



## **LAGERSTROEMIA SPECIOSALS**

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### **ABSTRACT**

Sumatra, especially in the northern Liverworts family Lepidoziaceae variety Sumatra Inadequate Report. Therefore, the aim of this study is to explore diversity Taman Eden 100 Natural Tourist Park, Lepidoziaceae in North Sumatra. Was explored the study runs along the hiking trails of the site. Species identification is based on these Morphological characters. Thirteen species of Lepidoziaceae were identified, of which 2 are Genus: Bazania (11 species), and Lepidozia (2 species). There were species of Lepidoziaceae found as epiphyte on tree trunks, decaying wood and soil. The most common species are found the study found Bazaniatridans, while Bazaniapectinata was a rare species.

**Keywords:** - Bazzania, Marchantiophyta, Diversity, Central Java.

## INTRODUCTION

Lepidoziaceae is one of the largest family of leaf liverwort, with about 440 species worldwide, With 29 generations, 7 tribes were recorded in Java. This is the largest genus in the family Byzantium, there are about 100 species worldwide. There are species of Lepidoziaceae Distributed from the lowlands to the mountains and abundantly in the tropical forests. There is a family commonly found on tree trunks or tree branches and sometimes on moist soils, rocks and rotten soils Entries. Lepidosis can be distinguished from other families based on morphological characteristics as peanut branching (in Lepidozia, Kurzia and Telarania), Dicotomus branching (in Acromastigum) and Bazania), irregular with basal stolon (in hygrolembidium), rhizoid in tufts from lower base of leaves, the leaves are usually divided into lobes, with lower leaves (ventral leaves) and Gametoasia on small ventral branches [2]. The family has high morphological variability characters, especially of the Bazania genus, are therefore difficult to identify at the species level. The wide morphological variations are affected by environmental changes, including light intensity, Humidity and temperature. Several recent data on the liver of North Sumatra have been recorded. However, the release of the Lepidozygous family is very limited. Just a publication about from North Sumatra to the present Lepidoziasi, which is, has recorded 17 species of Aek.NauliParpat Forest. Furthermore, information on Lepidoziaceae species in Taman Eden 100 no natural park record. Therefore, it is important to do research to create a list species of Lepidoziaceae in Taman Eden 100 Natural Park, North Sumatra. *L. Speciosa* is a species that is widely commercialized as an ornamental fore and azalea. The horticultural acquisition of this species is highly appreciated for its large, attractive, pink to lavender flowers. *L. speciosa* has escaped cultivation and can now have a variety of amenities, including natural waste, fallow lands, open grasslands and amazement. It has diffuse crown and dense root system that has the ability to change soil conditions and prevent the formation of a wide range in the understory. It is currently a member in Belize, Costa Rica, Puerto Rico and Virgin I

### Leaves –

Ethyl acetate extract of the leaves of *Lagerstroemia speciosa* (LSL) was investigated for possible antimicrobial-diabetic amylase and glucosidase inhibition. Six pentacyclic triterpenes (oleanolic acid, arjunolic acid, asiatic acid, maslinic acid, corosolic acid and 23-hydroxyursolic acid) made LSL connectors. Their composition was determined by spectroscopic analysis and their  $\alpha$ -glycosidase and  $\alpha$ -amylase inhibitory drug analysis. They demonstrated that-amylase and moderate  $\alpha$ -glucosidase were not inhibitory or weakly

inhibitory drugs. Corosolic acid, which seeks the best bioavailability against  $\alpha$ -glucosidase (IC<sub>50</sub> = 3.53  $\mu$ g / mL), contributes the most to the  $\alpha$ -glucosidase inhibitory regulation of EtOAcextract. The anti-diabetic action of 1% corosolic acid (Glucosol™) certified extract from the leaves of Lagerstroemia speciosa has been shown in randomized clinical trials involving type II diabetics (non-insulin-dependent diabetes mellitus, NIDDM). Subjects received daily oral doses of Glucosol and blood glucose levels were measured. Taking Glucosol in daily doses of 32 and 48 mg for 2 weeks showed a significant reduction in blood glucose levels. The soft gel capsule formulation shows a 30% reduction in blood glucose levels compared to the hard gelatin capsule formulation (P <0.001) filled with glucosol™ dry powder, indicating a 30% reduction in blood glucose levels, indicating that the bioavailability of the soft gel formulation is better. Dry powder formulation.

