

UJI SINERGISME METODE AZDAST PADA EKSTRAK NADES BUNGA TELANG (*Clitoria ternatea* L.) DAN AMOKSISILIN TERHADAP *Staphylococcus aureus*

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ABSTRAK

Resistensi *Staphylococcus aureus* terhadap amoksisilin memicu pencarian agen antibakteri alami seperti bunga telang (*Clitoria ternatea* L.). Penelitian ini bertujuan untuk mengevaluasi interaksi kombinasi ekstrak *Natural Deep Eutectic Solvent* (NADES) bunga telang dan amoksisilin terhadap *S. aureus* menggunakan metode AZDAST. Ekstraksi dilakukan dengan metode *Ultrasound Assisted Extraction* (UAE) menggunakan pelarut NADES kolin klorida-gliserol. Parameter yang diuji meliputi skrining fitokimia, kadar antosianin total, serta diameter zona hambat pada variasi konsentrasi ekstrak (100%, 90%, 80%) dan waktu inkubasi (12, 18, 24 jam). Hasil skrining menunjukkan adanya senyawa alkaloid, fenol, triterpenoid, flavonoid, dan saponin dalam ekstrak. Kadar antosianin total sebesar 75,590 mg/L (0,100 mg/ g bunga) ditemukan pada ekstrak konsentrasi 100%. Namun, seluruh pengujian kombinasi menghasilkan efek antagonis secara signifikan ($p < 0,05$). Fenomena ini terjadi akibat viskositas tinggi pelarut NADES (6,752 cP) yang menciptakan hambatan difusi senyawa aktif ke media agar, serta sifat bakteriostatik ekstrak yang menghambat efikasi amoksisilin yang bersifat bakterisidal. Penelitian menyimpulkan bahwa penambahan ekstrak bunga telang menurunkan diameter zona hambat amoksisilin secara bermakna.

Kata Kunci: Antosianin, AZDAST, Bunga Telang, NADES, *Staphylococcus aureus*.

SYNERGISM TEST OF THE AZDAST METHOD ON NADES EXTRACT OF BUTTERFLY PEA FLOWER (*Clitoria ternatea* L.) AND AMOXICILLIN AGAINST *Staphylococcus aureus*

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ABSTRACT

The resistance of *Staphylococcus aureus* to amoxicillin has prompted the finding for natural antibacterial agents such as butterfly pea flower (*Clitoria ternatea* L.). This study aimed to evaluate the interaction of a combination of Natural Deep Eutectic Solvent (NADES) extract of butterfly pea flower and amoxicillin against *S. aureus* using the AZDAST method. Extraction was performed using the Ultrasound-Assisted Extraction (UAE) method with a choline chloride–glycerol as NADES solvent. The evaluated parameters included phytochemical screening, total anthocyanin content, and inhibition zone diameter at varying extract concentrations (100%, 90%, and 80%) and incubation times (12, 18, and 24 hours). Phytochemical screening revealed the presence of alkaloids, phenols, triterpenoids, flavonoids, and saponins in the extract. A total anthocyanin content of 75.590 mg/L (0.100 mg/g flower) was observed in the 100% extract concentration. However, all combination tests exhibited a significant antagonistic effect ($p < 0.05$). This phenomenon is attributed to the high viscosity of the NADES solvent (6.752 cP), which created a diffusion barrier for active compounds into the agar medium, as well as the bacteriostatic nature of the extract that interfered with the bactericidal efficacy of amoxicillin. The study concludes that the addition of butterfly pea flower extract significantly reduced the inhibition zone diameter of amoxicillin.

Keywords: Anthocyanin, AZDAST, Butterfly Pea, NADES, *Staphylococcus aureus*