



The role of *Justicia adathoda* in Traditional Medicine - Review

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Abstract

*An extensive collection of cures for human problems has been made available by nature. Approximately 80% of people worldwide rely entirely or partially on traditional medicine for their basic care. As a result, during the past 20 years, there has been a significant increase in interest worldwide in the study and use of crude drugs due to growing awareness of the toxicity and side effects of synthetic drugs, their limitations in many therapeutic areas, their relatively high cost, and the fact that they are frequently out of reach for the average person. Since interest in herbal therapy has grown globally, standardizing herbal medications is currently the most desirable course of action. Many people use traditional remedies all throughout the world. Consequently Herbal remedies are becoming more and more significant economically. In order to determine the validity of commercial samples on the market and to identify adulterants or substitutes, pharmacognosy thus seems to be very valuable. *Justicia adathoda* is used to cure a variety of illnesses, and the number of medicinal formulations created by Vaidya's positively correlates with the number of disorders to be evaluated.*

Keywords: *Justicia adathoda*, natural product

Introduction

The medicinal shrub *Justicia adathoda*, sometimes called Malabar nut, adulsa, adathoda, vasa, or vasaka, is indigenous to Asia and is mostly found in areas ranging from Afghanistan to Indo-China. It is a member of the Acanthaceae family and has long been used in Unani and traditional Ayurvedic treatment. The plant is distinguished by its oppositely oriented, lance-shaped, bitter tasting. The plant is characterized by lance-shaped leaves, approximately 8–9 cm in length, which are oppositely arranged and have a bitter taste. The shrub grows well in seasonally dry tropical areas and usually has white flowers. Because of its medicinal qualities, certain components of *Justicia adathoda* are used in traditional medicine. In order to cure respiratory conditions like coughs, colds, bronchitis, and asthma, the leaves, roots, and flowers are processed into juices, powders, essential oils, and syrups. The quinazoline alkaloid vasicine, which has bronchodilatory, antioxidant, and anti-inflammatory qualities, is one among the plant's many phytochemicals. Standards for LGC Beyond its medicinal applications, *Justicia adathoda* plays a role in ecological management. It contributes to soil stabilization, ecological restoration, and phytoremediation by removing contaminants like chromium and mercury from wastewater. Additionally, its leaves enhance nitrogen content in compost, promote earthworm proliferation, and help suppress plant diseases, highlighting its potential for sustainable land management and integrated disease control. However, it's important to note that while the plant offers numerous benefits, it can also act as an invasive species in certain ecosystems, potentially suppressing native vegetation and leading to homogenization of plant communities. This dual nature underscores the need for sustainable utilization and conservation strategies for *Justicia adathoda*.

Classification of *Justicia adathoda*

- **Kingdom:** Plantae
- **Phylum:** Tracheophyta
- **Class** : Magnoliopsida
- **Order** : Lamiales
- **Family** : Acanthaceae
- **Genus** : *Justicia*
- **Species** : *Justicia adathoda*

Habit

It has long, opposing, climbing branches and usually reaches a height of 1.2 to 2.5 meters. Approximately 10 to 20 cm in length and 3.5 to 8 cm in breadth, the broad, lance-shaped leaves are placed oppositely. The plant bears thick, huge, axillary spikes of white or purple flowers.

Distribution

It is typically found in plains and lower Himalayan regions up to 1000 meters above sea level, where it grows well on well-drained soil in either full sun or partial shade. When dried, they smell like strong tea and have a harsh taste.

Therapeutic Uses

Respiratory Health

Justicia has long been used to treat ailments like asthma, chronic bronchitis, and cough. Alkaloids like vasicine, which have bronchodilatory and expectorant qualities and help clear respiratory passageways, are found in its leaves. The plant's extracts aid in the liquefaction of viscous sputum, which makes expectoration simpler and relieves acute bronchitis. Additionally, a traditional method of treating asthma has been to smoke dried Justicia leaves.

