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Review Article

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THERAPEUTIC USES OF LATAKARANJA (CAESALPINIA CRISTA LINN.) WITH A NOTE ON IT'S PHARMACOLOGICAL ACTIONS. -A REVIEW

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ABSTRACT

Traditional system of medicinal plant consists of various medicinal and pharmacological uses. Medical practitioners are using medicinal plant widely for curing various diseases in their day to day practices, Latakaranja (*Ceasalpinia crista linn*) *of* family febaceae is a moderately size one among found deciduous forest of India. expressed a valuable tank of new bioactive molecules. The present review aimed to compile complete information of pharmacological action of Latakaranja (*Caesalpinia crista linn*)with special emphasis on its various classical and scientifically documents. Plant mainly contains, flavonoids, tannins, proteins, alkaloids, carbohydrate reducing sugar, phytosteroids, saponins, coumarins, triterpenoids, cassane –diterpenes, neo cassane-diterpenes, nor cassane – diterpenes, and many other bioactive compounds. Is commonly used in Ayurvedic Preparations. Different parts of this plant are traditionally used for the treatment of jwara, Sula, Atisara, Raktatisara, diabetic, leprosy, malatia, skin disease, antifungal, anti tumour, hepatoprotective.

KEYWORDS: Latakaranja (*Caesalpinia crista linn.)* Phytoconstituent, Ayurveda, Pharmacological Action.

INTRODUCTION

Plants are one of the most important sources of medicine, large number of Drugs are derived from plants, Latakaranja has been botanically identified as Caesalpinia crista Linn. belongs to family caesalpiniaceae. Latakaranja herb has the great medicinal importance in ancient Ayurveda. Today there is an renewed interest in traditional medicine and an increasing demand for more drugs from plant sources, this revival of interest in plant derived drug is mainly due to the current wide spread belief that "Green Medicine" is safe and more dependable that the costly synthetic drugs many of which have adverse side effect. It is pricky shrub or woody vine, herb one of the common plants used in Indian traditional system of medicine.

Caesalpinia crista linn exerted nootropic, anticonvusant, antioxidant, antianxiety, adaptodenic, antimicrobial, antiprotozoal, anthelmintic, insecticidal, antiproliferative, antidiabetic, hypotensive, hepatoprotective, antioxidant, cardioprotective, anticancer and many other effects. The plant contained flavonoids, tannins, proteins, alkaloids, carbohydrates reducing sugars, phytosterols, triterpenoids, saponins, coumatins, furano-cassane-diterpenes, nor cassanediterpenes, neo-cassanediterpenesand many other bioactive compounds.

The main purpose of reviewing the Caesalpinia crista linn plant is to highlight chemical constituents and the pharmacological and the therapeutic effect of the plant for human health. It is an important herb in the Indian traditional medicine systems.

MATERAILS AND METHODS

Classification
Kingdom: Plantae
Order: Caryophyllales
Family: Plumbaginaceae

Classification
Kingdom: Plantae Order: fabales
Family:Fabaceae
Genus:*Caesalpinia*
Species:*Caesalpinia Crista*

Classsification according to Ayurveda
BhavprakashNighantu: Guduchiadivarg[1]
VaidyaBapulal G: Putikaranjadivarga[2]

Synonyms of Latakaranja
Sanskrit, putikaranja, pootikaranja, latakaranja, kantkikaranja, Kuberaksha.
English – Bonduc fruit, fever nut ,physic nut.

Botanical Description

It is pricky shrub or woody vine, plant is an extensive climber, branches finely grey downy, widely distributed all over the world, specially throughout the tropical and sub tropical regions of south Asia.-. Plant has a length of 10m or more also known as Sagargoti (Marathi), leaves are 1m long bi-pinnate with reaches armed with stout, sharp recurred spines, the leaflets are 2.5cm long 10 pairs and oblong somewhat hairy, the fruits are vpods 5-7cm length oblong, inflate and covered with slender spines and contain one or two seeds, seeds are somewhat rounded or ovoid large, hairy, grey and shiny. The flowers are about 1cm long yellow, born in axillary, simple or panicled raceme.

