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The Ecological and Medicinal Significance of Agaricus bisporus, Phytochemical Insights into Its Role in Nutrient Cycling and Health Promotion

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INTRODUCTION

The Lamiaceae family includes the important medicinal herb *Leucas aspera* is also known as Thumbai is usually grown in locations with sandy, open, and dry soils. It frequently thrive in waste areas, and agricultural fields. For best growth, it thrives in a warm climate and grows well throughout the wet season. Typically, the plant is propagated via seeds, which are planted in soil that drains properly and has enough moisture throughout the early phases of development. In order to guarantee optimum therapeutic effectiveness, harvesting is usually done by hand when the plant reaches maturity, usually during its blooming period. Simple instruments like sickles or knives are used to delicately cut the plant's aerial components, such as the leaves, stems, and flowers. This plant has a wide range of pharmacological qualities and is found throughout India, from the Himalayas to Ceylon. Different parts of the plant have been used for their medicinal properties, and *Leucas aspera* has long been used as an insecticide and antipyretic. The leaves are especially well-known for their ability to treat long-term ailments like rheumatism and skin disorders, and the flowers have several therapeutic uses, such as being an expectorant and stimulant.

Fig.1. A. The Whole Plant of *Leucas aspera* with flowers and seeds, B. white flowers of the *Leucas aspera* C. The Sac like structure which holds the seeds of the *Leucas aspera*

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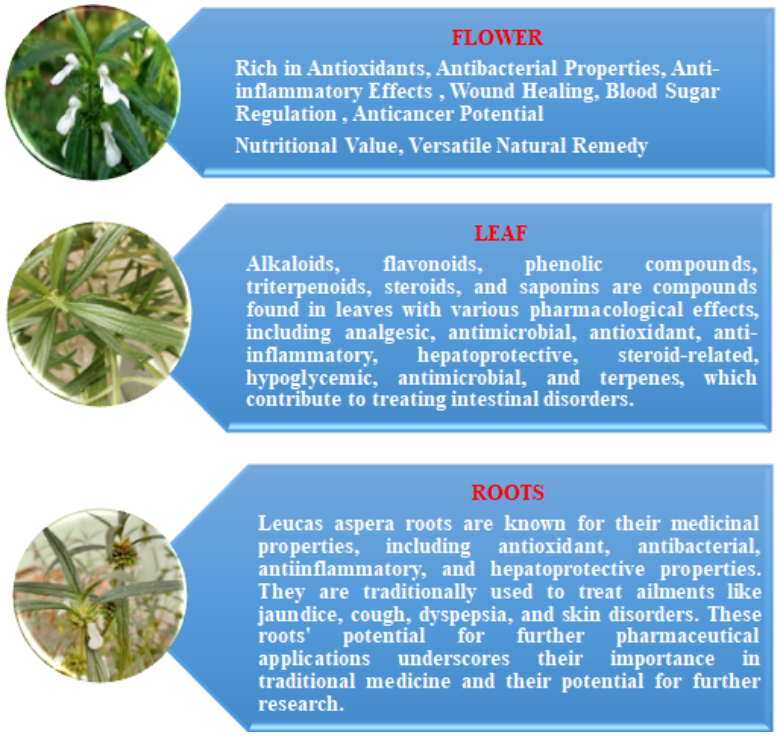
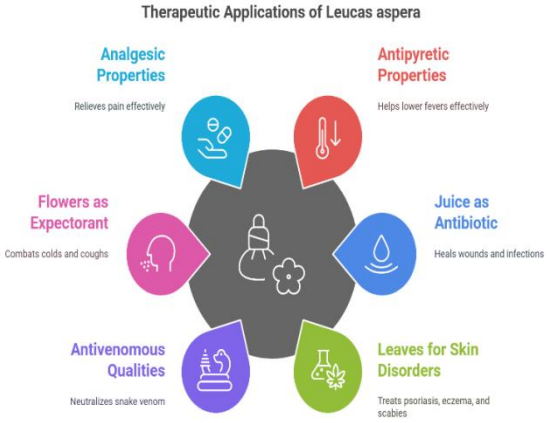


THERAPEUTIC USES:

According to phytochemical analyses, medication for a wide range of conditions because of its many therapeutic benefits. The plant is utilized as a natural pesticide and is well known for its antipyretic properties, which help lower fevers. Its juice is used as an antibiotic to heal wounds and infections, and its leaves are very useful for treating skin disorders including psoriasis, eczema, and scabies. Because bruised leaves are said to have antivenomous qualities, they are customarily administered to the bitten region in snake bite situations. *Leucas aspera* flowers are used as an expectorant and are frequently combined with honey to treat colds and coughs. The plant is also well-known for its analgesic, anti-inflammatory, and antibacterial properties, which help to effectively manage infections, discomfort, and swelling. Additionally, it is used to cure conditions including toothaches, asthma, dyspepsia, and jaundice. *Leucas aspera* is still an important plant in traditional medicine because of its many therapeutic uses.



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Current research on *Leucas aspera.*

Research on *Leucas aspera* is advancing, revealing its diverse pharmacological potential. Its antimicrobial properties have been shown to be effective against various pathogens, supporting its traditional use in treating infections. The plant's antioxidant activity has also been extensively studied, revealing its ability to scavenge free radicals and reduce oxidative stress. The anti-ophidian potential of *Leucas aspera*, particularly its methanolic extract against the Indian cobra venom, is being explored. Bioactive compounds like triterpenoids and flavonoids contribute to its medicinal properties. Essential oils are also being analyzed for their biological activities.

CONCLUSION

Leucas aspera emerges as a significant medicinal plant with a wide array of therapeutic properties, supported by both traditional practices and contemporary scientific research. Its leaves, stems, and roots are rich in bioactive compounds that exhibit potent antioxidant, antimicrobial, anti-inflammatory, and anticancer activities.

The plant's traditional uses in treating infections, wounds, and various ailments highlight its importance in folk medicine, while ongoing research continues to uncover its potential in modern pharmacology. With promising studies focused on enhancing its medicinal efficacy through innovative delivery systems and exploring its diverse chemical constituents, *Leucas aspera* holds great promise for future applications in healthcare.

As interest in natural remedies grows, this versatile plant could play a crucial role in developing new treatments and promoting holistic health approaches.