### **Antimicrobial Effects:**

Seed extracts were tested for antibacterial effect against different bacterial organisms, some fractions of seed extracts of Lagerstroemia speciosa showed high antibacterial activity when tested against both Gram-positive and Gram-negative bacteria [42]. The methanolic extracts of Lagerstroemia speciosa leaves and barks were evaluated for their antimicrobial activity against 11 Gram- positive, Gram-negative bacteria and 3 fungi using disk diffusion technique. The average zone of inhibition exhibited by methanolic leaves and barks extracts (500 $\mu$ g/disc) was 10-20 mm and 12-21 mm respectively [43]. The Lagerstroemia speciosa leaf extracts were investigated for antibacterial and antibiofilm activities against potential clinical strains (Staphylococcus aureus, Escherichia coli, P. aeruginosa and Salmonella typhi) by well diffusion technique. The antibacterial property was also investigated against common food borne pathogens (Listeria monocytogenes and Bacillus cereus) at varied concentrations 250 to 1000  $\mu$ g/ml. The antibiofilm assay was carried out from 250 to 1000 $\mu$ g/ml against P. aeruginosa by coverslip technique. Only minimum inhibition was seen in alcoholic extract for antibacterial activity, whereas all other extracts showed negligible activity. P. aeruginosa biofilm is inhibited to 93.0 $\pm$ 2% and 91 $\pm$ 2% at higher concentration (1000 $\mu$ g/ml) by methanolic and ethanolic extract respectively [44]. Antibacterial activity of ethanol and water extracts of leaves of Lagerstroemia speciosa were tested by plate agar diffusion method against Gram positive and Gram-negative bacteria. The MIC of ethanol and water extracts of leaves against Staphylococcus aureus: 14 and 15, Bacillus substiles: 12 and 15, Pseudomonas aeruginosa: 14 and 17, and Escherichia coli: 16 and 17 mm respectively. Water extract being the most effective [45]. The antimicrobial effect of the flowers extracts of Lagerstroemia

*speciosa* was studied against Gram positive bacteria (*Bacillus cereus*, *Bacillus megaterium*, *Bacillus subtilis*, *Staphylococcus aureus*, *Micrococcus luteus*), Gram negative bacteria (*Escherichia coli*, *Pseudomonas aeruginosa*, *Salmonella paratyphi*, *Salmonella typhi*, *Shigella boydii*, *Shigella dysenteriae*, *Vibrio mimicus*, *Vibrio parahemolyticus*) and Fungi (*Saccharomyces cerevisiae*, *Aspergillus niger*). Methanolic crude extract possessed an antimicrobial effect against all the tested microorganisms. The largest zone of inhibition (19 mm) was observed for the carbon tetrachloride soluble fraction against *Staphylococcus aureus* [46]. The antibacterial effect of the methanolic extract of *Lagerstroemia speciosa* leaves was investigated against *Escherichia coli*, *Salmonella typhimurium*, *Staphylococcus aureus* and *Pseudomonas aeruginosa*. The extract possessed high antibacterial activity against *Escherichia coli* (15 mm), *Staphylococcus aureus* (10 mm), *Pseudomonas aeruginosa* (10 mm), but had no activity against *Salmonella typhimurium*.

### **Side effects and safety**

The crude ethanol extract is non-toxic in rats, it was well tolerated at a concentration of 500, 1000, 2000, and 3000 mg/kg, no biochemical and histological changes were recorded [89]. In acute toxicity study, no mortality or toxic reaction was recorded in rats after administration of the methanolic crude extract of *Lagerstroemia speciosa* roots (200, 400, 800, 1600 and 3200 mg/kg, orally) [21]. There were no side effects in humans, with the use of the recommended dosages (8-48 mg/day). However, higher doses associated with lowered blood glucose levels, headache, dizziness, and fatigue [90].

### **Cardiovascular effects**

The cardioprotective effect of *Lagerstroemia speciosa* leave extract (containing 1 % corosolic acid) was evaluated in isoproterenol- induced myocardial injury in mice. Extract pretreatment augmented myocardial antioxidant status and attenuated myocardial oxidative stress. Myocardial apoptosis, as well as MMPs activities, was significantly prevented by the extract pretreatment in isoproterenol-induced myocardial injury in mice. Furthermore, extract pretreatment enhanced the nuclear protein expression of Nrf2 [83].

## **CONCLUSION**

A total of 13 species of Lepidozias in the Liverworts family were recorded from Taman Eden 100.Natural Park, North Sumatra, with 2 generations: *Bazania* (11 species) and *Lepidozia* (2 species). The most common species reported in the study was *Bazania aerea*. Is an unusual species reported *Bazania pectinata*.

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