

Uji Aktivitas Antibakteri Ekstrak Etanol 70% Buah Muda dan Tua Kesemek Hitam (*Diospyros nigra*) Menggunakan Metode Ekstraksi Nonkonvensional = Antibacterial Activity Test of 70% Ethanol Extract of Unripe and Ripe Black Persimmon (*Diospyros nigra*) Fruits Using Nonconventional Extraction Methods Abstract

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Abstrak

Pseudomonas aeruginosa dan *Staphylococcus aureus* merupakan dua bakteri umum penyebab penyakit infeksi di masyarakat. Pencarian senyawa dari tanaman sebagai antibakteri banyak dilakukan karena meningkatnya kasus resistensi antibiotik. *Diospyros nigra* atau buah kesemek hitam mengandung senyawa fenol, flavonoid, dan karotenoid yang telah terbukti memiliki aktivitas antibakteri. Pada buah tua *D. nigra* terjadi penurunan kadar fenol dan peningkatan kadar karotenoid. Penelitian ini bertujuan untuk mengetahui senyawa fitokimia; kadar fenol, flavonoid, dan karotenoid total; aktivitas antibakteri terhadap ekstrak etanol 70% buah muda dan tua *D. nigra* yang diekstraksi dengan metode Microwave Assisted Extraction (MAE) dan Ultrasound Assisted Extraction (UAE). Berdasarkan hasil identifikasi, buah *D. nigra* mengandung fenol, tanin, flavonoid, saponin, terpenoid, antrakuinon, dan glikosida. Penetapan kadar fenol total dilakukan menggunakan metode Folin-Ciocalteu dengan hasil pada buah muda sebesar 24,22 mgEAG/g (MAE) dan 21,79 mgEAG/g (UAE), serta buah tua sebesar 19,83 mgEAG/g (MAE) dan 18,36 mgEAG/g (UAE). Penetapan kadar flavonoid total dilakukan menggunakan metode kolorimetri $AlCl_3$ dengan hasil pada buah muda sebesar 6,85 mgEK/g (MAE) dan 5,73 mgEK/g (UAE), serta buah tua sebesar 2,65 mgEK/g (MAE) dan 1,84 mgEK/g (UAE). Penetapan kadar karotenoid total dilakukan menggunakan metode fraksinasi dengan hasil pada buah muda sebesar 45,59 mg/g (MAE) dan 43,67 mg/g (UAE), serta buah tua sebesar 55,71 mg/g (MAE) dan 51,10 mg/g (UAE). Pengujian aktivitas antibakteri dilakukan dengan metode mikrodilusi. Hasil pengujian menunjukkan aktivitas antibakteri paling potensial dihasilkan oleh ekstrak buah tua *D. nigra* metode MAE pada konsentrasi 16 mg/mL dengan persentase penghambatan pada *P. aeruginosa* sebesar 94% dan *S. aureus* sebesar 86,11%.

.....*Pseudomonas aeruginosa* and *Staphylococcus aureus* are two common bacteria that cause infectious diseases in the community. The search for compounds from plants as antibacterials is widely conducted due to the increasing cases of antibiotic resistance. *Diospyros nigra* (black persimmon fruit) contains phenol, flavonoid, and carotenoid compounds which have been shown to have antibacterial activity. In ripe *D. nigra* fruit there is a decrease in phenol compounds and an increase in carotenoids levels. This study aims to determine the phytochemical compounds; total phenol, flavonoid, and carotenoid content; as well as the antibacterial activity of the 70% ethanol extract of unripe and ripe *D. nigra* fruit using the Microwave Assisted Extraction (MAE) and Ultrasound Assisted Extraction (UAE) methods. Based on the identification, *D. nigra* fruit contains phenols, tannins, flavonoids, saponins, terpenoids, anthraquinones, and glycosides. Determination of total phenol content was carried out using the Folin-Ciocalteu method with results in unripe fruit is 24,22 mgGAE/g (MAE) and 21,79 mgGAE/g (UAE), while in ripe fruit is 19,83 mgGAE/g (MAE) and 18,36 mgGAE/g (UAE). Determination of total flavonoid content was carried out using the colorimetric $AlCl_3$ method with results in unripe fruit is 6,85 mgQE/g (MAE) and 5.73 mgQE/g (UAE),

while in ripe fruit is 2,65 mgQE/g (MAE) and 1,84 mgQE/g (UAE). Determination of total carotenoid content was carried out using the fractionation method with results in unripe fruit 45,59 mg/g (MAE) and 43,67 mg/g (UAE), while in ripe fruit is 55,71 mg/g (MAE) and 51,10 mg/g (UAE). Antibacterial activity testing was carried out using the microdilution method. The results showed that the most potential antibacterial activity was produced by ripe *D. nigra* fruit extract using the MAE method at a concentration of 16 mg/mL with an inhibition percentage of 94% for *P. aeruginosa* and 86,11% for *S. aureus*.