

**EXPLORING THE MEDICINAL MARVELS OF *NEOLAMARCKIA CADAMBA*: A  
COMPREHENSIVE REVIEW ON BOTANY AND PHARMACOLOGICAL PROPERTIES**Aboli Netragaonkar<sup>1\*</sup>, Dr. Padmaja Giram<sup>2</sup> and Mahesh Manke<sup>3</sup><sup>1</sup>Research Scholar, Channabasweshwar Pharmacy College, Latur.<sup>2</sup>HOD of Pharmacology, Channabasweshwar Pharmacy College, Latur.<sup>3</sup>Assistant Professor, Channabasweshwar Pharmacy College, Latur.**\*Corresponding Author: Aboli Netragaonkar**

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**ABSTRACT**

In the family Rubiaceae, *Neolamarckia cadamba* is a member. In a variety of countries, including China, India, and Egypt, this ayurvedic therapy is employed for therapeutic purposes. Ayurvedic medicine called *Neolamarckia cadamba* has been mentioned in several Indian medical books. In this communication, we explored *Neolamarckia cadamba*'s phytochemistry as well as its usage in the treatment of diabetes, diarrhoea, fever, inflammation, haemoptysis, cold, vomit, infections, wounds, debilitation, snake bite, and antibacterial activity. The primary components of the plant include triterpenes, triterpenoid glycosides, flavonoids, saponins, indole alkaloids, cadambine, cadamine, isocadambine, and iso dihydrocadambine. This page discusses the *Neolamarckia cadamba*'s pharmacological effects, toxicological investigations, and medicinal characteristics.

**KEYWORDS:** *Neolamarckia cadamba*; Pharmacological action; antioxidant; botanical description.**INTRODUCTION**

Ayurvedic herbs have been utilised for medical reasons to treat illnesses for hundreds of years. Ayurveda medicine is deeply rooted in India and the countries that surround it. Even before the mediaeval ages, when people had little knowledge of science, it was already being grown.<sup>[1]</sup> *Neolamarckia cadamba* Synonymous with "A. indicus," *Anthocephalus cadamba* (Family: Rubiaceae), sometimes known as "Cadamba," enjoys a privileged place in Ayurveda, an Indian traditional system of medicine. Also, it goes by the name Kadam. The tree is a medium to large sized deciduous tree with barrel-shaped branches and an adjusted crown<sup>[2]</sup>, growing to a height of 20 to 30 m and a width of about 2-3 m. The plant is used to cure fever and irritation because it is thought to possess tonic, potent, sweet, astringent, febrifugal, moderating, stomach-related, carminative, diuretic, expectorant, and antiemetic effects. Moreover, it demonstrates some pharmacological actions, including those that are anti-inflammatory, anti-diabetic, antioxidative, antimicrobial, anthelmintic, and anti-hepatotoxic.

**MATERIAL AND METHODS****1. Plant Collection**

- *Neolamarckia cadamba* specimens were collected from diverse locations representing different ecological regions.
- Collection sites included forests, botanical gardens, or other authorized areas with permission from relevant

authorities.

- Care was taken to ensure representative sampling of different plant parts, including leaves, flowers, fruits, and bark.
- Specimens were collected during appropriate seasons and at optimal stages of growth to capture relevant morphological features.

**2. Plant Identification**

- Collected specimens were compared with existing taxonomic literature, identification keys, and expert consultation to confirm their identity as *Neolamarckia cadamba*.
- Morphological characteristics such as leaf shape, venation, fruit morphology, and flower structure were meticulously observed and documented.
- Relevant botanical vouchers and references were used to validate the identification process.

**3. Specimen Preparation**

- Freshly collected plant specimens were carefully handled to minimize damage and preserve their morphological features.
- Leaves, flowers, fruits, and bark were collected separately and cleaned to remove any dirt or debris.
- Large leaves or other plant parts were cut into manageable sizes while preserving their original shape.
- Specimens were pressed between absorbent sheets

and dried using a plant press or other suitable drying methods.

- Proper labeling with unique identification numbers, collection dates, location details, and collector information was assigned to each specimen.

**4. Herbarium Formation**

- Dried plant specimens were mounted on herbarium sheets using archival-quality adhesive.
- The sheets were of standard size and made of acid-free, durable material to ensure long-term preservation.
- Information about each specimen, including botanical name, collector's name, collection location, date, and other relevant data, was recorded on the herbarium sheets.
- Duplicate specimens were prepared for deposition in multiple herbaria or for exchange with other botanical institutions to enhance accessibility and research collaboration.
- The herbarium sheets were organized systematically according to established herbarium protocols, such as taxonomic order or a designated numbering system.
- The prepared herbarium specimens were appropriately stored in cabinets or archival boxes within a controlled environment to prevent damage from pests, humidity, and light.

