

**GROWTH INHIBITORY EFFECT OF
MAHOGANY (*Swietenia macrophylla* King) LEAF LITTER
ON LETTUCE (*Lactuca sativa* L. var. Legacy) SEEDLINGS**

By

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ABSTRACT

Screening the allelopathic potential of Mahogany (*Swietenia macrophylla* King) leaf litter in plant-plant interaction using the sandwich bioassay method and growth-inhibitory bioassay have not been reported. The research objectives were to determine and categorize the allelopathic potential of Mahogany (*Swietenia macrophylla* King) leaf litter evaluated by the sandwich bioassay method and to determine the growth inhibitory activity and the specific activity (EC_{50}) of Mahogany (*Swietenia macrophylla* King) leaf litter on radicle lettuce (*Lactuca sativa* L. var. Legacy) seedlings. The sandwich method and growth-inhibitory bioassay were used to evaluate allelopathic potential of *S. macrophylla* leaf litter. The results showed that *S. macrophylla* leaf litter indicated strong allelopathic activity when compared with 46 leaf litter species and was included in the top ten of allelopathic leaf litter species. Enhancing *S. macrophylla* leaf litter concentration was concomitant with inhibition of radicle lettuce seedlings elongation compared with the control. According to the linear regression analysis, the effective concentration (EC_{50}) of *S. macrophylla* was estimated to be 3.25 mg D.W. eq. mL⁻¹ and was considered to have strong growth-inhibitory activity on lettuce radicle elongation. The results suggest the possibility of allelopathic potential of leaf litter in plant-plant interaction under *S. macrophylla* trees.

Keywords: Allelopathy; EC_{50} ; Leaf litter; Mahogany; Sandwich Method

**PENGARUH PENGHAMBATAN PERTUMBUHAN SERASAH DAUN
MAHONI (*Swietenia macrophylla* King) TERHADAP
BIBIT SELADA (*Lactuca sativa* L. var. Legacy)**

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ABSTRAK

Skrining potensi alelopati serasah daun Mahoni (*Swietenia macrophylla* King) dalam interaksi antar tumbuhan menggunakan *sandwich bioassay method* dan *growth-inhibitory bioassay* belum pernah dilaporkan. Tujuan penelitian ini adalah menentukan dan mengelompokkan potensi serasah daun Mahoni (*Swietenia macrophylla* King) yang dievaluasi menggunakan *sandwich bioassay method* serta menentukan aktivitas penghambatan pertumbuhan dan aktivitas spesifik (EC_{50}) dari serasah Mahoni (*Swietenia macrophylla* King) terhadap radikula bibit selada (*Lactuca sativa* L. var. Legacy). *Sandwich method* dan *growth-inhibitory bioassay* digunakan untuk mengevaluasi potensi alelopati pada serasah daun *S. Macrophylla*. Hasil menunjukkan bahwa serasah daun *S. macrophylla* menunjukkan aktivitas alelopati kuat ketika dibandingkan dengan serasah daun dari 46 spesies dan termasuk sepuluh teratas spesies serasah daun yang memiliki alelopati. Peningkatan konsentrasi serasah daun *S. macrophylla* seiring dengan penghambatan pemanjangan radikula bibit selada dibandingkan dengan kontrol. Berdasarkan analisis regresi linier, konsentrasi efektif (EC_{50}) *S. macrophylla* diperkirakan $3.25 \text{ mg D.W. eq. mL}^{-1}$ dan dipertimbangkan memiliki aktivitas penghambatan pertumbuhan yang kuat terhadap pemanjangan radikula selada. Hasil menyarankan adanya kemungkinan potensi alelopati serasah daun dalam interaksi antar tumbuhan dibawah pohon *S. macrophylla*.

Keywords: Alelopati; EC_{50} ; Serasah daun; Mahoni; *Sandwich Method*