PENGARUH KONSENTRASI PELARUT ETANOL TERHADAP AKTIVITAS PEREDAMAN RADIKAL BEBAS DPPH DARI *Kaempferia parviflora* Wall. DENGAN UAE (*Ultrasound-Assisted Extraction)*

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INTISARI

Latar Belakang: Radikal bebas merupakan senyawa reaktif yang dapat merusak sel dan memicu berbagai penyakit degeneratif. Antioksidan alami, seperti yang terkandung dalam jahe hitam (*Kaempferia parviflora* Wall.), dapat digunakan untuk menangkal radikal bebas. Penggunaan metode ekstraksi yang tepat, serta pemilihan pelarut yang sesuai, sangat berpengaruh terhadap hasil ekstrak. Oleh karena itu, penelitian ini dilakukan untuk mengetahui pengaruh konsentrasi pelarut etanol terhadap aktivitas antioksidan ekstrak jahe hitam menggunakan metode *Ultrasound-Assisted Extraction* (UAE).

Metode Penelitian: Penelitian dilakukan secara eksperimental dengan variasi pelarut etanol yaitu 50%, 70%, dan 96%. Ekstrak diuji skrining fitokimia dan dianalisis aktivitas antioksidannya menggunakan metode DPPH yang diukur berdasarkan nilai IC_{50}. Data statistik menggunakan uji normalitas, homogenitas, dan *One-Way ANOVA* untuk mengetahui signifikansi perbedaan antar kelompok.

Hasil Penelitian: Hasil skrining fitokimia menunjukkan bahwa semua variasi ekstrak mengandung flavonoid, fenolik, tanin, alkaloid, dan steroid. Nilai IC_{50} ekstrak jahe hitam dengan etanol 50%, 70%, dan 96% secara berturut-turut yaitu 800,244 ± 48,775; 618,683 ± 56,417; dan 517,403 ± 52,534 ppm. Hasil uji statistik *One-Way ANOVA* menunjukkan bahwa terdapat perbedaan yang signifikan antar kelopok perlakuan ($p < 0,05$).

Kesimpulan: Konsentrasi etanol berpengaruh terhadap aktivitas antioksidan ekstrak jahe hitam. Konsentrasi etanol 96% memberikan aktivitas antioksidan terbaik dengan nilai IC_{50} paling rendah.

Kata Kunci: Antioksidan, DPPH, Jahe Hitam, Pengaruh Etanol, UAE.

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THE EFFECT OF ETHANOL SOLVENT CONCENTRATION ON THE DPPH FREE RADICAL SUPPRESSING ACTIVITY OF *Kaempferia parviflora* Wall. USING THE UAE (Ultrasonic-Assisted Extraction) METHOD

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ABSTRACT

Background: Free radicals are reactive compounds that can damage cells and trigger various degenerative diseases. Natural antioxidants, such as those found in black ginger (*Kaempferia parviflora* Wall.), can be used to neutralize free radicals. The use of appropriate extraction methods and the selection of suitable solvents significantly influence the quality of the extract. Therefore, this study was conducted to investigate the effect of ethanol solvent concentration on the antioxidant activity of black ginger extract using the Ultrasonic-Assisted Extraction (UAE) method.

Objective: This study was conducted experimentally with variations in ethanol solvent concentration at 50%, 70%, and 96%. The extracts were screened for phytochemicals and their antioxidant activity was analyzed using the DPPH method, measured based on the IC_{50} value. Statistical data were analyzed using normality, homogeneity, and One-Way ANOVA tests to determine the significance of differences between groups.

Results: The phytochemical screening results showed that all extract variations contained flavonoids, phenolics, tannins, alkaloids, and steroids. The IC_{50} values of black ginger extracts with ethanol concentrations of 50%, 70%, and 96% were 800.244 ± 48.775; 618.683 ± 56.417; and 517.403 ± 52.534 ppm, respectively. The results of the One-Way ANOVA statistical test showed significant differences between the treatment groups ($p < 0.05$).

Conclusion: Ethanol concentration affects the antioxidant activity of black ginger extract. Ethanol concentration of 96% provides the best antioxidant activity with the lowest IC_{50} value.

Keywords: Antioxidants, DPPH, Black Ginger, Effects of Ethanol, UAE.

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