Antimicrobial Activity

Studies have demonstrated that extracts from *Justicia adathoda* possess significant antibacterial and antifungal activities. Methanolic and ethanolic extracts have shown effectiveness against bacterial strains like *Escherichia coli* and *Staphylococcus aureus*, as well as the fungal strain *Aspergillus niger*. These antimicrobial properties are attributed to the presence of bioactive compounds such as saponins, tannins, alkaloids, steroids, phenols, and flavonoids.

Anti-inflammatory and Analgesic Effects

Research indicates that leaf extracts of Vasaka inflammation and pain associated with various conditions, potentially due to the plant's antioxidant activity and ability to modulate oxidative stress.

Gastrointestinal Benefits: The juice extracted from Vasaka leaves has been used in traditional medicine to treat diarrhea and dysentery. Administering 2 to 4.

Chemical composition of *Justicia adathoda*

Alkaloids: *J. adathoda* main bioactive components are pyrroloquinazoline alkaloids, specifically: One quinazoline alkaloid with promise for therapeutic use is vasicine. Another important alkaloid with therapeutic qualities is vasicinone. Additional alkaloids include anisotine, adhatodine, adhatodinine, vasicinol, and adhava sinone. An additional phytochemical In addition to alkaloids, *J. adathoda* has Flavonoids are substances that have anti-oxidant qualities. Phenolics: renowned for their antioxidant and anti-inflammatory properties. Saponins are phytochemicals that may have immune-stimulating and antibacterial properties. A stringent substances with potential antibacterial qualities are called tannins.

Essential Oils: The essential oil extracted from *J. adathoda* leaves comprises various constituents, with major components identified as:

- **Phytol:** 57.8%
- **n-Hentriacontane:** 3.92%
- **Nonacosane:** 3.65%
- **Pentacosane:** 2.65

Nutritional Composition: Proximate analysis of *J. adathoda* leaves reveals:

- **Moisture:** 9.4%
- **Dry matter:** 90.6%
- **Crude protein:** 19.25%
- **Crude fat:** 4.5%
- **Crude fiber:** 8.0%
- **Total ash:** 11.5%

Plant parts used of *Justicia adathoda*

The leaves, bark, stem, flower, root, all parts are used in this plant.

Side effect and possible interaction

The use of Adathoda during pregnancy is not advised (except at delivery, and then only under a doctor's supervision). Adathoda is thought to be safe when taken as prescribed and in the recommended dosage. Its safety has not been tested in children and should be avoided unless prescribed by a healthcare provider. Adathoda should be taken with other medications or supplements that have expectorant or antispasmodic effects.

Siddha home remedies of *Justicia adathoda*

1. The following tried-and-true method can be applied to chronic wheezing. Make a decoction with grapes, Terminalia chebula (kadukkai), and adathoda leaves.
2. Take this concoction three times a day after meals, and mix in honey and palm candy.
3. Keep doing this until the wheezing stops.
4. A decoction of adathoda root, kandankathiri root, dry ginger, horsegram, and powdered allikizhangu (*Nymphaea rubra*) tuber is another combination. This works well to treat wheezing as well.
5. Mucus in the stool and bloody stools can be treated with the leaf juice.

Conclusion

Since ancient times, *J. adathoda* has been utilized in traditional medicine to treat a variety of illnesses. Since several plant parts include pharmacological qualities like antibacterial, antifungal, anti-inflammatory, anti-cancerous, insecticidal, and phytotoxic effects, the scientific community has confirmed the effectiveness of traditional claims. The latest developments in nanotechnology present fresh ways to explore its potential for therapeutic use. All things

considered, this plant offers fresh possibilities for pharmacological study and medication creation in the future. At the same time, its natural populations have decreased in some areas due to its medicinal value and the industrial demand for research and medication development. But new developments in artificial seed production and in vitro propagation are essential for germplasm preservation. The increasing amount of research on *J. adthoda* is limited to its pharmacological significance, ethnomedicinal use, and phytochemistry.

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