



**Review Article**

**A SHORT REVIEW ON THERAPEUTIC USES OF *COUROUPITA GUIANENSIS*  
AUBL**

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**ABSTRACT**

Medicinal plants are used as traditional form of providing relief to several diseases. Presently, millions of adults are depending on medicinal plants for their primary health care needs. *Couroupita guianensis* (Family: Lecythidaceae; Brazil-nut family), is an ever green tree native to tropical northern South America, Southern Caribbean and India. In India, it has religious significance and can be seen in *Shiva* temples and known as Mallikarjuna flowers in Telugu. Its common name includes Ayahuma, cannon-ball tree (cannon-ball-like fruits). It is very rare and lesser exploited from ethno pharmacology point of view. This review will be helpful to create interest towards *Couroupita guianensis* and may be useful in developing new formulations with more therapeutic and economical value.

**KEY WORDS:** *Couroupita guianensis*, Lecythidaceae

**INTRODUCTION**

Medicinal plants have been of age long remedies for human diseases because they contain components of therapeutic value <sup>1</sup>. Plants are used in modern medicine where they occupy a very significant place as raw material for important drugs <sup>2</sup>. Plants are considerably useful and economically essential. They contain active constituents

that are used in the treatment of many human diseases. Plants are rich sources of ecologically developed secondary metabolites, which are potential remedies for different ailments. Extreme interest in plants with microbial activity has revived as result of current problems such as resistance associated with the use of antibiotics obtained from micro organisms<sup>3</sup>.

*Couroupita guianensis* is a large deciduous evergreen tree growing to a height of 20 meters. Leaves are alternate, oblong-ovate, up to 20 cm long, entire to slightly serrate and hairy on the veins beneath. Inflorescence is racemose, arising from the trunk and other large branches. Flowers are reddish with a yellow tinge on the outside, fragrant, with stamens borne on an overarching androphore. Fruit is a large, reddish-brown globose, 15 to 24 cm, with a woody capsule, and each containing 200 to 300 seeds.

#### **BOTANICAL STUDY**

Kingdom: *Plantae*  
Subkingdom: *Tracheobionta*  
Division: *Magnoliophyta*  
Class: *Magnoliopsida*  
Order: *Lecythidales*  
Family: *Lecythidaceae*  
Genus: *Couroupita*  
Species: *Couroupita guianensis* Aubl.



**Fig 1:** Flowers of *Couroupita guianensis*

#### **CHEMICAL CONSTITUENTS**

Various part of the tree has been reported to contain volatile oils, keto-steroids, glycosides, couroupitone, indirubin, isatin and phenolic substances.

#### **TRADITIONAL USES**

The Cannonball Tree possesses antibiotic, antifungal, antiseptic and analgesic qualities. The trees are used to cure colds and stomach aches. Juice made from the leaves is used to cure skin diseases, and shamans of South America have even used tree parts for treating malaria. The inside of the fruit can disinfect wounds and young leaves ease toothache<sup>4</sup>.

#### **PHARMACOLOGICAL ACTIVITIES**

##### **Antimicrobial and Wound healing activity**

Umachigi et al reported the wound healing activity in ethanolic extract of Whole plant of *Couroupita guianensis* (CGEE) (barks, leaves, flowers and fruits) on excision and incision wound models. Various parameters like epithelization period, scar area, tensile strength and hydroxyproline measurements along with wound contraction, were measured to evaluate the effect of CGEE on wound healing. Nitrofurazone ointment was used as a positive control. The antimicrobial activity of CGEE was studied against Gram positive (*Staphylococcus aureus*) and Gram Negative Bacteria (*Escherichia coli*,

*Pseudomonas aeruginosa* and *Klebsiella pneumoniae*) compared to erythromycin and tetracycline. Moderate activity was observed against all organisms<sup>5</sup>.

#### **Anthelmintic activity**

Rajamanickam et al reported the anthelmintic activity in chloroform, acetone and ethanolic flower extracts of *Couroupita guianensis* in *Pheretima posthuma*. The activity was assessed by worm motility assay which involved determination of time of paralysis and death of worms. The alcoholic extract was found to be more effective than the chloroform and acetone extract and the activity was comparable with the standard drug Piperazine citrate<sup>6</sup>.

#### **Immunomodulatory activity**

Pradhan et al reported the immunomodulatory activity in methanol extract of *Couroupita guianensis*. The results of methanolic extract showed the significant dose related increase in the hyper sensitivity reaction in 100 and 200mg/kg. The successive methanol extract was found to stimulate cell mediated and anti body immune response in rats<sup>7</sup>.

#### **Antinociceptive activity**

Mariana et al reported the antinociceptive effects of crude ethanol extract (CEE) and its fractions of *Couroupita guianensis* leaves in three analgesic models (acetic acid-induced contortions,

tail flick, and hot plate). All fractions showed antinociceptive activity in the tail flick model, being the hexane and ethyl acetate the most potent and long acting fractions. In the hot plate method the highest effect observed was at the dose of 100 mg/kg from all fractions. Administration of naloxone inhibited the antinociceptive effect of fractions. Pre-treatment of mice with atropine reduced the antinociceptive activity of CEE and its fractions, the exception being the dichloromethane fraction. Mecamylamine didn't inhibit the effect of dichloromethane fraction. Naloxone reduced the anti-hyperalgesic effect of all fractions, but the most prominent effect was observed in the antinociceptive activity caused by CEE and butanol fraction<sup>8</sup>.

#### **CONCLUSION**

The extensive literature survey revealed that *Couroupita guianensis* is important medicinal plant with diverse pharmacological spectrum. The plant shows the presence of many chemical constituents which are responsible for varied pharmacological and medicinal property. The evaluation needs to be carried out on *Couroupita guianensis* in order to uses and formulation of the plant in their practical clinical applications, which can be used for the welfare of the mankind.

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