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A rare medicinal herb *Lagerstroemia parviflora* (ROXB)

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Abstract

Since antiquity, the herb *Lagerstroemia parviflora* (ROXB) has been employed as a key treatment in traditional systems of medicine. *Lagerstroemia parviflora* Roxb (*L. parviflora*) is utilised in numerous systems of medicine for several diseases, in addition to its ancient historical applications. Phytochemicals are a term used to describe the bioactive molecules generated by plants. Phenols, flavonoids, tannins, saponins, alkaloids, fixed oil, and lipids were found in the phytochemical constituents. The herb is often used by indigenous women to help them overcome breastfeeding issues. Traditional tradition said that the whole plant may be utilised to treat intestinal constriction and syphilis. This herb may also successfully manage cough, fever, asthma, and bronchitis. Until recently, very little scientific research on this plant has been done. Antioxidant, antibacterial, antiviral, anti-inflammatory, antinociceptive, anti-diarrheal, cytotoxic, xanthine oxidase inhibition, anti-obesity, and anti-fibrotic properties have all been discovered capabilities are among the species' pharmacological qualities. The primary purpose of the review was to look into the antibacterial, antifungal, and antiviral properties of *Lagerstroemia parviflora* Roxb's leaves.

Keywords: *Lagerstroemia parviflora* roxb, phytochemical constituents, pharmacological activity

Introduction

Lagerstroemia parviflora Roxb is a medium-sized tree, indigenous to India. *Lagerstroemia parviflora* Roxb is widely cultivated throughout India as a medium, sized deciduous plant, available even up to a height of 900m in the Himalayas. The tree is tall around 15-18m in stature until just now, this plant has been used in India to cure a variety of ailments. The Santals of India's Chotanagpur area use the plant's leaves to heal infections and persistent sores. The plant is widely used by tribal women to help them overcome lactation issues. According to conventional wisdom, the entire plant can be used to cure gastrointestinal strangulation and syphilis. This herb can also efficiently manage coughs, fevers, asthma, and bronchitis [1, 2].

Family: - Lythraceae

Common Name: - Small-flowered Crape Myrtle [3]

Vernacular Name

Hindi- Lendia, Sidi, Senia

English – Crepe Flower, Crepe Myrtle

Sanskrit- Siddeshwara

Kannada- Chennangi mara

Tamil – Narinaaval, Mathara, Kadaa

Telugu- Chinangi, Chennangi, Gullakaraka, Chinnagi

Marathi- Lendya [4]

Taxonomic Classification

Kingdom- Plantae

Phylum- Tracheophyte

Class- Dicotyledonae

Order- Myrtales

Family – Lythraceae

Genus- Lagerstroemia [5, 6]

Occurrence and Distribution

Lagerstroemia parviflora is a common tree in both moist and dry deciduous forests throughout India, particularly in the tropical Himalayas, Andhra Pradesh, Karnataka, Kerala, Maharashtra,

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Odisha, Tamil Nadu, and Myanmar, Java. [7, 8]

Flowering: April— May.

Fruiting: October—December



Fig 1: *Lagerstroemia parviflora* Leaves [9, 10]

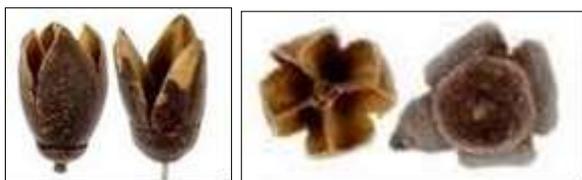


Fig 2: *Lagerstroemia parviflora* Fruit



Fig 3: *Lagerstroemia parviflora* Flower

Description of plant

Tree or sometimes large shrub

Bark grey or reddish, smooth, stripping off in long narrow flake in old trees; young branches often 4-winged.

Leaves

Narrowly elliptic or oblong or ovate-lanceolate, 5-8.5 x 2.5-3.7 cm, acute or acuminate, glabrous above, grey and more or less pubescent, especially along the nerves beneath, coriaceous; petiole very short.

Flowers

White, 7.5-12 mm across, in lax, axillary, and terminal downy panicles of 2-5 flowered cymes. Calyx-tube cupular, smooth, woody in fruit and embracing the capsule; lobes 6, triangular or lanceolate, acute. Petals 6, membranous, ovate-oblong, ca.6 mm long, margin undulate.

Capsule ellipsoid, 1.8-2.5 cm long, polished, 3- sometimes 4-valved. Seeds with a terminal wing that is thickened and somewhat curved on the back, 1.5-1.8 cm long including the wing.

