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## Antioxidant and antimicrobial properties of *Litsea elliptica* Blume and *Litsea resinosa* Blume (Lauraceae)

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### PEER REVIEW

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#### Comments

Results of this study are important contributions to the body of knowledge. It has been shown that the methanol extracts of root and stem of both *L. elliptica* and *L. resinosa* showed significant scavenging activity and *L. resinosa* showed strong antibacterial activities compared to *L. elliptica* and less polar extracts such as hexane and dichloromethane extracts showed significant activities as compared to methanol extracts which is polar. Essential oil of both species also showed great potential in inhibiting fungus *F. oxysporum*.

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### ABSTRACT

**Objective:** To investigate antioxidant and antimicrobial activities of two plant species, *Litsea elliptica* (*L. elliptica*) and *Litsea resinosa* (*L. resinosa*).

**Methods:** *In vitro* method –2,2–diphenyl–1–picrylhydrazyl radical scavenging assay was conducted for antioxidant activity determination while antimicrobial assay consisted of agar well diffusion assay and mycelial radial growth assay.

**Results:** Methanol extracts of root and stem of *L. elliptica* and *L. resinosa* exhibited the highest antioxidant activity with EC<sub>50</sub> of 23.99, 41.69, 11.22 and 35.48 mg/L respectively. All methanol extracts of *L. resinosa* as well as root extracts from *L. elliptica* showed significant scavenging activity. Hexane extract from stem of *L. resinosa* presented the largest inhibition zone in Gram-negative bacteria *Pseudomonas aeruginosa* and *Escherichia coli* while chloroform extract from inner bark of *L. resinosa* showed major inhibition towards Gram-positive bacteria *Bacillus subtilis*. Essential oils from the root of both species showed significant antifungal activities which are 80.11% and 66.85% respectively.

**Conclusions:** Overall, methanol extracts from root and stem of both species showed antioxidant activity comparable to standard butylated hydroxytoluene. Extracts from *L. resinosa* demonstrated stronger antimicrobial properties compared to that from *L. elliptica*.

### KEY WORDS

*Litsea elliptica*, *Litsea resinosa*, Antioxidant, Antifungal, Antibacterial, EC<sub>50</sub>

## 1. Introduction

*Litsea*, which is an important genus from the Lauraceae family, is frequently found in regions such as tropical and subtropical Asia, Australia, and from North America to subtropical South America[1]. Indigenous plants like this have been widely utilized as traditional medicine in maintaining human health[2]. The increase in pervasiveness of multi-drug resistant microorganisms has raised the

interest in natural product discovery from ethnomedicinal plants[3]. Thus, this species might have the potential to fulfill the increasing demands of antibiotics globally.

Secondary metabolites are produced by plants when they respond to environmental stress. Their production might also be a defense mechanism towards plant diseases[4]. They are selected by nature for specific biological interactions and possess drug-like properties. These metabolites usually retained antimicrobial characteristic

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