ABSTRAK

Floren Miani Sihotang, NIM 4223210020 (2026), Uji Aktivitas Antibakteri Dan Karakterisasi Hasil Biosintesis Nanopartikel Perak Ekstrak Etanol Tanaman Sarang Banua *(Clerodendrum Fragrans* Vent Willd*).*

Penelitian ini bertujuan untuk mensintesis dan mengkarakterisasi nanopartikel perak (AgNPs) menggunakan ekstrak daun sarang banua (*Clerodendrum fragrans*) serta mengevaluasi aktivitas antibakterinya. Sintesis AgNPs dilakukan secara ramah lingkungan dengan memanfaatkan ekstrak tanaman sebagai agen pereduksi dan penstabil. Karakterisasi ukuran partikel menggunakan Particle Size Analyzer (PSA) menunjukkan ukuran rata-rata 114 nm dengan distribusi yang relatif seragam. Analisis spektrofotometri UV-Vis memperlihatkan puncak serapan pada 427 nm yang menandakan terbentuknya nanopartikel perak, sedangkan analisis FTIR menunjukkan adanya gugus fungsi seperti –OH, C=O, dan C–O yang berperan dalam proses pembentukan dan stabilisasi. Uji aktivitas antibakteri menggunakan metode difusi cakram dengan menentukan zona bening yang dihasilkan, minimum inhibitor concentration untuk mengetahui konsentrasi hambat bakterinya dan minimum bactericidal concen. Hasil penelitian ini menunjukkan bahwa AgNPs ekstrak daun sarang banua berpotensi sebagai sumber antibakteri berbasis nanomaterial.

Kata kunci : Nanopartikel perak, *Clerodendrum fragrans,* Antibakteri

ABSTRACT

Indah sitanggang, NIM 4222210001 (2026), Synthesis, Characterization and Antioxidant Activity Evaluation of Silver Nanoparticles from Ethanol Extract of Sarang Banua Leaves (Clerodendrum Fragrans vent willd).

This study aims to synthesize and characterize silver nanoparticles (AgNPs) using *Clerodendrum fragrans* (sarang banua) leaf extract and to evaluate their antibacterial activity. The synthesis of AgNPs was carried out using an environmentally friendly approach by utilizing plant extracts as both reducing and stabilizing agents.Particle size characterization using a Particle Size Analyzer (PSA) showed an average size of 114 nm with a relatively uniform distribution. UV-Vis spectrophotometric analysis exhibited an absorption peak at 427 nm, indicating the formation of silver nanoparticles, while FTIR analysis revealed the presence of functional groups such as –OH, C=O, and C–O, which play a role in the formation and stabilization process. The antibacterial activity was evaluated using the disk diffusion method by measuring the inhibition zone, as well as determining the Minimum Inhibitory Concentration (MIC) to identify the inhibitory concentration against bacteria and the Minimum Bactericidal Concentration (MBC).The results of this study indicate that AgNPs synthesized from sarang banua leaf extract have potential as a nanomaterial-based antibacterial agent.

Keywords : Silver nanoparticle, *Clerodendrum fragrans,* Antibacterial

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