Ayurvedic properties of Latakaranja

Guna – Laghu, Ruksha
Rasa - Katu
Virya Ushana.
Vipaka- Katu.
Doshaghnata- Pacifies all the doshas.[3]

Karma and uses

Latakaranjahas very useful medicine in traditional system hence take important place in Ayurveda. Dipan, Yakrututtejak, Grahi, Shoolparshaman, Krimighana Jwarahara, Shothaghana, Stambhana, Raktastambhana, Vednahara,, Krimighana, It is also used in diseases like Vishamjwara, Sutikajwara, shool, Swas, Vatvikar, Charmaroga, Shoot and Vrana etc.[4]

Phytochemical Constituents: Latakaranja has been explored phytochemically by various researchers and found to possess number of chemical Constituent like Bonducin, Heptocasane, phytosterol alkaloids, flavonoids, triterpenoids, proteins, saponins, steroids, tannins and glycosides.

Part used, Medical Formulation and doses

Part used- Root, Bark, Leaf, Seeds.
Some important formulation-
Vishamjwaraghanivati, Kuberksataila
Dose –Bijmajjachooran powder 5 to 20gm in divided dose per dayPatraswaras10 to 20 ml.Moolachoorna 10 to 15 gm.

The properties of Latakaranja

Latakaranja is useful in disease.[13]
JWARA-Latakaranjabeejchurna withmarich is useful.
SHAYAJ SWAS AND KASA- Latakaranjaseed kwath**.**
KRIMI-Latakaranjapatraswaras is useful.
TARUNYAPITIKA-Latakaranjabeejtaila is useful.
UDARSHOOL-Latakaranjabeejmajja with lavanga.
DRUSHTAVRANA- Latakaranjasneh is useful.

Pharmacological Action

Latakaranja (Caesalpinia Crista Linn.) utilised for centuries from Samhitakala to treat a wide range of diseases, showed great potential as safe and Useful multi-purpose medicinal plant. Apart from Its traditional uses, A lot of recent researches have done hepato-protective, immunomodulatory, antitumor hypolipidemic and cardioprotective. Moreover, various parts of plants are reported to possess abortifacient, and anticancer etc.

1. Wound Healing

The wound healing activity of different extracts and fractions of seeds of *C. crista* has been studied using the excision, incision and dead space wound models in albino rats. Results showed that the group orally administered with the ethyl acetate fraction was the most effective. Closure of excision was 21% at day 4 and 100% at day 20. Values of the control group were 12% and 77% for the same duration. Tensile strength of the healing incision and dead space wounds was 285 g and 305 g, compared to the control group of 144 g and 157 g, respectively.[5]

2. Antioxidant Action

Antioxidant properties of leaf and seed extracts of *C. crista* have been studied. The 70% methanol leaf extract was assayed using different assays for phenolic contents and antioxidant activities (Mandal et al., 2011). Total phenolic content was 50 mg GAE/ml while total flavonoid content was 107 QE/ml. Total antioxidant activity based on trolox equivalent antioxidant capacity (TEAC) was 0.6. IC50 values of scavenging were 0.4, 25, 34, 61 and 170 µg/ml for ROS of hydroxyl, superoxide, nitric oxide, singlet oxygen and hypochlorous acid, respectively. For in vivo experiments, oral administration of the leaf extract to normal mice for a week significantly enhanced the activity of antioxidant enzymes (Mandal et al., 2011).[6]

3. Anti-inflammatory and Analgesic

Seeds of *C. crista* have been reported to possess anti-inflammatory and analgesic properties. Using the carrageenan-induced paw oedema method, the ethanol seed extract showed maximum inhibition of 74% at 300 mg/kg. Diclofenac, the standard, had a value of 88% at 13 mg/kg. The extract at 300 µg/ml concentration showed potent analgesic activity of 71% based on writhing reflexes in mice and 5.3 sec tail withdrawal latency using the tail immersion method. The aqueousextract of *C. crista* leaves was reported to inhibit 5-lipoxygenase with an IC50value of 23 µg/ml compared to nordihydroguaiareticacid used as the control which had an IC50value of 8.6 µg/ml. 5-Lipoxygense is a key enzyme in the biosynthesis of leukotriens, which are implicated in inflammatory and allergic.

