

## An overview on Latakaranja(Cisalpinia crista) with special reference to Ayurvedic and modern aspect

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### ABSTRACT:

Cisalpinia crista commonly known as Latakaranja, It is well-known medicinally usefull plant world wild. Various properties of C. crista,described in ancient text of Ayurveda like Santat Jwar (Malarial fever),Krumighna(anthelmintic), Granthi (tumor), Apara patana(removing the placenta), Shwas(respiratory diseases), Aamvata(rheumatism), Shothghna (Anti-inflammatory), Yakrutvikara (liver disorder) etc.

active compounds that are chemically diverced and structurally complex. Roots, stem, leaves and seeds are used as febrifugal, convulsion, anthelmintic, anti-inflammatory, analgesic activity, anti-oxidant, anti-tumor, anti-malarial properties.This review aims to provide a detailed overview of various properties and medicinal uses of Caesalpinia crista described in Ayurveda texts and modern science, along with pharmacological reports.

**Keywords:** Latakaranja, Caesalpinia crista, Phytochemistry, Traditional uses,Pharmacological actions.

### I. INTRODUCTION:

Ayurveda is a Traditional system of Indian medicine used over thousand of years for healing and well-being of body. Medicinal plants are the natures gift to human being to help them to persue a disease- free healthy life. Treatmentsin Ayurveda are given to cure the body also to maintain its homeostasis. This can be achieved with the help of numerous medicinal plants mentioned in ancient samhitas. Caesalpinia crista Linn. commonly known as Latakaranja of family Fabaceae is moderately size deciduous tree, growing throughout the deciduous forest of India. Roots, Leaves, Fruits, Seeds, are useful parts of Caesalpinia crista which are admistrated in Treatment of many diseases like Infections, Jwar(Febrifugal),anthelmintic (krumi), periodic, tonic, colic, convulsion, leprosy and palsy and also used to treat pneumonia, skin diseases, swelling, pulmonary tuberculosis, uterine stimulant and to cleanse the uterus<sup>[1]</sup>. This review article about to study the pharmacology activity by its chemical constituent in various disorders.

**Botanical Name:** Caesalpinia crista Linn.

**Synonyms:**

Synonyms	M.N <sup>[2]</sup> <sub>1</sub>	R.N <sup>[3]</sup>	Sh.N <sup>[4]</sup>	SH.N <sup>[5]</sup>	D.N <sup>[6]</sup>	A.N <sup>[7]</sup>	So.N <sup>[8]</sup>	K.N <sup>[9]</sup>	P.N <sup>[10]</sup>	Bp.N <sup>[11]</sup>
1.Angarvalli	+		+	+	+					
2.Karanj				+			+		+	
3.Karanji	+									
4.Kalimar				+			+			
5.Kantaki									+	

6.Kantphal		+							
7.Kantakikaranj								+	+
8.Kaktundi			+				+		
9.Kaktikta	+					+			
10.Kuberaksha	+	+		+					+
11.Chirbilva			+		+	+			
12.Tiragandhika		+						+	
13.Dusparsha		+							
14.Dhanadaksha		+							
15.Prakirya			+		+	+		+	
16.Putikaranja		+	+			+			+
17.Vajraviraka		+							
18.Vallikaranja								+	
19.Latakarnja		+				+	+		+
20.vayasya	+								
21.Saurashtri							+		
22.Karbhandika								+	
23.Hastivaruni				+					

- 1.Kantakikaranja- Because it is a prickly shrub.
2. Kuberaksha – Its seeds resembles the size of eye.
3. Putikaranja, Vitapakaranja, Karanjiputika- Plant has foetid smell.
4. Latakarnja – A scandent shrub or a drug which similar property of Karanja but grows as a scandent shrub.
5. Dusparsha – Difficult to touch because of the presence of thorns on the plant.
6. Vajraviraka – Seeds are head like that of diamond.
7. Kantaphala – Fruits with wiry prickles.
8. Ganadaksha – The colour of seed indicates the cornea of a race who are rich.
9. Angarvalli – Creeper which is red in colour like burning coal.

