

**UJI AKTIVITAS ANTIJAMUR DAN ANTIBIOFILM NANOPARTIKEL
PERAK (AgNP) EKSTRAK ETIL ASETAT TERONG UNGU (*Solanum
melongena* L.) TERHADAP *Candida tropicalis* In Vitro**

ABSTRAK

Latar Belakang: *Candida tropicalis* merupakan patogen oportunistik yang mampu membentuk biofilm sehingga meningkatkan resistensi terhadap antijamur. Nanopartikel perak (AgNP) berbasis ekstrak etil asetat terong ungu (*Solanum melongena* L.) diperkirakan memiliki aktivitas antijamur dan antibiofilm lebih baik karena ukuran partikel kecil meningkatkan penetrasi dan pelepasan ion Ag⁺ yang bersifat toksik bagi sel jamur. **Tujuan:** Mengetahui aktivitas antijamur dan antibiofilm nanopartikel perak ekstrak etil asetat terong ungu (*Solanum melongena* L.) terhadap *Candida tropicalis* in vitro, melalui penentuan nilai Konsentrasi Hambat Minimal (KHM), Konsentrasi Bunuh Minimal (KBM), *Minimum Biofilm Inhibitory Concentration 50%* (MBIC₅₀), dan *Minimum Biofilm Reduction Concentration 50%* (MBRC₅₀). **Metode:** Penelitian true experimental dengan desain *post test only control group design*. KHM ditentukan menggunakan mikrodilusi, sedangkan KBM melalui metode *spread plate*. Aktivitas antibiofilm diukur dengan *microtiter plate assay* untuk menentukan MBIC₅₀ dan MBRC₅₀. Kontrol meliputi kontrol negatif, kontrol positif (flukonazol 6,25 µg/mL), kontrol media, dan kontrol pelarut. Perlakuan terdiri dari konsentrasi AgNP 4, 2, 1, 0.5 dan 0.25 mg/mL. **Hasil:** AgNP ekstrak etil asetat terong ungu menunjukkan aktivitas penghambatan pertumbuhan dengan KHM pada konsentrasi 4 mg/mL. Persentase daya bunuh jamur terbesar adalah 99,18%, namun belum memenuhi kriteria KBM ≥99,99%, sehingga KBM tidak diperoleh. Aktivitas antibiofilm terdeteksi dengan MBIC₅₀ dan MBRC₅₀ pada konsentrasi 0,25 mg/mL, menunjukkan kemampuan menghambat pembentukan serta mengurangi biofilm pada konsentrasi rendah. **Kesimpulan:** : AgNP ekstrak etil asetat terong ungu berpotensi sebagai agen antijamur dan antibiofilm terhadap *C. tropicalis*, meskipun belum menunjukkan aktivitas fungisidal berdasarkan kriteria KBM.

Kata kunci: Antibiofilm, Antijamur, *Candida tropicalis*, Etil asetat, Nanopartikel perak (AgNP), Terong ungu (*Solanum melongena* L.)

**ANTIFUNGAL AND ANTIBIOFILM ACTIVITY OF SILVER
NANOPARTICLES (AgNPs) FROM ETHYL ACETATE EXTRACT OF
PURPLE EGGPLANT (*Solanum melongena* L.) AGAINST *Candida tropicalis* In
Vitro**

ABSTRACT

Background: *Candida tropicalis* is an opportunistic pathogen capable of forming biofilms, which increase its resistance to antifungal agents. Silver nanoparticles (AgNPs) derived from ethyl acetate extract of purple eggplant (*Solanum melongena* L.) are predicted to have enhanced antifungal and antibiofilm activity due to their small particle size, which facilitates penetration and the release of toxic Ag⁺ ions into fungal cells. **Objective:** To determine the antifungal and antibiofilm activity of silver nanoparticles synthesized from ethyl acetate extract of *Solanum melongena* L. against *C. tropicalis* in vitro, through the evaluation of Minimum Inhibitory Concentration (MIC), Minimum Fungicidal Concentration (MFC), Minimum Biofilm Inhibitory Concentration 50% (MBIC₅₀), and Minimum Biofilm Reduction Concentration 50% (MBRC₅₀). **Methods:** This true experimental study used a post-test only control group design. MIC was determined using a microdilution method, while MFC was assessed using the spread plate method. Antibiofilm activity was evaluated using a microtiter plate assay to determine MBIC₅₀ and MBRC₅₀. The control groups included a negative control, a positive control (fluconazole 6.25 µg/mL), a media control, and a solvent control. Treatment groups consisted of AgNP concentrations of 4, 2, 1, 0.5, and 0.25 mg/mL. **Results:** AgNPs from ethyl acetate extract of purple eggplant inhibited fungal growth with an MIC of 4 mg/mL. The highest percentage of fungal killing was 99.18%, which did not meet the MFC criterion of ≥99.99%, indicating that a MFC was not achieved. Antibiofilm activity was observed with MBIC₅₀ and MBRC₅₀ values at 0.25 mg/mL, demonstrating the nanoparticles ability to inhibit and reduce biofilm formation at low concentrations. **Conclusion:** AgNPs derived from *Solanum melongena* L. exhibit potential antifungal and antibiofilm agents against *C. tropicalis*, although fungicidal activity based on MFC criteria was not achieved.

Keywords: Antibiofilm, Antifungal, *Candida tropicalis*, Ethyl acetate, Silver nanoparticles (AgNP), *Solanum melongena* L.