4. Antibacterial and antiviral

Phytochemical study on the methanol leaf extract of C. crista afforded 2-hydroxytrideca-3,6-dienyl-pentanoate, octacosa-12,15-diene, along with 3-O-methylellagic acid 3'-O-α- rhamnopyranoside and β-sitosterol (Kumar et al., 2014). All the isolated compounds, extract and fractions were evaluated for in vitro antibacterial activity against various Gram-positive and Gram-negative bacteria. They were found to be significantly active against

Staphylococcus aureus and methicillin-resistant S. aureus with MIC ranging from 64–512 µg/ml. Againstparamyxovirus and orthomyxovirus, significant or complete inhibition was exhibited by aqueous, ethanol and methanol extracts of C. crista (Patil and Sharma, 2012).[9,10]

5. Effect on Alzheimer's Disease

Amyloid beta (A beta) is the major etiological factor implicated in Alzheimer's disease. The ability of *Caesalpiniacrista* leaf aqueous extract was studied on theprevention of (i) the formation of oligomers and aggregatesfrom monomers (Phase I: A beta(42) + extract coincubation); (ii) the formation of fibrils from oligomers(Phase II: extract added after oligomers formation); and (iii) dis-aggregation of pre-formed fibrils (Phase III: aqueous extract added to matured fibrils and incubated for9 days). The aggregation kinetics was monitored usingthioflavin-T assay and transmission electron microscopy. The results showed that *Caesalpinia crista* aqueous extract was able to inhibit the A beta(42) aggregation from monomers and oligomers and also able to dis-aggregate the pre-formed fibrils.[11]

6. Anticonvulsant Effects

The anticonvulsive effect of seed extract of *Caesalpinia crista* was investigated by pentylenetetrazole, maximal electro shock strychnine- and picrotoxin-inducedconvulsions models. Diazepam was used as astandardreference for all models except maximal electro shock model, wherein phenytoin wasused as standard reference. Seed kernels of *Caesalpinia crista* were powdered and subjected to successive extraction with petroleum ether, ethanol, methanol and water. All the extracts were administered as suspension in 2% gum acacia in all the experiments. In pentylenetetrazole maximal electro shock, strychnine- and picrotoxin-induced convulsion models, the medium and high doses (600 and 800mg/kg) of the extract showed significant anticonvulsant activity.[12]

7. Immunomodulatory Effects

The aqueous extract of *Caesalpinia crista* seeds was tested for its effect on cell mediated and humoral components of the immune system in rats. Administration of *Caesalpinia crista* seed extract produced an increase of 93.03 ± 4 mean hemagglutinating antibody titer and a change of 0.56 ±0.058 mm in delayed type hypersensitivityas compared to control at a dose of 400 mg/kg bw.[13]

The immunomodulatory activities of ethanolic extract of *Caesalpiniacrista*seeds were tested via neutrophil adhesion test, haemagglutinating antibody titer, delayed-type hypersensitivity response, phagocytic activityand cyclophosphamide-induced myelosuppression. Oral administration of ethanolic seed extract of *Caesalpinia crista* (200-500 mg/kg) evoked a significant increase in percent neutrophil adhesion to nylon fibers, as well as a dose-dependent increase in antibody titer values, and potentiated the delayed-type hypersensitivity reaction induced by sheep red blood cells. Also it prevented myelosuppression in cyclophosphamide treated rats with agood response towards phagocytosis in carbon clearanceassay.[14]

8. Antidiaarrheal Effects

Antidiarrheal activities of fractions of methanolic leaf extracts of C crista were evaluated at two doses (200 and 400mg) and compared with loperamide in castor oil – induced diarrheal model in rat. All fractions exhibited dose dependent anti diarrheal action. Ethyl acetate fraction exerted maximum inhibition (51.11%) against defaecation, where as 57.75% inhibition was obtained for loperamide.[15]

9. Hypotensive and antihypertensive effects

The administration of aqueous leaf extracts of C Crista induced progressive decrease of blood pressure. The hypotensive action of extracts was dose dependent and reversible. Similarresult were obtained using acetylcholine. Hpotension induced by aqueous leaf extract of C crista or acetylcholine were inhibited were atropine. On the other hand, it significantly reduced blood pressure caused by the prior administration of adrenaline. These result showed that the leaves of Caesalpinia crista exerted hypotensive and antihypertensive effect by different mechanism.[16]

10. Anticancer

The antidiabetic activity of ethanol and aqueous seed extracts of C. crista was evaluated in streptozotocin-induceddiabetic mice. Both the extracts showedantidiabetic activity. There was a significant decrease in serum glucose, cholesterol and triglyceride when compared with thediabetic untreated group after 3 weeks of treatment.

