

PENGARUH WAKTU EKSTRAKSI METODE *ULTRASOUND ASSISTED EXTRACTION* TERHADAP KADAR FLAVONOID DAN FENOLIK TOTAL EKSTRAK DAUN JAMBU BIJI (*Psidium guajava* L.)

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INTISARI

Latar Belakang: Daun jambu biji (*Psidium guajava* L.) merupakan salah satu tanaman yang mulai banyak dibudidayakan karena memiliki banyak manfaat dan potensi sebagai antiinflamasi, antioksidan, antidiabetes, antibakteri dan antifungi. Diantara banyaknya kandungan metabolit sekunder yang ada di dalam daun jambu biji, flavonoid dan fenolik merupakan dua senyawa yang banyak berperan dalam aktivitas farmakologis daun jambu biji. *Ultrasound Assisted Extraction* (UAE) merupakan modifikasi dari metode maserasi yang menggunakan bantuan gelombang ultrasonik dimana memiliki keunggulan yaitu meningkatkan hasil ekstraksi, memerlukan pelarut yang sedikit, waktu ekstraksi yang singkat dan cocok digunakan untuk senyawa flavonoid dan fenolik yang tidak tahan terhadap pemanasan.

Tujuan Penelitian: Mengetahui pengaruh waktu ekstraksi terhadap kadar senyawa flavonoid dan fenolik total ekstrak daun jambu biji.

Metode Penelitian: Daun jambu biji diekstraksi menggunakan metode UAE dengan variasi waktu 15, 30, 45, 60, 75 menit menggunakan etanol 96%. Seluruh ekstrak dilakukan uji kualitatif skrining fitokimia dan Kromatografi Lapis Tipis (KLT) dengan fase digunakan n-heksan: etil asetat: asam format dengan perbandingan (6:4:0,2) untuk uji flavonoid sedangkan untuk uji fenolik digunakan kloroform: etil asetat: asam format (1:3:1). Digunakan metode kolorimetri $AlCl_3$ dengan standar kuersetin untuk penentuan kadar flavonoid total sedangkan metode Folin Ciocalteu dengan standar asam galat untuk penentuan kadar fenolik total. Hasil KLT dapat dilihat dibawah sinar UV 254 nm dan 365 nm.

Hasil Penelitian: Kadar flavonoid total ekstrak daun jambu biji yang diperoleh pada variasi waktu ekstraksi 15, 30, 45, 60, 75 sebesar 55,653; 50,441; 44,643; 52,014; 52,812 mg QE/g secara berturut-turut. Kadar flavonoid tertinggi didapatkan pada waktu ekstraksi 15 menit sebesar 55,653 mg QE/g. Kadar fenolik total ekstrak daun jambu biji yang diperoleh pada waktu 15, 30, 45, 60, 75 menit sebesar 208,070; 299,298; 334,094; 410,702; 250,175 mg GAE/g secara berturut-turut. Kadar fenolik total tertinggi didapatkan pada waktu ekstraksi 60 menit sebesar 410,702 mg GAE/g.

Kesimpulan: Terdapat pengaruh waktu ekstraksi terhadap kadar senyawa flavonoid total pada menit 15 dengan dihasilkan kadar 55,653 mg QE/g dan fenolik total pada 60 menit yaitu 410,702 mg GAE/g pada ekstrak daun jambu biji.

Kata Kunci: Daun Jambu Biji, Flavonoid Total, Fenolik Total, *Ultrasound Assisted Extraction* (UAE), Waktu Ekstraksi

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**EFFECT OF ULTRASOUND ASSISTED EXTRACTION TIME ON TOTAL
FLAVONOID AND PHENOLIC CONTENT IN EXTRACT OF
(*Psidium guajava* L.) LEAVES**

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ABSTRACT

Background: Guava leaf (*Psidium guajava* L.) is one of the plants that is starting to be widely cultivated because it has many benefits and potential as anti-inflammatory, antioxidant, antidiabetic, antibacterial and antifungal. Among the many secondary metabolites present in guava leaves, flavonoids and phenolics are two compounds that play a role in the pharmacological activity of guava leaves. Ultrasound Assisted Extraction (UAE) is a modification of the maceration method using ultrasonic waves which has the advantages of increasing extraction yield, requiring less solvent, short extraction time and is suitable for flavonoid and phenolic compounds that are not resistant to heating.

Objective: To determine the effect of extraction time on the levels of flavonoids and total phenolic compounds in guava leaf extract.

Methods: Guava leaves were extracted using UAE method with time variation of 15, 30, 45, 60, 75 minutes using 96% ethanol. All extracts were subjected to qualitative phytochemical screening and Thin Layer Chromatography (TLC) with the phases used n-hexane: ethyl acetate: formic acid in the ratio (6:4:0.2) for flavonoid test while for phenolic test used chloroform: ethyl acetate: formic acid (1:3:1). Colorimetric method $AlCl_3$ with quercetin standard was used for determination of total flavonoid content while Folin Ciocalteu method with gallic acid standard was used for determination of total phenolic content. The TLC results can be seen under UV light 254 nm and 365 nm.

Result: Total flavonoid content of guava leaf extract obtained at 15, 30, 45, 60, 75 extraction time variations amounted to 55.653; 50.441; 44.643; 52.014; 52.812 mg QE/g respectively. The highest flavonoid content was obtained at 15 minutes extraction time of 55.653 mg QE/g. Total phenolic content of guava leaf extract obtained at 15, 30, 45, 60, 75 minutes amounted to 208,070; 299,298; 334,094; 410,702; 250,175 mg GAE/g respectively. The highest total phenolic content was obtained at 60 minutes extraction time of 410.702 mg GAE/g.

Conclusion: There is an effect of extraction time on the levels of total flavonoid compounds at 15 minutes with the resulting levels of 55.653 mg QE/g and total phenolics at 60 minutes, namely 410.702 mg GAE/g in guava leaf extract.

Keywords: Extraction Time, Guava Leaves, Total Flavonoids, Total Phenolic, Ultrasound Assisted Extraction (UAE)

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