



## Antibacterial activity of leaves of *Lagerstroemia speciosa* (L) Pers.

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### ABSTRACT

Antibacterial activity of ethanol and water extracts of leaves of *Lagerstroemia speciosa* (L) pers. were tested cup-plate agar diffusion method against Gram positive and Gram negative bacteria. It was observed that all extracts have inhibitory effect, water extract being most effective.

**Keywords:** Antibacterial, *Lagerstroemia speciosa*, leaves.

### INTRODUCTION

*Lagerstroemia speciosa* (L) pers. is a medium sized to large deciduous tree with a rounded crown distributed more or less throughout India especially in Assam, Bengal and Deccan peninsula<sup>1</sup>. It is commonly called as Banaba. The leaves of *Lagerstroemia speciosa* are purgative, deobstructive and diuretic. A decoction of the leaves prepared like tea is used for diabetes mellitus in Phillippines<sup>2</sup>.

The preliminary phytochemical studies reveal the presence of tannins, triterpenoids, proteins and amino acid. Tannins may serve as lead compounds for the development of new therapeutic agent with antibacterial activity. The literature study revealed that the different extracts of the seeds have been shown to possess antimicrobial properties against Gram positive and Gram negative organisms<sup>4</sup>. But there are no reports on antimicrobial activity of the leaf extracts. Hence the present study was designed to investigate the antimicrobial activity of extracts of *Lagerstroemia speciosa*

Alcoholic and water extracts were tested against *Staphylococcus aureus*, *Bacillus subtilis* (Gram positive) and *Pseudomonas aeruginosa*, *Escherichia coli*, (Gram negative bacteria). Ampicillin was used as the standard.

### MATERIALS & METHODS

#### Plant material

The fresh leaves *Lagerstroemia speciosa* (L) pers. Were collected from the local areas were authenticated by authority of Botany Department, Bangalore University.

#### Extraction of plant material

Leaves of *Lagerstroemia speciosa* (L) pers. were shade dried, powdered and extracted with ethanol in a Soxhlet extractor and then by maceration with water for about 24hrs. the extract were concentrated in rotary vacuum evaporator and subjected to preliminary phytochemical investigation<sup>3</sup>. The percentage yield of extracts from *Lagerstroemia speciosa* was ethanol (19% w/w) and water (14% w/w).

#### Determination of Zone of Inhibition

Cup plate method agar method was used to determine the zone of inhibition of two extracts<sup>2</sup>. The extracts were dissolved in dimethyl sulfoxide (DMSO) at a concentration of 200 mg/ml. Ampicillin were separately dissolved separately in DMSO to give a concentration of Ampicillin 10µg/ml. In each bore 200 µg/ml of ethanol and water extract of leaves were introduced. The Petri dishes were then incubated at 37°C for 24 hrs and the zone of inhibition was measured (Table1).

From the zone of inhibition produced by the extracts, it was observed that water extract showed prominent antimicrobial activity against all micro-organisms. Thus the water extract was more potent compared to ethanol extract. The antimicrobial activity may be due to the presence of tannins.

### RESULT & DISCUSSION

The preliminary phytochemical studies reveal the presence of tannins, triterpenoids, proteins and amino acids.

From the zone of inhibition produced by the extracts, it was observed that

water extract showed prominent antimicrobial activity against all micro-organisms. Thus the water extract was more potent compared to ethanol extract. The antimicrobial activity may be due to the presence of tannins. Other phytochemical constituents like triterpenoids may also contribute to the activity.

**Table 1. Antibacterial Activity of *Lagerstroemia speciosa* (L) pers . leaves extract**

Microorganisms	Zone of inhibition (diameter in mm)		
	Ethanol Extract	Water Extract	Standard (Ampicillin)
<i>S.aureus</i>	14	15	22
<i>B.Subsillis</i>	12	15	25
<i>P.aeruginosa</i>	14	17	23
<i>E.Coli</i>	16	17	25

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