**Vernacular Name:**

**English:** Teri pods, Fever nut; **Hindi:** Katukranja, Karanjava; **Marathi:** Sagargoti, Gajra,Kanchak;

**Sanskrit:** Putrakaranja ; **Kannada :** Gujugu, Gaduggu; **Malayalam :** Aryaveppu; **Tamil :** Kalarkodi, Kalichikai**Telugu :** Guchepikkakachkai, Gachakaya; **Gujarati :** Kanchaki, Kankachia; **Konkani:** Vakeri; <sup>[12]</sup>

**Raspanchaka:**<sup>[13]</sup>

1. Rasa- Tikta, Kashaya
2. Virya- Ushna
3. Vipak- Katu
4. Doshagnata- It balances all the tridoshas.
5. Guna- laghu, Ruksha

**Part used-** RootBark, Leaves, Seeds.

**Doses-** 1. Powder- 1 to 3 gm.

2. Juice- 10 to 20 ml

**Formulation-** Kuberakshavati, Ayush 64, AnthrakutharamGulika, HimasagaraTailam, Ayaskriti, Vishamjwaraghnivati.

**Traditional Use:**

Latakaranja used in Shula (Pain), Shotha (Inflammation), Arsha (haemorrhoids), Shwasa (Respiratory diseases), Kushtha (Skin disease), Aamvata (Rheumatic fever), Gulma, Kasa (cough), Meha (Diabetes mellitus), Sandhigatvata (osteoarthritis), Vishamjwar (Typhoid fever), Santatjwara (malarial fever), Sutikajwara (Post partum fever), Udarshula (abdominal pain), Raktaatisar (diarrhea), Yakritpliharoga (liver, spleen disorder), Krimi (worms), Anartava (dysmenorrhea)<sup>[13]</sup>

1. Bark of seed kernels and black pepper powder mixed with honey and make small balls. Take one ball each per day which is useful to treat the PCOS.
2. It is useful in malarial fever, shothyuktajwara.
3. It is very useful in treating skin diseases.
4. Used in treating piles and haemorrhoids.
5. Paste applied over the painful swelling.
6. For massage in Aamvata and Sandhivatlatakaranj oil is used.
7. In Agnimandya, shula, pravahika, yakrutvrudhi, arsha, vatajshulalatakaranj given with hing and rock salt.
8. Seed bark used in Atisar, Grahani, and Pravahika.
9. Seed pulp is used as contraceptive.
10. In leucorrhoea seed bark is used.
11. For ovulation in female seed powder is used.

#### Habitat:

The plant grows all over the India especially in sea coast and in many forests and hills. It is frequently found around the marshy land, plain land.<sup>[12]</sup>

#### Taxonomy:

- Kingdom: Plantae
- Phylum: Magnoliophyta
- Class: Angiospermae

- Order: Fabales
- Family: Fabaceae
- Genus: Caesalpinia
- Species: Crista<sup>[12]</sup>

#### Morphology: <sup>[14]</sup>

Latakaranja plant is prickly shrub or woody vine reaching a length of 10 mt in height.

#### 1. Macroscopic:

**Leaves-** The plant has large bipinnate leaves, leaflet are present in 2-3 pairs, leaves are ovate or elliptic in shape, with upper surface shining and lower surface dull. The leaves are 30-60 cm long, petioles are prickly; stipules a pair of reduced pinnae 6-8 pair 5-7.5 cm long, with a pair of hookstipulary spines at the back. Leaflets have 6-9 pairs 2-3.8 by 1.3-2.2 cm, membranous, elliptic-oblong, obtuse, glabrous above, and more or less puberulent beneath.

**Flowers –** flowers are fragrant, yellow, with axillary and terminal racemes inflorescence combined into a 20-40 cm long panicle. Flowers are dense long peduncled terminal supraaxillary racemes dense at the top, lax downwards, 15-25 cm long; pedicels very shorts in the bud, elongating to 5 mm calyx 6-8 mm long, fulvous hair lobes ovate, oblong and obtuse. Petals are oblanceolate and yellow colored.

**Pods –** The pods are greenish brown or dark brown to black in color, 5 cm long and usually one seeded. Pods shortly stalked, oblong, 5-5.7 by 4.5 cm, densely arm on the faces with wiry prickles.

