www.pharmaerudition.org

ISSN: 2249-3875

International Journal of Pharmaceutical Erudition

Research for Present and Next Generation

AUG 2019

Vol: 09 Issue:02

(59-65)

ISSN 2249-3875

International Journal of Pharmaceutical Erudition

Review Article

PHYTOCONSTITUENTS AND HEALTH PERSPECTIVE OF MEDICINAL PLANT ARAGVADHA

Lohiya Garima *, Sharma Rashmi
Research Scholar*, Department of Zoology, SPC Govt. College, Ajmer (Rajasthan)

India is known as "Botanical garden of world", because all over the world 3000 species of medicinal plants are officially recognize. Family Fabaceae is the third largest family of Angiosperms after Orchideaceae, Asteraceae with 730 and 19,400 species. Subfamily- Caesalpiniaceae has 160 genera and 2000 species. *Cassia fistula* Linn. (Caesalpiniaceae) known as Pudding Pipe Tree. It is also known as "Golden Shower" because of bunches of yellow flowers. Cassia other name in Sanskrit is "Aragvadha" which means "diseases slayer" and it is commended for all age groups and pregnant women also. In Charaka Samhita it is known as Virechanopaga, Kusthaghna (curative of skin problems), Kandughna (curative of pruritus). Number of drugs had been isolated from plants and still investigations of medicinal properties of plants are an issue of national public health concern. Plants are rich and natural source of phenolic compounds and flavonoids, which play a key role in human health. Many of secondary metabolites already discovered in various plant species and still a deep investigation is needed to identify the various components activity particularly.

Key Words: Cassia Fistula Linn, phyoconstituents, Kusthaghna , phenolic compounds and flavonoids.

INTRODUCTION

Plants are treasure of the earth as they regulate ecological function and provide us so many products directly or indirectly. Before the inventions of modern medicaments plant parts like bark, stem, flowers, root, seeds were used in form of powder, lotion, syrup, extract, quath, bhasma, churna, rasayana was preferred by the people as a remedy in various disease according to "Rigveda". Uses of plants in the treatment of various diseases during 300 B.C. were documented in Egypt, China, India and Middle East. Before the 700 B.C. Saraka Samritham wrote by Saraka, Materica medica written by Dioscoretes, they described 350,600 medicinal plant species respectively. WHO listed 21,000 plants around the world but the estimate indicate that there number will be 35,000-70,000 worldwide. About 43,000 plant species are said to be exist in India of which 7500 plant species find mention in the recorded folklore of India. Among these 1773 have been documented in Ayurveda, 4,720 in traditional medicines, 1122 in Siddha, 751 in Unani and 105 in Allopathy [1-3].

HABITAT

It is deciduous mixed monsoon forests throughout greater parts of India, ascending to 1300 m in outer Himalaya. It is distributed in Asian countries such as India, China, Malaysia, Thailand, Hong Kong as well as Amazon, Bangladesh, Sri Lanka, South Africa, East Africa and West Indies.

ISSN 2249-3875

International Journal of Pharmaceutical Erudition

VERNACULAR NAMES

Hindi	Sonali, Amulthus, Bandarlauri, Hamaltas, Khyar, Sundarraj
Sanskrit	Nripadruma, Aragvadha, Arevata, Arogyashimbi, Chakraparivyadha, Mahakarnika
English	Indian Laburnum, Cassia fistula, Golden shower, Drum stick, Pudding pipe, Pudding stick, Purging fistula
German	Cassienroehrlein, Rohrkassie
Greek	Glykokalamon, Kasias Syrian, Kassia meliana

Table 1: **Review of Literature**

Plant part	Name of scientist	Activity
ANTI OXIDANT ACTIVITY		
Cassia fistula fruit	Kalantari H, Jalal, Saini et.al (2011)[4]	Antioxidant activity of bromobenzene induced liver injury in mice
Cassia fistula flower aqueous extract	Manonmania (2005)[5], Luxmon et al(2004)[6], Mo. shahid et al (2009)[7],	Antioxidant activity of alloxan induced diabetes in rats
fruit pulp of Cassia fistula	Bhatnagar et al (2010)[8]	in vitro and in vivo antioxidant activity
ANTI-DIABETIC ACTIVITY		
Seeds of Cassia fistula	Nayan Bhalodia (2011)[9], Siddhuraju P. et al (2002)[10],	Hydroalcoholic seed extract of Cassia fistula
Cassia fistula bark and leaves	Malpani et al(2010)[11], Silawat et al (2009)[12], M. Ali et al(2012)[13], Bhatka etal (1997)[[14], John et al (2006)[15]	Hypoglycemic activity of hydroalcoholic, alcoholic and methanolic extract reaction of Cassia fistula bark and leaves on alloxan induced diabetic rats
	Aviello, Rowland et al(2010)[16]	Cytotoxicity on human colon adenocarcinoma.
	Shankar et al (2012)[17],	Antitumor activity of methanolic extract of Cassia fistula in skin tumor promotion model
Cassia fistula seed	Gupta et al (2000)[18]	Methanolic extract activity of Cassia fistula seeds on EAC
ANTI-INFLAMMATORY ACTIVITY		
Cassia fistula barks	Raju Ilavarsana (2005)[20],	Aqueous and methanol extract of Cassia fistula bark in wistar albino rats
Cassia fistula bark and leaves	Gobind et al (2010)[21], Rajeshwari etal (2006)[22], Bhatnagar etal (2010)[8], Somnath(2009)[23], Dinanath et al(2012)[24],	Ethanolic extract activity of Cassia fistula in hind paw odema and cotton pellet granulose wistar albino rats

