PENGARUH PERBEDAAN KONSENTRASI EKSTRAK DAUN BELIMBING WULUH (*Averrhoa bilimbi Linn)* DENGAN METODE *ULTRASOUND ASSISTED EXTRACTION* (UAE) TERHADAP PERTUMBUHAN *Trichophyton rubrum* SECARA IN VITRO

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Abstrak

Dermatofitosis merupakan jenis infeksi jamur yang menyerang jaringan tubuh yang mengandung keratin. Di antara spesies penyebabnya, *Trichophyton rubrum* adalah yang paling sering ditemukan. Daun belimbing wuluh diketahui mengandung berbagai senyawa bioaktif, seperti alkaloid, flavonoid, tanin, saponin, dan steroid, yang berpotensi memberikan efek antijamur. Penelitian ini bertujuan untuk menilai pengaruh variasi konsentrasi ekstrak daun belimbing wuluh (*Averrhoa bilimbi L*.) yang diperoleh melalui teknik ekstraksi berbantuan ultrasonik (UAE) terhadap pertumbuhan *T. rubrum* secara *in vitro*. Ekstrak disiapkan menggunakan pelarut akuades pada konsentrasi 30%, 40%, 50%, dan 60%, serta dibandingkan dengan kontrol negatif berupa akuades dan kontrol positif berupa ketokonazol 2%. Pengujian aktivitas antijamur dilakukan dengan metode sumuran pada media *Sabouraud Dextrose* Agar, kemudian diinkubasi selama 24 dan 48 jam. Meskipun sifatnya fungistatik, ekstrak daun belimbing wuluh tetap menunjukkan kemampuan penghambatan yang signifikan ($p < 0,05$), dengan konsentrasi 50% menjadi yang paling efektif pada kedua periode pengamatan. Temuan ini diperoleh melalui analisis statistik menggunakan uji *One Way ANOVA* dan *Kruskal–Wallis*.

Kata kunci: Dermatofitosis, ekstrak daun belimbing wuluh, *Trichophyton rubrum*, *Ultrasound Assisted Extraction*

THE EFFECT OF DIFFERENT CONCENTRATIONS OF STAR FRUIT (*Averrhoa bilimbi Linn*) LEAF EXTRACT USING ULTRASOUND ASSISTED EXTRACTION (UAE) METHOD ON THE IN VITRO GROWTH OF *Trichophyton rubrum*

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Abstract

Dermatophytosis is a fungal infection that targets keratinized tissues of the body. Among the dermatophytes, Trichophyton rubrum is recognized as the most frequently encountered species. Belimbing wuluh leaves contain several bioactive compounds—such as alkaloids, flavonoids, tannins, saponins, and steroids—that contribute to their antifungal properties. The purpose of this study was to examine how various concentrations of belimbing wuluh leaf extract (Averrhoa bilimbi L.), obtained through ultrasonic-assisted extraction (UAE), influence the in vitro growth of T. rubrum. Distilled water was used as the solvent to prepare extract concentrations of 30%, 40%, 50%, and 60%, which were then compared with a negative control (distilled water) and a positive control (2% ketoconazole). The antifungal activity was assessed using the well-diffusion method on Sabouraud Dextrose Agar, followed by incubation for 24 and 48 hours. Although the extract acts in a fungistatic manner, it exhibited significant inhibitory activity ($p < 0.05$), with the 50% concentration showing the strongest effect at both observation periods. These findings were supported by statistical analyses using One-Way ANOVA and the Kruskal–Wallis test.

Keywords: *Dermatophytosis, starfruit leaf extract, Trichophyton rubrum, Ultrasound Assisted Extraction*