

ABSTRACT

ACTIVITY OF ANTIOXIDANT AND ANTIBACTERIAL OF METHANOL EXTRACT OF OIL PALM LEAVES (*ELAEIS GUINEENSIS* FOLIA JACQ) USING ULTRASOUND ASSISTED EXTRACTION

By

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Background: Indonesia is a country abundant in natural resources, and almost all types of plants can thrive in its territory. One of them is the oil palm leaf (*Elaeis guineensis* folia Jacq), which contains compounds such as terpenoids, steroids, alkaloids, flavonoids, glycosides, tannins, and saponins. Additionally, this plant is known among communities for its beneficial properties in treating skin infections. Previous studies have been limited to conventional extraction methods, with no research utilizing modern extraction methods. This study aims to investigate the potential antioxidant and antibacterial activities of methanol extract from oil palm leaves (*Elaeis guineensis* folia Jacq).

Methods: Laboratory-scale experimental research was conducted. Oil palm leaf extraction was performed using the ultrasound-assisted extraction method. Subsequently, total phenolic content was measured using the Folin-Ciocalteu method, total flavonoid content was measured using the $AlCl_3$ method, antioxidant activity was tested using DPPH (2,2-diphenyl-1-picrylhydrazyl), and antibacterial activity was tested using the cylinder diffusion method.

Results: The results of this study showed that the methanol extract of oil palm leaves had a total phenolic content of 529.44 mg GAE/gr, total flavonoid content of 103.15 mg QE/gr, an IC_{50} value of 187.14 ppm, and produced a zone of inhibition diameter of 0 mm.

Conclusion: The extract of oil palm leaves (*Elaeis guineensis* folia Jacq) had lower total phenolic and flavonoid content compared to some other studies, exhibited weak antioxidant effects, and showed no antibacterial effects against both test bacteria.

Keywords: Antibacterial, oil palm leaf, ultrasound-assisted extraction, antioxidant

ABSTRAK

AKTIVITAS ANTIOKSIDAN DAN ANTIBAKTERI EKSTRAK METANOL DAUN KELAPA SAWIT (*ELAEIS GUINEENSIS FOLIA* *JACQ*) MENGGUNAKAN METODE *ULTRASOUND* *ASSISTED EXTRACTION*

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Latar Belakang : Indonesia merupakan negara dengan kekayaan alam yang melimpah dan hampir segala jenis tumbuhan dapat tumbuh di wilayah negara ini. Salah satunya ialah daun kelapa sawit (*Elaeis guineensis folia Jacq*) mengandung senyawa-senyawa terpenoid, steroid, alkaloid, flavonoid, glikosida, tanin dan saponin dan juga tanaman ini dikalangan masyarakat memiliki manfaat yang dapat digunakan untuk pengobatan infeksi kulit. Penelitian sebelumnya terbatas pada metode ekstraksi konvensional dan belum ada penelitian yang menggunakan metode ekstraksi modern. Penelitian ini bertujuan untuk mengetahui potensi aktivitas antioksidan dan aktivitas antibakteri dari ekstrak metanol daun kelapa sawit (*Elaeis guineensis folia Jacq*).

Metode: Penelitian eksperimental skala laboratorium. Ekstraksi daun kelapa sawit dilakukan dengan metode *ultrasound assisted extraction*. Selanjutnya, dilakukan pengukuran total fenolik dengan metode *Folin-Ciocalteu*, pengukuran total flavonoid dengan metode $AlCl_3$, uji aktivitas antioksidan dengan menggunakan DPPH (2,2-diphenyl-1-picrylhydrazyl) dan uji aktivitas antibakteri dengan metode difusi silinder.

Hasil: Hasil penelitian ini menunjukkan bahwa ekstrak daun rambutan metode memiliki kadar total fenolik sebesar 529,44 mg GAE/gr, total flavonoid sebesar 103,15 mg QE/gr, nilai IC_{50} sebesar 187,14 ppm serta menghasilkan diameter zona hambat sebesar 0 mm.

Simpulan: Ekstrak daun kelapa sawit (*Elaeis guineensis folia Jacq*) memiliki kadar total fenolik dan total flavonoid yang lebih rendah dibandingkan beberapa penelitian lain, memiliki efek antioksidan dengan kategori lemah dan belum terdapat efek antibakteri terhadap kedua bakteri uji

Kata kunci: Antibakteri, daun kelapa sawit, ultrasound assisted extraction, antioksidan