia)* [7]

TRADITIONAL USES

Aragvadha is uses in *Ayurvedic* remedies for flatulence, anti-inflammatory, abdominal distension, hepatobiliary disorder, constipation, skin diseases, intermittent fever, especially for black water fever, worm infestation. [8] Traditionally, *Cassia fistula* L, is taken in many forms, as *Aragvadhadi kvatha, Aragvadhadi leha, Aragvadharishta, Mahamarichyadi taila.* [9]

CHEMICAL CONSTITUENTS

Different part of plant containing various amounts of constituents, The leaves contain free rhein, glucoside and sennosides A and B (Indian J. Pharm 1968, 30:8). A stem bark powered contain tannins, lupeol, haxacosanol, B-sitosterol. The pulp contains protein 19.94%, carbohydrate 26.30%, arginine, leucine, and glutamic acid. Pods contain fistulic acid, sugar, astringent matter, gluten, (Ind.J.Chem. 1972, 10, 379) matter; Seed contain vernolic oil, sterculic and malvalic acids. Flower contains aurantimide acetate, B-sitosterol[10.]

VARIOUS ACTIVITY OF *CASSIA FISTULA* LINN

Antipyretic activity: The *Cassia fistula* pod was found to be devoid of antipyretic activity in experimental models. The pods extracts showed a marked antipyretic effect by causing a reduction in yeast-induced fever. The extract caused a better hypothermal activity against yeast-induced pyrexia in rats. Subcutaneous injection of yeast induces pyrexia by increasing synthesis of prostaglandin and is used to screen [11].

Antitussive activity: The methanol extract of *Cassia fistula* was investigated for its effect on a cough model induced by sulphur dioxide gas in mice. It exhibited significant antitussive activity when compared with control in a dose dependent manner.[12]

Antibacterial and antifungal: The microbial activity of hydroalcohol extracts of leaves of *Cassia fistula* Linn. (an ethnomedicinal plant) was evaluated for potential antimicrobial activity against medically important bacterial and fungal strains. The antibacterial and antifungal activities of extracts (5, 25, 50, 100, 250 µg/ml) of *Cassia fistula* were tested against two Gram-positive—*Staphylococcus aureus, Streptococcus pyogenes*; two Gram-negative—*Escherichia coli, Pseudomonas aerugi-*

nosa human pathogenic bacteria; and three fungal strains—*Aspergillus niger, Aspergillus clavatus, Candida albicans*. The results revealed that in the extracts for bacterial activity, *S. pyogenes and S. aureus* were more sensitive as compared with *E. coli* and *P. aeruginosa*, and for fungal activity, *C. albicans* shows good result as compare with *A. niger* and *A. clavatus.* The results show that the extracts of *Cassia fistula* were found to be more effective against all the microbes. The present study claimed uses of leaves in the traditional system of medicine to treat various infectious disease caused by the microbes.[13]

Antioxidant activity: The antioxidant properties of 90% ethanol extracts of leaves, and 90% methanol extracts of stem bark, pulp and flowers from *Cassia fistula*. The antioxidant activity power was in the decreasing order of stem bark, leaves, flowers and pulp and was well correlated with the total polyphenolic content of the extracts. Thus, the stem bark had more antioxidant activity[14].

Anti-inflammatory activity: The anti-inflammatory activities of the aqueous (CFA) and methanolic extracts (CFM) of the *Cassia fistula* bark were assayed in Wistar albino rats. The extracts were found to possess significant anti-inflammatory effect in both acute and chronic models[15].

Hypolipidemic activity: The effect of 50% ethanolic extract of *Cassia fistula* legume on serum lipid metabolism in cholesterol fed rats. Administration of *C. fistula* legume extract at the doses 100, 250 and 500 mg/kg b.wt./day along with cholesterol significantly prevented the rise in the serum total and LDL-cholesterol, triglycerides and phospholipid in a dose dependent manner[16].

Anticancer activity: Cancer has been a leading cause of death in the developing countries. With changing standard of living and food habits and also due to availability of curative treatment for many infection diseases, cancer is surpassing other ailments as a principal cause morbidity and mortality even in developing countries. Surgery, radiotherapy and chemotherapy are the established treatment modalities for various cancers are costly, mutilating, having serious side effects and associated with residual morbidity as well as frequent relapse. In *Ayurveda*, various plants are used as a potential source of anticancer and antitumor properties [17]. It has been found that methanolic extract (ME) of *Cassia fistula* seed on the growth of Ehrlich ascites carcinoma (EAC) and on the life span of tumour bearing mice. ME treatment showed an increase of life span, and a decrease in the tumour volume and viable tumour cell count in the EAC tumour hosts [18].

Wound Healing: Infection is the major problem to treat the wound. Antibiotic resistance by the pathogenic microorganism renders drug ineffective. The alcohol extract of *C. fistula* leaves was analyzed for antibacterial effect against *Staphylococcus aureus* and *Pseudomonas aeruginosa*. *Cassia fistula treated* rats showed, better wound closure, improved tissue regeneration at the wound site, and supporting histopathological parameters pertaining to wound healing, and thus confirming efficacy of *Cassia fistula* in the treatment of the infected wound [19].

Anti-diabetic activity: The hypoglycemic effects of the hexane extract of stem bark of *Cassia fistula*, in normal and streptozotocin induced diabetic rats. Hexane extract of *C. fistula* bark at doses 0.15, 0.30, 0.45 g kg-1 body weight for 30 days suppressed the elevated blood glucose levels in diabetic rats [20]. Aqueous extract of *Cassia fistula* (Linn.) flowers (ACF) locations was screened for its antioxidant effect in

alloxan induced diabetic rats. And seeds of *Cassia fistula* were investigated for their hypoglycemic activity. They were found to have marked hypoglycemic activity on normal members of albino rats [21 & 22]. The mechanism of hypoglycemic and antidiabetic action of hydro alcoholic extract of *Cassia fistula* Linn. in rats [23].

Hepatoprotective activity: The hepatoprotective activity of the n-heptane extract of *Cassia fistula* leaves. The extract at a dose of 400 mg/kg body weight exhibited significant protective effect by lowering serum levels of transaminase (serine glutamic-oxaloacetate transaminase [aspartate aminotransferase] and serine glutamic-pyruvic transaminase [alanine aminotransferase]), bilirubin and alkaline phosphatase. The protective effect is comparable to that of a standard hepatoprotective agent [24 & 25].

CONCLUSION:

From above literature it is concluded that *Cassia fistula* (Linn.) is responsible for the various therapeutic potentials especially in gastrointestinal disorders. Many research studies reveal that it is useful herbal plant for hepatic disorder & it also shows the lipolipedic activity.

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