Chemical constituents

There are no alkaloids, glucosides, sterols, or flavonoids in corosolic acid alanine, isoleucine alpha amino butyric acid, or methionine. Lageracetal, amyl alcohol, ellagic acid, beta-sitosterol, new tannin-lager tannin, 3, 3, 4- tri-O-methylellagic acid, and 3-O-methylgallagic acid are also found in the leaves [11, 12].

Phytochemical constituents

Phenols, flavonoids, tannins, saponins, alkaloids, fixed oil, and lipids.

Habitat

Common in forests throughout the area.

Uses

1. *Lagerstroemia parviflora* is a valuable tree species for its timber.
2. The wood is extremely tough and long-lasting. Typical applications include house pillars, beams, rafters, doors, window frames, carts, and agricultural tools.
3. Elephants feed on the bark of this species.
4. The bark contains tannins and is used to make black dye. The tree produces a sweet-tasting gum that can be eaten.
5. It is also an excellent fuel tree as it gives good charcoal. [12]

Pharmacological activities

The following pharmacological activities have been reported on the genus:

Antimicrobial activity

Antimicrobial characteristics have been discovered in the leaves of *L. speciosa*. With ampicillin as a control, *L. speciosa* leaf powder extracts were evaluated against *Staphylococcus aureus*, *Bacillus subtilis*, *Pseudomonas aeruginosa*, and *Escherichia coli*. The water extract was more efficient than the ethanol extract in terms of the zone of inhibition. Using the agar well diffusion method, the inhibitory effectiveness of methanol extract of *L. speciosa* leaves was investigated against 12 oral isolates of *Streptococcus* variants. Zones spanning from 0.00.9 cm, 0.82.1 cm, and 1.02.6 cm for extract doses of 10, 25, and 50 mg/ml, respectively, demonstrated considerable inhibitory efficacy against cariogenic isolates. Antibacterial activity has also been reported in the flowers of *L. speciosa*. The flower's methanol extract was tested against *S. mutans* and *S. mutans*. The agar well diffusion experiment was used to test the flower's methanol extract against *S. mutans* and *S. aureus* [13].

Anti-inflammatory activity

Carrageenan-induced acute inflammation and formalin-induced chronic paw oedema experiments were used to test the anti-inflammatory activity of ethyl acetate and ethanol leaf extracts of *L. speciosa* [15].

Antioxidant

Lagerstroemia speciosa (Banaba) leaf extract (150 mg/kg body weight) reduced STZ-generated reactive intermediate and radical species, allowing normal levels of antioxidative markers such as superoxide dismutase, catalase, glutathione-S-transferase, and reduced glutathione to be maintained [13].

Antitussive

Whenever cough was generated by sulphur dioxide gas in rats, *Lagerstroemia parviflora* leaf extract demonstrated maximal suppression of cough response at 90 minutes after drug treatment [14].

Cytotoxic activity

The ethanol fruit extract of *L. speciosa* demonstrated significant cytotoxic action in the brine shrimp (*Artemia salina*) lethality test. The lethal concentration (LC50) was 60 g/ml, while the lethal concentration (LC90) was 100 g/ml [14].

Anti-obesity activity

If obese female KK-AY mice were administered a hot water *L. speciosa* leaf extract, there was a significant reduction in body weight and parametrial adipose tissue weight. Despite the fact that blood glucose levels and serum lipids were comparable in the control and test diet groups, the triglyceride content in the liver was reduced, demonstrating *L. speciosa*'s anti-obesity efficacy^[14].

Xanthine oxidase inhibition

Valoneic acid dilactone, which was extracted from aqueous leaf extract of *L. speciosa*, was found to have a significant inhibitory impact on xanthine oxidase (XOD), implying that it could be used to prevent and cure hyperuricemia. The inhibitory impact was non-competitive and more potent than that of the therapeutic medication allopurinol. The primary enzyme in hyperuricemia is XOD, which catalyses the conversion of hypoxanthine to xanthine and then to uric acid^[15].

Antiviral properties

When orobol 7-OD-glucoside (O7G) extracted from *L. speciosa* leaves was examined for anti-human rhinovirus (HRV) activity in HeLa cells, it showed broad-spectrum anti-HRV activity against HRV of groups A and B. O7G has an inhibitory concentration (IC₅₀) of 0.5888.80 g/ml and a cytotoxic concentration (CC₅₀) of above 100 g/ml.

Conclusion

This Review provides valuable details of the Plant *Lagerstroemia parviflora* (ROXB) which would be helpful for other researchers and scientists for further investigations and exploring properties present in this plant.

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Conflict of Interest

We declare that the publishing of this paper is free of any conflicts of interest.

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Nil.

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