

AKTIVITAS INHIBISI ENZIM α -GLUKOSIDASE EKSTRAK DAN FRAKSI DAUN KERSEN (*Muntingia calabura*) SECARA IN-VITRO

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ABSTRAK

Latar Belakang: Diabetes Melitus merupakan penyakit yang ditandai adanya hiperglikemi. Daun kersen (*Muntingia calabura* L.) mengandung flavonoid sehingga berpotensi menjadi obat antidiabetes. Fraksinasi ekstrak daun kersen berpengaruh terhadap kadar flavonoid total yang diperoleh.

Tujuan: Mengetahui aktivitas ekstrak dan fraksi daun kersen dalam menghambat enzim α -glukosidase dan korelasinya dengan nilai kadar flavonoid total serta mengetahui tingkat sitotoksitasnya berdasarkan uji *Brine Shrimp Lethality Test*.

Metode: Daun kersen diekstraksi kemudian difraksinasi dengan metode Kromatografi Cair Vakum. Ekstrak dan fraksi dilakukan uji KLT, kadar flavonoid total, aktivitas inhibisi enzim secara in vitro, dan uji sitotoksitas BSLT. Analisis data menggunakan *One Way ANOVA* dilanjutkan *Post Hoc* LSD dan korelasi *Pearson*.

Hasil: Kadar flavonoid total ekstrak etanol sebesar $70,17361 \pm 1,220$, fraksi etil asetat sebesar $116,7708 \pm 0,551$, dan fraksi etanol sebesar $60,92 \pm 0,17\%$. Aktivitas inhibisi enzim α -glukosidase dengan %inhibisi ekstrak etanol sebesar $58,02 \pm 0,17\%$, fraksi etil asetat sebesar $60,92 \pm 0,17\%$, dan fraksi etanol sebesar $56,65 \pm 0,17\%$. Nilai LC_{50} ekstrak etanol sebesar $9,363 \mu\text{g/mL}$, fraksi etil asetat sebesar $129 \mu\text{g/mL}$, dan fraksi etil asetat sebesar $12,217 \mu\text{g/mL}$.

Kesimpulan: Ekstrak dan fraksi daun kersen memiliki aktivitas inhibisi enzim α -glukosidase. Terdapat korelasi antara nilai kadar flavonoid total dengan aktivitas inhibisi enzim α -glukosidase ekstrak dan fraksi daun kersen. Ekstrak dan fraksi daun kersen memiliki tingkat sitotoksitas yang sangat tinggi.

Kata kunci: *Diabetes melitus, α -glukosidase, daun kersen, toksisitas, flavonoid.*

INHIBITION ACTIVITY OF THE ENZYME α -GLUCOSIDASE EXTRACT AND FRACTIONS OF CHERRY LEAVES (*Muntingia calabura*) IN-VITRO

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ABSTRACT

Background: Diabetes Mellitus is a disease characterized by hyperglycemia. Cherry leaves (*Muntingia calabura* L.) contain flavonoids so they have the potential to be an antidiabetic drug. Fractionation of cherry leaf extract affects the total flavonoid levels obtained.

Objective: To determine the activity of cherry leaf extracts and fractions in inhibiting the α -glucosidase enzyme and its correlation with the value of total flavonoid levels and to determine the level of cytotoxicity based on the Brine Shrimp Lethality Test.

Method: Cherry leaves were extracted then fractionated using the Vacuum Liquid Chromatography method. Extracts and fractions were subjected to TLC test, total flavonoid content, in vitro enzyme inhibition activity, and BSLT cytotoxicity assay. Data analysis used *One Way ANOVA* followed by *Post Hoc* LSD and Pearson correlation.

Results: Total flavonoid content in ethanol extract of 70.17361 ± 1.220 , ethyl acetate fraction of 116.7708 ± 0.551 , and ethanol fraction of $60.92 \pm 0.17\%$. The inhibitory activity of the α -glucosidase enzyme with the % inhibition of the ethanol extract was $58.02 \pm 0.17\%$, the ethyl acetate fraction was $60.92 \pm 0.17\%$, and the ethanol fraction was $56.6 \pm 0.17\%$. The LC_{50} value of the ethanol extract was $9,363 \mu\text{g/mL}$, the ethyl acetate fraction was $129 \mu\text{g/mL}$, and the ethyl acetate fraction was $12,217 \mu\text{g/mL}$.

Conclusion: Kersen leaf extracts and fractions have α -glucosidase enzyme inhibitory activity. There is a correlation between the total flavonoid content values and the α -glucosidase enzyme inhibitory activity of cherry leaf extracts and fractions. Cherry leaf extracts and fractions have a very high level of cytotoxicity.

Keyword: *Diabetes mellitus, α -glucosidase, cherry leaves, flavonoid, toxicity.*