

**PENGARUH METODE EKSTRAKSI BUNGA KAMBOJA PUTIH
(*Plumeria alba* L.) TERHADAP AKTIVITAS PEREDAMAN
RADIKAL BEBAS DPPH (2,2-diphenyl-1-picrylhydrazyl)**

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INSTISARI

Latar Belakang: Pembentukan radikal bebas di dalam tubuh dapat dicegah dengan menggunakan senyawa antioksidan dengan cara memberikan elektron kepada molekul radikal bebas, sehingga menghentikan reaksi berantai yang dapat merusak sel dan jaringan. Bunga kamboja putih (*Plumeria alba* L.) merupakan salah satu sumber alami yang memiliki aktivitas antioksidan. Aktivitas tersebut berasal dari senyawa metabolit sekunder yaitu flavonoid. Senyawa flavonoid dari bunga kamboja putih dapat diperoleh dengan proses ekstraksi. Metode ekstraksi dapat berpengaruh terhadap kandungan senyawa metabolit sekunder dan aktivitas antioksidan.

Tujuan Penelitian: Mengetahui pengaruh metode ekstraksi terhadap aktivitas peredaman radikal bebas DPPH pada ekstrak bunga kamboja putih *Plumeria alba* L.

Metode Penelitian: Bunga kamboja putih diekstraksi dengan metode maserasi dan *Ultrasonic-assisted Extraction* (UAE) menggunakan pelarut etanol 70% dengan perbandingan 1:10. Uji peredaman radikal bebas DPPH dilakukan pada ekstrak bunga kamboja putih hasil maserasi dan UAE serta pada standar kuersetin. Uji tersebut meliputi pembuatan larutan induk DPPH, ekstrak bunga kamboja putih dan standar kuersetin serta penentuan panjang gelombang serapan maksimum, *operating time*, dan penetapan aktivitas peredaman radikal bebas DPPH menggunakan spektrofotometri UV-Vis. Aktivitas peredaman radikal bebas dihitung berdasarkan nilai IC₅₀ dan dianalisis menggunakan SPSS uji *T-test independent* dengan nilai signifikansi 99%.

Hasil Penelitian: Ekstrak bunga kamboja putih menunjukkan aktivitas peredaman radikal bebas DPPH. Hasil ekstraksi dengan metode maserasi memiliki nilai IC₅₀ sebesar 176,4167 ppm. Sedangkan, hasil ekstraksi dengan metode UAE memiliki nilai IC₅₀ sebesar 99,0907 ppm.

Kesimpulan: Aktivitas peredaman radikal bebas DPPH bunga kamboja putih dalam meredam DPPH dipengaruhi oleh metode ekstraksi yang digunakan, metode UAE memberikan aktivitas yang lebih baik, dibandingkan dengan metode maserasi dan berbeda signifikan ($p < 0,05$).

Kata Kunci: Antioksidan, Bunga kamboja putih, DPPH (2,2-diphenyl-1-picrylhydrazyl), Maserasi, *Plumeria alba* L., UAE.

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THE EFFECT OF EXTRACTION METHODS OF WHITE FRANGIPANI FLOWERS (*Plumeria alba* L.) ON DPPH (2,2-diphenyl-1-picrylhydrazyl) FREE RADICAL SCAVENGING ACTIVITY.

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ABSTRACT

Background: The formation of free radicals in the body can be prevented by using antioxidant compounds, which work by donating electrons to free radical molecules, thereby stopping the chain reactions that can damage cells and tissues. White frangipani flowers (*Plumeria alba* L.) are a natural source known for their antioxidant activity. This activity is attributed to secondary metabolite compounds, specifically flavonoids. Flavonoid compounds from white frangipani flowers can be obtained through the extraction process. The extraction method can influence the content of secondary metabolite compounds and antioxidant activity.

Research Objective: To determine the effect of extraction methods on the DPPH free radical scavenging activity in the extract of white frangipani flowers (*Plumeria alba* L.)

Research Method: White frangipani flowers were extracted using maceration and *Ultrasonic-assisted Extraction* (UAE) methods with 70% ethanol as the solvent in a 1:10 ratio. The DPPH free radical scavenging test was conducted on the white frangipani flower extracts obtained from both maceration and UAE methods, as well as on the quercetin standard. The test involved the preparation of stock solutions of DPPH, white frangipani flower extract, and quercetin standard, along with the determination of the maximum absorption wavelength, operating time, and the evaluation of DPPH free radical scavenging activity using UV-Vis spectrophotometry. The free radical scavenging activity was calculated based on the IC₅₀ value and analyzed using an independent T-test in SPSS with a 99% significance level.

Research Results: The white frangipani flower extract exhibited DPPH free radical scavenging activity. The extract obtained through maceration had an IC₅₀ value of 176,4167 ppm, while the extract obtained through the UAE method had an IC₅₀ value of 99,0907 ppm.

Conclusion: The DPPH free radical scavenging activity of white frangipani flowers is influenced by the extraction method used, with the UAE method providing better activity compared to the maceration method, and the difference is statistically significant ($p < 0,05$).

Keywords: *Antioxidants, White Frangipani Flowers, DPPH (2,2-diphenyl-1-picrylhydrazyl), Maceration, Plumeria alba* L., UAE.

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