ISSN 2249-3875

International Journal of Pharmaceutical Erudition

ANTIBACTERIAL AND ANTIFUNGAL ACTIVITY		
Leaves, flower and seed of Cassia fistula	Shoeb etal (2005)[25], Singh (2006)[26], Subramanion et al (2011)[27],	Antifungal activity of acetone, diethyl ether and methanol extract of leaves, flower and seed
Leaves	Phongpaichit et al (2004)[[27]	Compared the antifungal activity of Cassia alata, C.tora, C.fistula
Cassia fistula leaves, root bark and bark	Awal et al(2010)[28], Duraipandiyana et al (2007)[30], R.N.yadav (2003)[31], Muthusamy et al(2006)[32]	Antimicrobial activity against different species of bacteria
HEPATOPROTECTIVE ACTIVITY		
Cassia fistula bark, leaves	Bhakta et al,(2001)[34], Vandal et al,(2008)[35]	Leaf and bark extract activity of Cassia fistula against carbon tetra chloride induced hepatotoxicity
Fruit pulp of Cassia fistula	Das et al,(2008)[36]	Activity of fruit pulp aqueous extract Cassia fistula against carbon tetra--chloride induced liver damage in albino rats

Table 2: Phytoconstituents and medicinal use of Plant parts

Name of Plant Part	Phytochemical constituents	Medicinal Uses
Leaves	Anthrquinone,Oxyanthraquinone,rhein,volatile oil, glycosides, sennosides A & B, Hentriacontanoic, triacotanoic, nonacosanoic, hepatosanoic acid (cuticular wax)[8,18,37,38],	Laxative, insect bites, swelling, rheumatism, facial paralysis, jaundice, piles, skin eruption, ring worm eczema[17,20,34,37]
Stem Bark	Flavonol, glycosides	Amenorrhoea, Chest pain, swelling
Root Bark	Phlobaphenes, oxyanthraquinone, betulinic acid, β sitosterol, 7-methylphyscion[18,38]	Strong purgative, chest pain febrifuge, astringent, joint pain, migraine, dysentery, heart disease, biliousness, blackwart fever [18,20,38]
Flower	Aurantiamide acetate, β sitosterol, β-D glucosides, ceryl alcohol, kaemferol, fistulin, bianthraquinone glycoside[9]	Inhibit ovarian function, stimulate uterine function

ISSN 2249-3875

International Journal of Pharmaceutical Erudition

Seeds	Galactomannon, sugar, amino acid, seed oil contain vernolic acid, malvalic acid, stetculic acid[8,9]	Used in constipation, jaundice, biliousness, swollen throat, skin disease and improve appetite [20,37]
Fruit	Anthraquinone glycoside, sennosides A & B, rhein, barbalion, alin, formic acid, butyric acid, oxalic acid and good source of Fe and Mn.	Used in asthma, snake bite, pyrea, chest pain, livernad throat problem, antifertility activity, abortifacient [20,34,37]
Pulp	Sugar, tannins, albuminous starch, calacium oxalate, gum, gluten, astringent matter, sucrose, fructose, glucose, protein -arginine, leucine, lysine, phenyalanine, tryptophan, glutamic and aspartic acid [18,37,38]	Disorder of liver, antipyretic, anti-malarial, anthrax, antidysentric, leprosy [37]

DISCUSSION AND CONCLUSION

Review indicate family Fabaceae members are excellence source of minerals, amino acid, flavonoids, isoflavonoids, glucosides, rhein, polyphenol compounds, alkaloids, saponins, tanins etc. Review support their antioxidant activity, which is proportional to the total phenolic content, flavonoids, bio flavonoids and other phytoconstituents present in different plant parts with vary concentrations. Polyphenols, flavones, isoflavone, glycosides protect from cancers and heart diseases by reduce the level of LDL while rhein depreciate the risk of human breast cancer, cervical cancer and liver cancer. Anthraquinone commonly work as laxative and improve digestion. Tannins are astringent in nature and highly used in skin care products. Tannin in Vaccinium macrocarpon defensive activity also proved as they reduce the growth of Ecolab in women urinary tract.

