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UJI EFEKTIVITAS ANTIFUNGI EKSTRAK AKAR TANAMAN AKAR WANGI (*Chrysopogon zizanioides*) DENGAN METODE ULTRASONIC ASSISTED EXTRACTION (UAE) TERHADAP PERTUMBUHAN JAMUR *Malassezia furfur* SECARA IN VITRO

RINCIAN HALAMAN (xvii +99 halaman, 22 tabel, 6 gambar, 6 lampiran)

ABSTRAK

Infeksi jamur kulit seperti *Pityriasis versicolor* merupakan masalah dermatologis yang umum di Indonesia disebabkan oleh pertumbuhan berlebih *Malassezia furfur*. Penggunaan antijamur sintetis seperti ketokonazol efektif namun memiliki efek samping dan potensi resistensi, sehingga diperlukan alternatif alami yang lebih aman. Akar wangi (*Chrysopogon zizanioides*) diketahui mengandung senyawa aktif seperti flavonoid, tanin, dan alkaloid yang berpotensi sebagai antifungi. Penelitian ini bertujuan mengetahui aktivitas antifungi ekstrak akar wangi hasil *Ultrasonic Assisted Extraction* (UAE) terhadap pertumbuhan *M. furfur* secara in vitro. Penelitian eksperimental ini menggunakan rancangan *post-test only control group* design dengan perlakuan lima konsentrasi ekstrak (5%, 10%, 20%, 30%, dan 40%) terhadap isolat *M. furfur* pada media *Sabouraud Dextrose Agar* (SDA) dengan metode difusi sumuran. Kontrol positif menggunakan ketokonazol 2% dan kontrol negatif menggunakan DMSO. Pengamatan dilakukan pada 24, 48, dan 72 jam. Hasil uji fitokimia menunjukkan adanya senyawa alkaloid, flavonoid, dan tanin. Rata-rata diameter zona hambat menunjukkan peningkatan yang konsisten seiring kenaikan konsentrasi ekstrak. Aktivitas tertinggi tercatat pada konsentrasi 40% sebesar 17,53 mm pada 48 jam, melampaui kontrol positif (14,44 mm). Uji *One Way ANOVA dan Kruskal-Wallis* menunjukkan perbedaan bermakna antar kelompok perlakuan ($p < 0,05$). Aktivitas antifungi diperkirakan terjadi melalui kerusakan membran sel dan penghambatan sintesis protein oleh flavonoid dan tanin. Dengan demikian, ekstrak akar wangi berpotensi sebagai antifungi alami terhadap *M. furfur*, optimal pada konsentrasi 40% di 48 jam, dan bersifat fungistatik dalam menghambat pertumbuhan jamur.

Kata kunci : Antifungi, Difusi sumuran, Ekstrak akar tanaman akar wangi, *Malassezia furfur*, *Pityriasis versicolor*, *Ultrasound Assisted Extraction*.

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PAGE DETAIL (xvii + 99 pages, 22 tables, 6 pictures, 6 appendices)

ABSTRACT

Fungal skin infections such as Pityriasis versicolor are common dermatological problems in Indonesia, caused by the overgrowth of Malassezia furfur. Although synthetic antifungal agents like ketoconazole are effective, they may cause side effects and resistance, prompting the search for safer natural alternatives. Vetiver root (Chrysopogon zizanioides) contains active compounds such as flavonoids, tannins, and alkaloids, which are potential antifungal agents. This study aimed to determine the antifungal activity of vetiver root extract obtained through the Ultrasonic Assisted Extraction (UAE) method against M. furfur in vitro. This experimental research used a post-test only control group design with five extract concentrations (5%, 10%, 20%, 30%, and 40%) tested against M. furfur isolates on Sabouraud Dextrose Agar (SDA) medium using the well diffusion method. Ketoconazole 2% served as the positive control and DMSO as the negative control. Observations were made at 24, 48, and 72 hours. Phytochemical screening revealed the presence of alkaloids, flavonoids, and tannins. The average inhibition zone increased consistently with higher extract concentrations. The highest activity was observed at the 40% concentration (17.53 mm at 48 hours), exceeding the positive control (14.44 mm). Statistical analysis using One Way ANOVA and Kruskal-Wallis showed significant differences among treatment groups ($p < 0,05$). The antifungal activity is presumed to occur through membrane disruption and inhibition of protein synthesis by flavonoids and tannins. Therefore, vetiver root extract demonstrates strong potential as a natural antifungal agent against M. furfur, with its highest inhibitory effect observed at the 40% concentration after 48 hours of incubation, indicating a primarily fungistatic mode of action.

Keywords: Antifungal, Malassezia furfur, Pityriasis versicolor, Ultrasonic Assisted Extraction, Vetiver root extract, Well diffusion.