**PLANT DESCRIPTION**

The *Neolamarckia cadamba* is a larger tree, growing 20–45 metres tall and 100–160 cm in diameter at the base. Its bole is cylindrical and has a straight crown. Kadam might start to bloom at four years old. From July to December, it blooms in India. All flowers are heterosexual.<sup>[3]</sup>

❖ **Bark**

Unlike the older trees, which have tougher bark, young trees have smooth, light bark. To treat skin infections, the bark is employed. For the treatment of hoarseness of the throat (zeera), the bark of *Neolamarckia cadamba* is mixed with water, honey, and cumin. The affected person receives it orally. Taking a shower or bath in

fresh water helps to maintain the skin healthy, smooth, and infection-free.<sup>[4]</sup>

❖ **Leaf**

Glossy green leaves are opposite, simple, ovate to elliptic, more or less sessile to etiolate, and 15–50 × 8–25 cm in size. Clustered inflorescence with terminal globose heads lacking bracteoles and sub sessile fragrant orange or yellow flowers; Flowers are bisexual and 5-merous, and have a funnel-shaped calyx tube and a gamopetalous saucer-shaped corolla with a narrow tube and slender lobes that imbricate in the bud. On the corolla tube are five stamens with short filaments and basified anthers. With a spindle-shaped stigma and style that protrude, the inferior ovary is binocular, occasionally 4-locular, and has a spindle-shaped ovary. Fruits can multiply by growing in number to four hollow or solid structures in their upper sections. Trigonal or otherwise irregular seeds.

❖ **Flower**

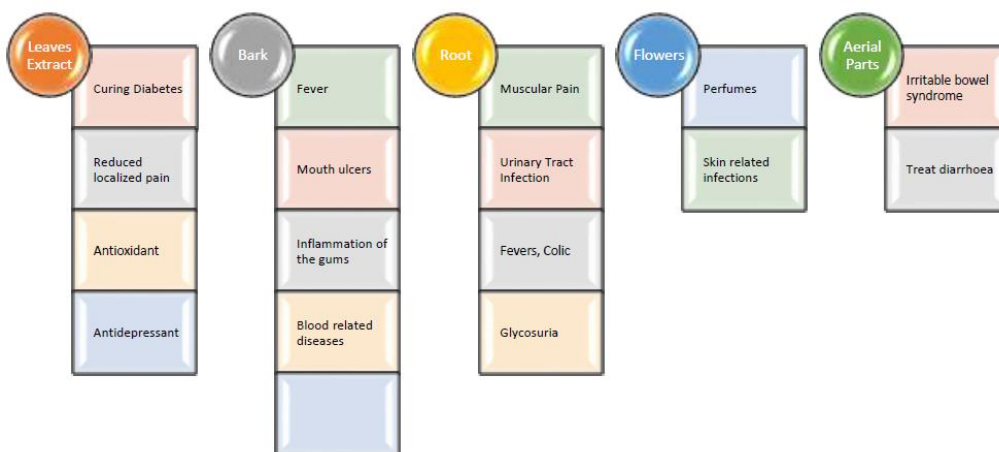
Small, orange-colored blooms are arranged in a globose head that has a diameter of 3–5 cm. The five-merous, bisexual flowers have a short tube-shaped calyx and a gamopetalous saucer-shaped corolla with narrow lobes that imbricate in the bud. Anthers are basifixed, there are five stamens, and they are attached to the corolla tube. Ovary inferior, binocular, occasionally four-locular in the upper portion, with a protruding stigma and style in the shape of a spindle. Plants are created from flowers.

❖ **Fruit**

Fruits are plentiful and have four solid or hollow structures on their upper sections. When the fruit is ripe, it is meaty, orange, globose, 5-7 cm in diameter, and yellow.<sup>[5]</sup>

✓ Applications for *Neolamarckia cadamba* in Medicine.<sup>[6-9]</sup>

Figure No. 01 displays *Neolamarckia cadamba* 's historical therapeutic use.

