EFEKTIVITAS EKSTRAKSI SENYAWA ANTIBAKTERI PADA DAUN JATI (*Tectona grandis L.f*) DENGAN METODE *ULTRASOUND ASISSTED EXTRACTION* BERDASARKAN KAJIAN KONSENTRASI PELARUT DAN WAKTU EKSTRAKSI

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Latar Belakang: Daun jati (*Tectona grandis* L.f) memiliki potensi sebagai agen antibakteri dikarenakan adanya kandungan senyawa flavonoid. Senyawa flavonoid dapat diambil melalui proses ekstraksi. Salah satu metode ekstraksi yang dapat digunakan adalah *Ultrasound Assisted Extraction* (UAE). Metode UAE merupakan metode ekstraksi yang menggunakan gelombang ultrasonik untuk meningkatkan efektivitas ekstraksi senyawa aktif. Konsentrasi pelarut dan waktu ekstraksi merupakan faktor yang mempengaruhi efektivitas ekstraksi senyawa flavonoid dalam metode UAE.

Tujuan Penelitian: Mengetahui efektivitas ekstraksi daun jati (*Tectona grandis* L.f) dengan menerapkan metode UAE berdasarkan variasi konsentrasi pelarut dan waktu ekstraksi, serta pengaruhnya terhadap kadar flavonoid total, dan menetukan konsentrasi hambat minimum terhadap pertumbuhan bakteri

Metode Penelitian: Rancangan Acak Kelompok digunakan sebagai desain penelitian. Esktrak dibuat dengan metode UAE menggunakan pelarut etanol dengan variasi konsentrasi pelarut dan waktu ekstraksi. Identifikasi ekstrak etanol daun jati dilakukan dengan skrining fitokimia. Analisis kuantitatif dilakukan dengan metode Spektrofotemtri UV-Vis. Uji daya hambat bakteri dilakukan dengan metode difusi cakram *Kirby-Bauer* dengan konsentrasi 20%, 40%, 60%, 80% dan 100%, kontrol positif antibiotik ampisilin, dan kontrol negatif akuades

Hasil Penelitian: Kadar total flavanoid tertinggi pada ekstrak etanol daun jati diperoleh pada konsentrasi pelarut 96% dan waktu 30 menit yaitu 19,9401±0,302 mgEK/g, serta rata-rata diameter zona hambat sebesar 10,616; 11,683; 12,483; 13,166; dan 15,883 mm

Kesimpulan: Perbedaan konsentrasi pelarut dan waktu ekstraksi berpengaruh terhadap kadar total flavanoid dalam ekstrak etanol daun jati, serta memiliki aktvitas dalam menghambat pertumbuhan bakteri *Staphylococcus aureus* dengan klasifikasi sensitif.

Kata Kunci: Antibakteri, Daun jati, Flavanoid total, *Staphyloccus aureus*, *Tectona grandis* L.f, UAE.

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THE EFFECTIVENESS OF ANTIBACTERIAL COMPOUND EXTRACTION FROM TEAK LEAVES (*Tectona grandis* L.f) USING ULTRASOUND-ASSISTED EXTRACTION METHOD BASED ON SOLVENT CONCENTRATION AND EXTRACTION TIME STUDY

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ABSTARCT

Background: Teak leaves (*Tectona grandis* L.f) have potential as antibacterial agents due to their flavonoid content. Flavonoids can be extracted through the extraction process. One of the extraction methods that can be used is Ultrasound Assisted Extraction (UAE). UAE is a method that utilizes ultrasonic waves to enhance the effectiveness of active compound extraction. Solvent concentration and extraction time are factors influencing the effectiveness of flavonoid extraction using the UAE method.
Objective: To evaluate the effectiveness of extracting teak leaves (*Tectona grandis* L.f) using the Ultrasound Assisted Extraction method based on variations in solvent concentration and extraction time, assess its impact on the total flavonoid content, and determine the minimum inhibitory concentration against bacterial growth.
Method: A Randomized Complete Block Design (RCBD) is used as the research design. Extracts are prepared using the ultrasound-assisted extraction method with ethanol solvent varying in concentration and extraction time. Phytochemical screening identifies the components of teak leaf ethanol extracts. Quantitative analysis is conducted using UV-Vis Spectrophotometry. The antibacterial activity is evaluated using the Kirby-Bauer disk diffusion method at concentrations of 20%, 40%, 60%, 80%, and 100%, with ampicillin as the positive control antibiotic and distilled water as the negative control.
Results: The highest total flavonoid content in the ethanol extract of teak leaves was obtained at a solvent concentration of 96% and an extraction time of 30 minutes, measuring 19.9401±0.302 mgEQ/g. Additionally, the average inhibition zone diameters were 10.616, 11.683, 12.483, 13.166, and 15.883 mm.
Conclusion: The differences in solvent concentration and extraction time significantly affect the total flavonoid content in the ethanol extract of teak leaves, as well as its activity in inhibiting the growth of Staphylococcus aureus bacteria, classified as sensitive.

Kata Kunci: Antibacterial, Staphylococcus aureus, teak leaves, total flavonoids, Tectona grandis L.f, ultrasound-assisted extraction (UAE).

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