DISCUSSION

In this article reviews that Latakaranja (Caesalpinia crista Linn.) is used for centuries in Ayurvedic medicine for the treatment of various disease. It is known as fever nut because it is useful in many types of fever. It is also known as Stambhini, Vamihara, Pittaarshahara, Krumihara, Kushtaghana, Prahehajit. Apart of these, it is traditionally used in treatment of liver and spleen disorders. The traditional knowledge, medicinal uses, pharmacological and therapeutic applications of the plant.

Caesalpinia crista L. Described. It content active chemical constituent such as flavonoids, tannins, alkaloids and carbohydrates and many useful compounds for treatment of various diseases.

CONCLUSTION

The evidence presented in this review has showed that Caesalpinia crista L. has a wide range of chemical constituent to be used in medical practice for the

treatment and management of various human diseases. Like wondhealing anti –diabetic, analgesic, hepatoprotective, cardioprotective etc.

REFERENCES

1. Sharma P.V. Dravya GunaVigyana, Chukhambha Bharati Academy, Varanasi, Reprint, 2006; (2).
2. Chunekar Krushnachandra, Dr. pande Gangasahay, Bhavprakashnighantu, Chaukhambabharti academy, Varanasi, 2025.
3. Vaidya Bapulal G, Nighantuadarshvol 1, Chaukhambabhartiacademy Varanasi, reprint, 2002.
4. Dr Shastri Ambikadatt, Mrhta Pranjivan Manikchand, ShushrutSamhita, Chikitsasthan Adhyaya 31 shlok no 5, Chaukhamba Sanskrit prakashan , Varanasi: reprint, 2026.
5. Patil KS. Wound healing activity of the seed kernels of Caesalpinia crista Linn. J Nat Remed, 2005; 5: 26-30.
6. Mandal S, Hazra B, Sarkar R, Biswas S, Mandal N. Assessment of the antioxidant and reactive oxygen species scavenging activity of methanolic extract of Caesalpinia crista leaf. Evid-based Complement Altern Med, 2011; ID 173768: 11.
7. Gill NS, Kaur R, Arora R, Bali M. Phytochemical investigation of Caesalpinia crista seed extract for their therapeutic potential. Res J Med Plants, 2012; 6: 100-107.
8. Ramesh BN, Girish TK, Raghavendra RH, Naidu KA, PrasadaRao UJS, Rao KS. Comparative study on antioxidant and anti-inflammatory activities of Caesalpinia crista and Centellaasiatica leaf extracts. J Pharm Bio Allied Sci, 2014; 6: 86-91.
9. Patil U, Sharma MC. Antiviral activity of lathakaranja(Caesalpinia crista L.) crude extracts on selected animal viruses. Global J Res Med Plants Indigen Med, 2012; 1: 440-447. Patil U, Sharma MC. Antiviral activity of lathakaranja. (Caesalpinia crista L.).
10. Crude extracts on selected animal viruses. Global J Res Med Plants Indigen Med, 2012; 1: 440-447.
11. Kumar A, Garg V, Chaudhary A, Jain PK, Tomar PK. Isolation, characterisation and antibacterial activity of new compounds from methanolic extract of seeds of Caesalpinia crista L. (Caesalpinaceae). Nat Prod Res, 2014; 28: 230-238.
12. Ramesh BN, Indi SS, Rao KSJ. Anti-amyloidogenic property of leaf aqueous extract of Caesalpinia crista. Neuroscience Letters, 2010; 475(2): 110-114.
13. Ali A, Rao NV, Shalam MD, Gouda TS, Kumar SM. Anticonvulsant effect of seed extract of Caesalpiniabonducella(Roxb). Int J Pharmacy Tech, 2009; 8: 51-55.
14. Shukla S, Mehta A, Mehta P, Vyas SP, Shivaprasad HN. In vivo immunomodulatory activities of the aqueous extract of bonduc nut Caesalpiniabonducella seeds. Pharm Biol, 2010; 48(2): 227-230.
15. Wadkar GH, Mulani S, Pathan A, MohiteS. In-vitro anthelmintic activity of Caesalpiniabonducella (Linn). Flemleaves. J Pharmacy Research, 2010; 3: 926-927.
16. Shukla S, Mehta A, John J, Mehta P, Vyas SP, Shukla S. Immunomodulatory activities of the ethanolic extract of Caesalpiniabonducella seeds. J Ethnopharmacol, 2009; 125(2): 252-256. Al-Snafi AE. The pharmaceutical importance of Althaeaofficinalisand AlthaearoseaA Review. Int J PharmTech Res., 2013; 5(3): 1387-138.