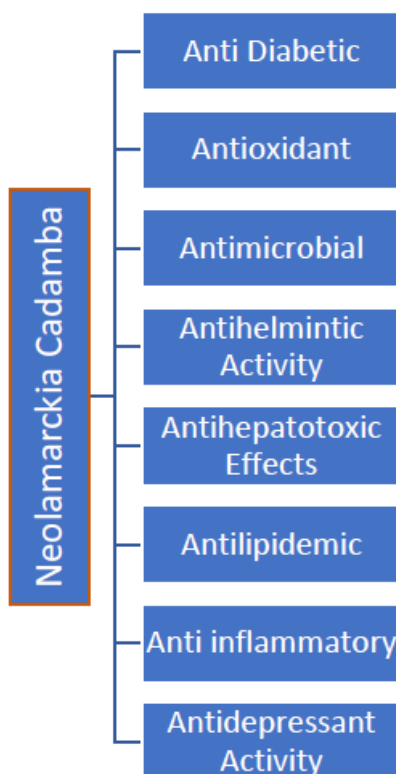


**Figure 01: Neolamarckia cadamba 's historical therapeutic use.**

## MEDICINAL USES OF NEOLAMARCKIA CADAMBA

*Neolamarckia cadamba's* pharmaceutical properties

The following are briefly addressed below and depicted in figure No. 02 as the pharmacological activities of *Neolamarckia cadamba*:



**Figure 02. Pharmacological activities of *Neolamarckia cadamba*.**

### ❖ Anti-diabetic

Both normoglycemic and alloxan-induced diabetic Wistar rat-skinned rodents were treated with methanolic concentrate of *N. cadamba*, which has significant anti-diabetic effects. Methanol separates showed comparable blood glucose reduction to that of the standard drug glibenclamide and had a stronger effect than watery concentrate.<sup>[10]</sup>

### ❖ Antioxidant

*Neolamarckia indicus* root extract reduced the age of superoxide anions and hydroxyl extremists, in under in vitro circumstances, both enzymatic and non-enzymatic frameworks. Root separation inhibited the enzymatic formation of OH' in the hypoxanthine-xanthine oxidase and Fe+2 arrangements, as well as the OH' intervened 2, 3-dihydroxybenzoate arrangements in a fixation-dependent manner. The *Neolamarckia cadamba* natural product hydro ethanolic extract reduced the levels of thiobarbituric corrosive receptive substances, a lipid peroxidation item, and increased the movement of the cell reinforcement chemicals, such as peroxidase and catalase, leading to a decrease in oxidative pressure in the alloxan-induced diabetic rat.<sup>[11]</sup>

Antioxidant effects may aid in preventing oxidative modifications of other important macromolecules, such as lipids and proteins, and Deferring various pathophysiological disorders along these lines.<sup>[12]</sup>

### ❖ Antimicrobial

Flavonoids, alkaloids, and terpenes are present in antimicrobial *Neolamarckia cadamba* isolates, and their presence may be responsible for limiting the growth of microorganisms.

Bruises, wounds, and ailments like throat irritation, eye contamination, and skin diseases have all been treated using leaves' antimicrobial properties, which have been exploited to great effect.<sup>[13]</sup>

### ❖ Anti-inflammatory

In terms of protecting human erythrocytes from damage, the methanolic concentrate of *Neolamarckia cadamba* organic products. The lysis of human erythrocytes caused by hypotonic arrangement and heat was almost identical in its ability to stabilise membranes to that of the commonly used drug acetyl salicylic acid.<sup>[14]</sup> The leaf methanol extract exhibited a significant layer-settling effect on human red blood cell film, and plant concentrates can provide significant protection against harmful elements and thus inspire relaxing characteristics.<sup>[15]</sup>

### ❖ Antilipidemic

Hyperlipidemic adults received strong doses of the antilipidemic *Neolamarckia cadamba* root and natural product separately. Male Charles Foster rodents, and both concentrations had a lipid-lowering effect as determined

by the inversion of plasma levels of total cholesterol, following the reactivation of the post-heparin lipolytic movement, phospholipids, and fatty material. Root extraction significantly reduced total cholesterol and fatty oil levels in a way that is superior to natural product removal, whereas organic product separation had better inversion of phospholipid.<sup>[16]</sup>

#### ❖ Antihepatotoxic

*Neolamarckia cadamba* has been suggested to be used for its hepatoprotective Activity due to the presence of chlorogenic acid (CGA) separate from *Neolamarckia cadamba* detected in mice at a different ratio and thus demonstrated a preferred liver defensive activity over silymarin (SM), in CCl<sub>4</sub> managed mice. One method for simulating liver damage is CCl<sub>4</sub>.<sup>[17]</sup>

#### ❖ Anthelmintic activity

*Neolamarckia cadamba*'s develop bark has been used in aqueous concentrations and extracts for its Night crawlers, tapeworms, and roundworms are all treated with anthelmintics.<sup>[18]</sup>

### CONCLUSION

Ayurvedic plants have recently proliferated all throughout the world, according to this review study. Even though *Neolamarckia cadamba* engages in a variety of conventional and pharmaceutical activities that support a number of biotechnological techniques, creative drug delivery studies, and toxicological investigations. To assure the plant's unrestricted use, the work should also be possible in this direction.

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