

Abstrak

ANALISIS TOTAL FLAVONOID DAN AKTIVITAS ANTI-INFLAMASI FRAKSI ETIL ASETAT RIMPANG *Zingiber ottensii* TERHADAP SEL RAW 264.7

Syelma Aurania Nerie, Hanif Nasiatul Baroroh, Rehana

Latar Belakang: Inflamasi merupakan mekanisme pertahanan tubuh terhadap infeksi atau kerusakan jaringan, tetapi respon yang tidak terkendali dapat memicu penyakit kronis seperti artritis dan autoimun. Rimpang bangle hantu (*Zingiber ottensii*) mengandung flavonoid seperti kaempferol yang berpotensi sebagai antiinflamasi, tetapi kajian mengenai efektivitas fraksi etil asetatnya pada tingkat seluler masih terbatas. Penelitian ini bertujuan untuk menentukan kandungan total flavonoid serta mengevaluasi aktivitas antiinflamasi fraksi etil asetat rimpang *Z. ottensii* terhadap sel RAW 264.7 yang diinduksi LPS.

Metodologi: Ekstraksi dilakukan dengan metode maserasi dan fraksinasi cair-cair. Penetapan kadar flavonoid total (TFC) menggunakan metode kolorimetri $AlCl_3$ dengan standar kuersetin. Uji viabilitas sel dilakukan dengan *MTT assay*, sedangkan pengukuran kadar nitrit oksida (NO) menggunakan reagen Griess pada sel RAW 264.7 yang diinduksi LPS 100 ng/mL dengan variasi konsentrasi fraksi (31,25–500 $\mu\text{g/mL}$).

Hasil Penelitian: Fraksi etil asetat rimpang *Z. ottensii* mampu menurunkan produksi NO secara efektif pada konsentrasi 62,5 $\mu\text{g/mL}$ terhadap sel RAW 264.7 yang diinduksi LPS tanpa menyebabkan efek sitotoksik. Aktivitas ini disebabkan oleh adanya kandungan flavonoid pada fraksi sebesar $39,204 \pm 1,83$ mgQE/g.

Kesimpulan: Fraksi etil asetat rimpang *Z. ottensii* memiliki aktivitas antiinflamasi secara *in vitro* melalui penghambatan produksi NO dan berpotensi dikembangkan sebagai kandidat terapi komplementer antiinflamasi alami.

Kata kunci: *Zingiber ottensii*, fraksi etil asetat, sel RAW 264.7, antiinflamasi, kandungan total flavonoid.

Abstract

TOTAL FLAVONOID CONTENT AND ANTI-INFLAMMATORY ACTIVITY OF THE ETHYL ACETATE FRACTION OF *Zingiber ottensii* RHIZOME ON RAW 264.7 CELLS

Syelma Aurania Nerie, Hanif Nasiatul Baroroh, Rehana

Background: Inflammation is biological response of the immune system against infection or tissue damage; however, uncontrolled responses can trigger chronic diseases such as arthritis and autoimmunity. Bangle hantu rhizome (*Zingiber ottensii*) contains flavonoids, such as kaempferol, which have anti-inflammatory potential, yet studies regarding the cellular-level effectiveness of its ethyl acetate fraction remain limited. This study aims to determine the total flavonoid content of the *Z. ottensii* rhizome ethyl acetate fraction and evaluate its anti-inflammatory activity against LPS-induced RAW 264.7 cells.

Methods: Extraction was performed using maceration followed by liquid-liquid fractionation. The total flavonoid content (TFC) was determined using the $AlCl_3$ colorimetric method with quercetin as the standard. Cell viability was assessed via MTT assay, while nitric oxide (NO) levels were measured using Griess reagent on RAW 264.7 cells induced by 100 ng/mL LPS with varying fraction concentrations (31.25–500 μ g/mL).

Results: The ethyl acetate fraction of *Z. ottensii* rhizome effectively reduced NO production at a concentration of 62.5 μ g/mL in LPS-induced RAW 264.7 cells without inducing cytotoxic effects. This activity is attributed to the presence of flavonoids, with the total flavonoid content (TFC) reaching 39.204 ± 1.83 mg QE/g fraction.

Conclusion: The ethyl acetate fraction of *Z. ottensii* rhizome exhibits *in vitro* anti-inflammatory activity through the inhibition of NO production and has the potential to be developed as a candidate for natural complementary anti-inflammatory therapy.

Keywords: *Zingiber ottensii*, ethyl acetate fraction, RAW 264.7 cells, antiinflammatory, total flavonoid content.