**Seeds-** Seeds are black, orbicular to ovoid or reniform, flat, beaked. Seeds 1-2 in number, oblong, in shape, lead color, 1.3 cm long.

**Bark –** The color of the bark is black, branchlets are glossy, armed with recurved prickles





## 2. Microscopic:<sup>[14]</sup>

**A. Transverse section of root** – The root T. S. revealed the outlines like a cork with several layers of thin walled cells, flat, and polygonal parenchymatous cells followed by thin-walled epidermal cells. The cortex comprises of an elongated parenchyma cell containing starch grains. The phloem is consisting of sieve tube and bundle of fibres with calcium oxalate crystal. Entire central portion occupies by xylem with prominent vessels, biseriate medullary rays and pith.

**B. Transverse section of leaf** – T. S. showed characteristics like cork, phelloderm, cambium, phloem, xylem, epidermal cells, stomata, trichomes, fibres, vascular tissue, prismatic crystal and cluster of calcium oxalate crystals.

## Phyto Chemistry (Chemical Composition)<sup>[14]:</sup>

Flavonoids, tannins, proteins, alkaloids, phytosterols, saponins, coumarins, triterpenoids, caesalpins, 4-O- methyl myoinositol hydrate.

## Pharmacological activities:

- 1. Antimalarial activity** – This is known to be an effective herb in the treatment of malaria. It helps to manage the symptoms like moderate to severe chills, high fever, sweating, headache, vomiting, and diarrhea which are with malaria.<sup>(15)</sup>
- 2. Anthelmintic activity-** phase Anthelmintic activity of *Caesalpinia crista* were determined against the trichostrongylid nematodes of sheep. In vitro anthelmintic activity of crude aqueous methanolic extract was determined using mature *haemonchus contortus* and their eggs in adult motility assay and egg hatch test, resp. In vivo sheep was naturally infected with mixed species of gastrointestinal nematodes by

administering crude powder and methanolic extract in increases doses. This data shows *Caesalpinia crista* possess anthelmintic activity in vitro and in vivo.<sup>(16)</sup>

- 3. Anti-amyloidogenic** – It is evidence that *Caesalpinia crista* leaf aqueous extract has anti-amyloidogenic potential. this study focused on ability of *Caesalpinia crista* leaf extract on the prevention of (1)the formation of oligomers and aggregates from monomers (phase1: AB + extract co-incubation); (2) the formation of fibrils from oligomers (phase2: extract added after formation of oligomers); and (3) disaggregation of preformed fibrils (phase 3: aqueous extract added to matured fibrils and incubated for 9 days) As amyloid beta is the major etiological factor implicated in Alzheimers disease, the recent studies aimed to decrease levels or prevention of amyloid beta aggregation which are the major targets for therapeutic intervention. The aggregation kinetics was monitored using thioflavin – T assay and transmission electron microscopy. The result showed that *C. crista* aqueous extract could able to inhibit the amyloid beta aggregation from monomers and oligomers and also able to disaggregate the performed fibrils.<sup>(17)</sup>
- 4. Contractile activity-** Contractile activity studied in pregnant rat myometrium preparation of uterus. The increased contractile force by leaf extract of *C. bonduc* were compared with acetylcholine obtained contraction. Contraction induced by acetylcholine on uterine smooth muscle was able to elicit contraction in calcium-free solution containing EDTA. These shows