REFERENCE

1. Samarth RM, Goyal P.K., Kumar A, "Radioprotective effect of Mentha piperita", J. Med. Aromat. Plant Sci., 22/23, 91-97, 2001.

2. Chauhan Neelam, Bairwa R., Sharma K.,Chauhan N., “Review on *Cassia fistula*”, International journal of Research in Ayurveda & Pharmacy, 2(2), 426-30,2011.

3. Dongray Archana, Irchhaiya Raghuveer, Chanchal Dilip and Chaudhary Saurabh, "Phytochemical and Pharmacological Properties of *Bauhinia acuminata*", World Journal of Pharmaceutical Research, 5(1),531-46, 2015.

4. Kalantari H, Jalali M, Jalali A., Mahdavinia M., Salimi A, Tosaki A, Gesztelyi R, “Protective

effect of *Cassia fistula* fruit extract against Bromo-benzene induced liver injury in mice", Hum Exp toxico, 30(8), 2011.

5. Manonmani G., Bhavapriya V., Kalpana S., Govindsamy S., "A Antioxidant activity of *Cassia fistula* flower in alloxan induced diabetics rat", Journal of Ethanopharmacol, 97(1), 39-42,2005.

6. Luximon Ramma, Bhavapriyaa V., Kalpana S, Govindasamya S., Apparananthan T., "Antioxidant Activity of *Cassia fistula (Linn.)* Flowers in Alloxan induced diabetic rats", Journal of ethanopharmacology , 7(1), 2004.

7. Mo.Shahid etal., "Bio Efficacies of *Cassia fistula*", African Journal of Pharmacy and Pharmacology, 3(6):287-92, 2009.

8. Bhatnagar M., Sunil V., Vyas Y., Sharma D., Sharma K., "Antioxidants activity of fruit pulp powder of *Cassia fistula*", Journal of Pharmacognosy, 2(8), 219-28, 2010.

9. Bhalodia R. Nayan et.al, "Antifungal and Antibacterial Activity from the leaf extract of *Cassia fistula*", International Journal of Pharm. Tech. Res,2(2) ,104-9, 2011.

10. Siddhuraju P., "Studies on the Antioxidant Activity of the Indian Laburnum: A Preliminary Assessment of crude extract from the stem bark, leaves, flowers and fruit pulp", Journal of Food Chemistry,79, 2002.

11. Malpani S N., Manjunath K P., Hasanpasha S.,Savadi R V.,Akkai K.,Darade S S., "Antidiabetic activity of *Cassia fistula linn* bark in Alloxan induced diabetic rats", Int. Journal of Pharmacy Sci.,2:382-85,2010.

12. Silawat N., Jarald E Edwin, Jain Neetesh, Yadav Akash, Deshmukh T P., "The mechanism of hypoglycemic and antidiabetic action of hydroalcoholic extract of *Cassia fistula linn*. In rats", Journal of the Pharma Research,01; 82-92,2009.

13. M.Ali, Sagar H.A., Sultana M.C., Azad A.K., Begum K., Wahed M.I.I., "Antihyperglycemic and Analgesic Activities of Ethanolic Extract of *Cassia fistula (L)* stem Bark", Int. Jour. Pharm Sci. Res.,3(2), 416-23, 2012.

14. Bhakta. T., Mandal S.C., Saha S.S., Pal M., Banerjee S., Maity T. K., "Hepatoprotactive Activity of *Cassia fistula* leaf Extract" Phytomedicine, 8 (3), 2001.

15. John W.E., etal, "Antidiabetic and Hypoglycemic activity of the flowers of *Cassia fistula*", Indian Journal of Pharmaceutical Education and Research, 40(3),2006.

16. Aviello G, Rowland I, Gill C I, Acquaviva A M, capasso F, Capasso R, Izzo A A, "Anti-proliferative effect of rhein , an anthraquinone isolated from Cassia soieces, on Caco-2human adenocarcinoma cells", J.Cell Mol.Med.: 14(7), 2010.

17. Shankar S and Methew L, "Chemopreventive potential of methanolic extract of stem bark of *Cassia fistula Linn* in mice, IJPI'S, journal of Pharmacognosy and Herbal Formulation", 2,8, 2012.

18. Gupta M., Mazumdar U.K., Rath N.,

Mukhopadhyay D. K., "Antitumor activity of methanolic extract of *Cassia fistula linn* seed against Ehrlich Ascites Carcinoma", Journal of Ethanopharmacology, 72, 151-6,2000.

