

A Medicinal Potential worth of *Caesalpinia bonducella*

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Abstract: The welfare of people all around the world is shaped in large part by herbal remedies. In medicine, healing plants are used to treat ailments that affect a person as well as a potential way to keep them healthy. One of the pans tropical leguminous scandent plants, *Caesalpinia bonduc* is thought to have scientific uses by many researchers and has been used as a source of medicine by locals for a very long time. The *Caesalpinia* genus is well-organized, including *Caesalpinia bonducella*. Then, it is referred to as *C. crista* Linn and *C. bonducella* Flem. Common names for it include Fever Nut, Bonduc Nut, and Nicker Nut. The plant is available in the tropical countries of Bangladesh, Sri Lanka, Myanmar, Vietnam, and China. Every major chemical component of the *Caesalpinia bonduc* plant is present, including isoflavones, steroidal saponin, fatty acids, hydrocarbons, amino acids, phenolics, and phytosterols. The objective of the current study oversimplifies the chemical components and pharmacological and therapeutic uses of *Caesalpinia bonduc*.

Keywords: *Caesalpinia bonducella*, medicinal, Potential worth, Phytochemistry and Pharmacological potential.

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Review Paper

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INTRODUCTION

To maintain human health, medicinal plants are essential. Both synthetic and conventional herbal medications are made from natural ingredients [1]. In some places of the world, they continue to serve as the primary healthcare system [2]. The use of plants in traditional Indian medicine is based on local empirical knowledge of their therapeutic qualities. One of the pans tropical leguminous scandent plants, *Caesalpinia bonduc* is thought to have scientific uses by many researchers and has been used as a source of medicine by locals for a very long time. The *Caesalpinia* genus is well-organized, including *Caesalpinia bonducella*. Then, it is referred to as *C. crista* Linn and *C. bonducella* Flem. It is frequently referred to as Fever Nut, Bonduc Nut, and Nicker Nut [3]. *Caesalpinia bonducella* (roxb.) is primarily used in the traditional Indian medical system known as Ayurveda for its antimalarial, anthelmintic, calming, antiperiodic, and





antipyretic properties. It is also used for a variety of infections including spasms, paralysis, leprosy, skin conditions, hydrocele, orchitis, and analogous nervous grumbles. It is also known to have an antibacterial, anticancer, antioxidant, and antidiabetic potential [4].



Fig 1: *Caesalpinia bonducella* whole plant

Botanical description [5]	Synonyms [6]	Geographical description [7]
Kingdom: Plantae Order: Fabales Family: Caesalpineaceae Genus: Caesalpinia Species: <i>C. bonducella</i>	Sanskrit: Kakachika, Karanja and Latakaranja Hindi: Kathkaranj Bengali: Nata English: Fever nut Urdu: Akitmakit French: Bois canic	An armed liana, up to 15 m in height, found up to an altitude of 1,000 m in Himalaya and wild throughout the plains of India and; it is also found in deltaic region of western, eastern and southern India 1. Found particularly along the seacoast throughout the hotter parts of India, Burma and Sri Lanka.

Pharmacognostical Studies [8, 9]**Macroscopic Characteristics**

Leaves	Leaflet	Flower	Seed
<p>Leaves are with large, leafy, branched, basal appendages; 30-60 cm. long; petioles prickly; stipules a pair of reduced pinnae at the base of the leaf each furnished with a long mucronate point; pinnae 6-8 pairs, 5-7.5 cm. long, with a pair of hook stipular spines at the base. Main leaf axis armed with stout, sharp, recurved spines, divided into 5-8 pairs of secondary branches.</p>	<p>Leaflets 6-9 pairs, 2-3.8 by 1.3-2.2 cm, membranous, elliptic-oblong, obtuse, strongly mucronate, glabrous above more or less puberulous beneath; petioloules very short; stipels of short hooked spines.</p>	<p>Flowers in dense (usually) long-peduncled terminal and supraaxillary racemes dense at the top, lax downward, 15-25 cm. long; pedicels very short in bud, elongating to 5 mm. in flower and 8 mm. in fruits, brown-downy; bracts squarrose, linear, acute, reaching 1 cm. long, fulvous hair. Calyx 6-8 mm. long, fulvous hairy; lobes obovate-oblong, obtuse. Petals oblanceolate, yellow.</p>	<p>Seed coat is hard, glossy, and greenish to ash grey in colour. And is traversed by circular and vertical faint markings of the cracks, forming uniform rectangular to squarish rectulations all over the surface. Seeds 1-2, oblong, lead-colored, 1.3 cm. long. A raised hilum with remains of the stalk lies in the centre of the dark spot, at the narrow edge of the seed. Adjacent to the hilum, lays a faint coloured circular to oval elevated micropyle. Testa is about 1-1.25 mm in thickness and is composed of three distinct layers, the outermost - thin and brittle, the middle one - broad, fibrous and dark - brown and the innermost - white and papery. The seed is exalbuminous. The kernel surface is furrowed and ridged, hard, pale yellowish - white, circular to oval, flattened and about 1.23- 1.75 cm. in diameter. Taste is very bitter and odour is nauseating and unpleasant.</p>
			