- capability of herb to contract uterine smooth muscle.<sup>(18)</sup>
5. **Antifeedant activity** – The noctuid *Helicoverpa armigera* (Hubner) is polyphagous pest and attacks over 200 crop species in India. *C. crista* seed extracts were investigated in the laboratory against *Helicoverpa armigera* (Hubner).<sup>(19)</sup>
  6. **Immunomodulatory activity**-The evaluation of immunomodulatory potential by oral administration of ethanolic seed extract of *C. crista* (200-500mg/kg) evoked a significant increase in percent neutrophil adhesion to nylon fibers. It also showed that the dose dependent increase in antibody titer values, and potentiated the delayed type hypersensitivity reaction induced by sheep red blood cells.<sup>(20)</sup>
  7. **Nootropic activity** –This study is undertaken to assess the potential of dried seed kernels of *C. crista* extract as learning and memory enhancer. In mice, amnesic effect of scopolamine was ameliorated using aqueous extract of dried seed kernels of *C. crista*. Using the radial arm maze and Morris water maze paradigm as the exteroceptive behavioral models, aqueous extract of dried seed kernels of *C. crista* is compared with standard drug piracetam in scopolamine induced amnesia in mice. Morris water maze model for learning and memory retention was carried out with the statistical analysis.<sup>(21)</sup>
  8. **Antiviral activity**-Aqueous extract of Latakaranja showed complete inhibition on paramyxovirus while showing highly significant inhibitory activity on orthomyxovirus.<sup>(22)</sup>
  9. **Hepatoprotective activity** – Methanolic extract of *C. crista* is reported as exert hepatoprotective activity by upregulating antioxidant enzymes and chelating iron to excrete from the body. It may be seen as an effective hepatoprotective agent in liver diseases associated with iron overload.<sup>(23)</sup>
  10. **Anti-diabetic Activity**-Ethanolic and aqueous seed extract of *C. crista* have shown antidiabetic activity in streptozotocin induced diabetes in 2 days old pups models.<sup>(24)</sup>
  11. **Antipyretic activity** -The ethanolic and aqueous seed extract of *C. crista* was evaluated in experimental animal models using Brewer's yeast induced pyrexia in rats, TAB- vaccine induced pyrexia in rabbits and boiled milk induced pyrexia in rabbits model. The ethanolic extract of the plant was nearly equal to that of standard paracetamol and showed significant antipyretic activity.<sup>(25)</sup>
  12. **Anticancer activity** –A novel cassane type diterpenes compound isolated from *C. crista* has evaluated for antitumor activity against T47D human cell line, DU145 prostate cancer cell line, it showed significant inhibitory activity.<sup>(26)</sup>
  13. **Neurodegenerative disorder** –*C. crista* can improve disorder like dementia. Traditional extract of the plant have been used as stress relaxation health drink and health tonic for rheumatism and backache. The extract of *C. crista* have a diversity of bioactivities namely, anti-inflammatory, anthelmintic, memory enhancer, free radical scavenging activity etc.<sup>(26)</sup>
  14. **Anti bacterial activity** –The *C. crista* leaf methanolic extract exhibited the zone of inhibition at 250 and 500 µg/ disc, respectively, against various pathogenic bacterial strains while the MIC values ranged from 62.5 to 500 µg/ml.<sup>(27)</sup>
  15. **Wound healing activity** – The wound healing activity of different extract and fractions of seed kernels of *C. crista* was investigated in excision, incision and dead space wound models in albino rats. Ethyl acetate fraction has shown the significant wound healing activity in all models as compared to alcoholic extract and other fraction.<sup>(28)</sup>

## II. CONCLUSION:

Caesalpinia cristata possesses numerous biological activities proved by many experimental studies. *C. crista* having Tikta, kashaya rasa, Katuvipaka and ushnavirya so it is used to treat Tridoshjanya diseases. Due to its Ushnavirya it helps in artavajanan so useful to treat PCOS. While going through Samhita and Nighantus most of common indications found are for Agnideepan (Appetizer), Aartavjanaan (Ovulation), Stambhan, Garbhnirodhak (contraceptive), Vranropan (wound healing), Shothahar (reduces swelling), Shul (pain), Pravahika (dysentery), yakrutvruddhi (hepatomegaly), Arsh (haemorrhoids), Atisar (diarrhea), Grahani (IBS), Aamvat (rheumatoid fever), Sandhivat (osteoarthritis), shwas (asthma),

kas(cough), Raktdushti(impure blood), Vatakaphajjwar, VishamJwar(phlegm fever). Research studies provided scientific validation for certain activities like Antipyretic, Antimalarial, Nootropic activity, Immunomodulatory, wound healing, Anti-diabetic, Anti-cancerous, Hepatoprotective, Anthelmintic, Anti – Amyloidogenic activity.

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