19. K. Vasudevan, S. Manoharan, L. M. Alias, S. Balakrishnan, L. Vellaichamy, M. Gitanjali, International Journal of Chemical Sciences, 2008, 6(3), 1341-1354.

20. Raju Ilavarasan, Mallika Moni and Venkataraman Subramanian, "Anti inflammatory and Antioxidant Activity of *Cassia fistula Linn*. Bark extract", Afr. J. Trad. Cam, 2,(1),2005.

21. Gobianand k., Vivekananda P., Pradeep K., Mohan C V R, Karthikeyan S., "Anti-inflammatory and antipyretic activities of indian medicinal plant *Cassia fistula Linn*. (Golden Shower) in wistar albino rats,", International journal of Pharmacology", 6;7, 19-25,2010

22. R.Rajeshwari, P.Thejomoorthy, L.N. Mathurum, K.V.S.N.Raju, Tamilnadu Journal of Veterinary and Animaal Science, 2(5),193-199,2006.

23. Somnath N., "Evaluation of antiinflammatory activity of *Cassia fistula Linn* and *Ficus benghalensis*", Journal pf Pharmacy Research, 2:8,2009.

24. Dinanath D.Patil, Dnyandeo K. Mhaske and Machindra Patre GurumeetC. Wadhawa,"Antibacterial and Antioxidant, Antiinflammatory Study of Leaves and Bark of *Cassia fistula*", International Journal of Pharmacy, 291, 401-5, 2012.

25. Shoeb Shoeb M., "Cytotoxic compounds from the genus Centaurea, Ph.D. Thesis Aberdeen,UK, he Robert Gordon University, 2005.

26. Singh P, Karnwal P, "Antifungal activity of leaf extract against candida albicans", Indian Journal of Microbiology, 46(2), 2006.

27. Subramanion L., Zuraini Z., Yeng C., Yee L. L., Sreenivasan S, " Acute oral toxicity of methanolic seed extract of *Cassia fistula* in mice", Molicules: 17, 6997-7009, 2011.

28. Phongpaichit S., Pujenjob N., Rukachaisirikul V. and Ongsakul M., **"**Antifungal Activity from leaf extract of *Cassia fistula*", *Cassia alata*, *Cassia taura*, Journal Science technology, 26, 2004.

29. Awal M. A., Ahsan S.M., Haque E., Asghor, Q. H., "In vitro Antibacterial Activity of leaf and root extract of *Cassia fistula*" , Dinajpur Med. Clg. Journal ,3, 2010.

30. Duraipandiyana V and Ignacimuphu S., " Antibacterial and antifungal Activity of *Cassia fistula Linn.*, An. Ethanomedicinal Plant", Journal of Ethanopharmacology, 112,2007.

31. Yadava R. N., Verma Vikash, "A new Biologicaly Active Flavon Glycoside from the Seed of *Cassia fistula (Linn*)", Journal of Asian Natural Products Research, 5(1),2003.

32. Muthusamy S., Ramasamy S., Raghwan HarinarayananV., Sehgal P.V., " Wound Healing Potential of *Cassia fistula* on Infected Albino rat model", Jour. of Surgical Research, 131: 283-89,2006.

33. Wasu SJ, Muley BP. Hepatoprotective effect of *Cassia fistula* Linn. Ethnobotanical Leaflets, s13:910–6,2009.

34. Bhakta. T., Mandal S.C., Saha S.S., Pal M., Banerjee S., Maity T. K., "Hepatoprotactive Activity of *Cassia fistula* leaf Extract" Phytomedicine, 8 (3), 2001.

35. Vandal P Y., Sakhare G R, Patwadhan S K., Singhani A K., Simani R S., "Evaluation of hepatoprotective activity of ethanolic extract of bark of *Cassia fistula*", Indian Journal of Pharmacol,40;68,2008

36. Das Sangita, Sarkar P. K., Sengupta A., Chattopadhyay A. A, "Clinical Study of Aragvadha on Vicharchika", Journal Res. Educ. Indian Med., 2008.

37. Mohd. Danish, Singh P., Mishra Garima, Srivastava S., Jha A. A., Khosa L. R.,*Cassia fistula* (Linn).(Amulthus)-An Important Medicinal Plant: A Review of its Traditional Uses, Phytochemistry and Pharmacological Properties", Journal of natural product and plant resources", vol. 1(1), 101-118,2011.

38. Rajgopal P L,Premlatha K, Kiron S S, Sreejith K R, "International Journal of Pharmaceutical, Chemical and Biological Science, 3(3),672-679,2013.

39. Mahbubur Rahman, Barman AK., "A Preliminary Taxonomic Account of the Family Caesalpiniaceae of Rajshahi", *Discovery*, 53(256), 243-254, 2017.

40. www.webmed.com

41. www.flowersofindia.net