Phytochemistry

Phytochemical screening of methanolic extracts revealed the presence of alkaloids, saponins,

flavonoids, tannins and steroids [10]. The methanol extract of *C. bonducella* leaves containing flavonoids and triterpenoids, the antioxidant defence system has

been evaluated. The phenolic compound has several functions such as singlet and triplet oxygen quenchers, free radical scavengers, peroxide decomposers, enzyme inhibitors and synergists [11]. The qualitative analysis has shown the presence of phenol in all the extracts performed other than the hexane for *C. bonducella*.

Pharmacological studies [12-14]

Many Pharmacological activities of *Caesalpinia bonduc* have been reported treatment of tumors, inflammation antiviral, antiasthmatic, antiamebic, and antiestrogenic and liver disorders, antipyretic, antidiuretic, anthelmintic, antibacterial, anticonvulsant, antiviral, antiasthmatic, antiamebic, and antiestrogenic and other activities.

Previous work done on <i>Caesalpinia bonducella</i>	
Pharmacological Potential	Description
Anti-diarrheal activity	Anti-diarrheal activity of the nuts of <i>Caesalpinia bonducella</i> Flem [15].
Antibacterial activity	Antibacterial activity of <i>Caesalpinia Bonducella</i> seeds [16].
Antidiabetic Activity	Advanced studies on the hypoglycemic effect of <i>Caesalpinia bonducella</i> F. in type 1 and 2 diabetes in Long Evans rats [17].
Antitumor Activity	Antitumor Activity and Antioxidant Status of <i>Caesalpinia bonducella</i> Against Ehrlich Ascites Carcinoma in Swiss Albino Mice [18]
Anti-inflammatory, antipyretic and analgesic potential	Studies on anti-inflammatory, antipyretic and analgesic properties of <i>Caesalpinia bonducella</i> F. seed oil in experimental animal models [19].
Immunomodulatory Potential	Immunomodulatory activities of the ethanolic extract of <i>Caesalpinia bonducella</i> seeds [20].
Antifilarial activity	Antifilarial activity of <i>Caesalpinia bonducella</i> against experimental filarial infection [21].
Antioxidant activity	Antioxidant activity and total phenolic content of ethanolic extract of <i>Caesalpinia bonducella</i> seeds [22].
Anxiolytic Activity	Anxiolytic Activity of Seed Extract of <i>Caesalpinia Bonducella</i> (Roxb) In Laboratory [23].

Traditional and Recent uses [24, 25]	
Root bark	The root bark is useful for treating tumours and for removing the placenta after childbirth. Numerous characteristics of root bark include amenorrhea, intestinal worms, cough, anthelmintic, and febrifuge.
Twigs and leaves	Twigs and leaves are frequently used to treat hepatic, inflammatory, and tumour issues. They have also been used to treat toothaches. Smallpox and elephantiasis have traditionally been treated with leaves and leaf juice.
kernels Extract	Sugar and Kernel powder with goat milk gives countless results in disorders of liver. Roasted kernels Extract used in asthma. Kids incapable to process parent's milk were specified the distillate of the seed powder or kernels together with spirit, nectar, and salt to catch great impact as a stomach. Kernel adhesive gives alleviation from swellings and boils.
Seed	The seed is demanded to be anthelmintic aperient, styptic, and used for irritations, valuable in hydrocele, colic, sickness, leprosy and skin diseases.

CONCLUSION

The prickly shrub *Caesalpinia bonducella* L. is found all over the world, but especially in India and Sri Lanka. It is a very valuable plant that is used in traditional system of medicine because all parts of the plant have different properties. The plant has been reported to have antinociceptive anti diarrhoeal antidiabetic adaptogenic anthelmintic antiestrogenic antimalarial antispasmodic. The presence of saponins and triterpenoids has been found in seeds of *Caesalpinia bonducella*. The current review article deals with therapeutic efficacy of the *Caesalpinia bonducella* extensively used in Indian System of Medicine has been established through modern testing

and evaluation (pre-clinical and clinical trials) in different disease conditions. The present review article revealed that medicinal property of *Caesalpinia bonducella* is attributed to saponin and triperpenoids present in the plant. It could be concluded that *Caesalpinia bonducella* are rich source of compounds, interesting chemical structures and various biological active products.

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