

**ANTIFUNGAL ACTIVITY OF FUNGUS COMB EXTRACTS FROM
INDO-MALAYAN TERMITE *Macrotermes gilvus* HAGEN MOUND
AGAINST *Aspergillus flavus* FNCC 6181**

ABSTRACT

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Food security, which includes food availability, access, utilization, and stability, is an important human need that has to be fulfilled in order to provide a good quality of life. The challenge in providing healthy, nutritious, and safe food is to prevent pre- and postharvest losses due to the contamination by microorganisms, including fungi *Aspergillus* sp., especially *A. flavus*. This study is aimed to investigate the alternative natural source antifungal agent by determining the antifungal activity of fungus comb extracted from Indo-Malayan Termite *Macrotermes gilvus* Hagen (Isoptera: Termitidae) against *Aspergillus flavus* FNCC 6181. Fungus comb extraction was carried out gradually using *n*-hexane, ethyl acetate, methanol, and water solvents. Having nystatin as a positive control, the susceptibility test was done through the Kirby-Bauer method on PDA medium. The fungus comb extracts were also determined for their MIC on RPMI 1640 and MFC on PDA medium. The results showed that the highest inhibition activity was presented by ethyl acetate extract and the most effective dose was 50 mg; as proved by the diameter of the inhibition zone that was 49.33 ± 13.43 mm and also the lowest MIC and MFC 0.78 mg/mL and 1.56 mg/mL, respectively. Regarding this, the fungus comb extracted with ethyl acetate had the potential to be an antifungal agent. However, the application of this extract as a food antifungal agent needs to be further investigated.

Keywords : *A. flavus*, antifungal activity, *Macrotermes gilvus*, fungus combs extracts, MIC, MFC

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**AKTIVITAS ANTIFUNGAL EKSTRAK *FUNGUS COMB* DARI SARANG
RAYAP INDO-MALAYAN *Macrotermes gilvus* HAGEN TERHADAP
Aspergillus flavus FNCC 6181**

ABSTRAK

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Ketahanan pangan, yang meliputi ketersediaan, kemudahan akses, pemanfaatan, dan stabilitas pangan merupakan kebutuhan penting manusia yang harus dipenuhi dalam rangka memberikan kualitas hidup yang baik. Tantangan dalam penyediaan pangan yang sehat, bergizi, dan aman adalah mencegah kerusakan pra dan pasca panen akibat kontaminasi mikroorganisme, termasuk *Aspergillus* sp., terutama *A. flavus*. Penelitian ini bertujuan untuk mengetahui alternatif agen antijamur dengan menentukan aktivitas antijamur jengger jamur (*fungus comb*) yang diekstraksi dari sarang rayap Indo-Malaya *Macrotermes gilvus* Hagen (Isoptera: Termitidae) terhadap *Aspergillus flavus* FNCC 6181. Ekstraksi *fungus comb* dilakukan menggunakan pelarut n-heksana, etil asetat, metanol, dan air. Menggunakan nistatin sebagai kontrol positif, uji kepekaan (*susceptibility*) dilakukan dengan metode *Kirby-Bauer*. Ditentukan pula nilai MIC pada media RPMI 1640 dan MFC pada media PDA. Hasil penelitian menunjukkan aktivitas penghambatan tertinggi diberikan oleh ekstrak etil asetat dan dosis paling efektif adalah 50 mg; dibuktikan dengan diameter zona hambat masing-masing sebesar $49,33 \pm 13,43$ mm serta MIC dan MFC terendah masing-masing 0,78 mg/mL dan 1,56 mg/mL. Maka, *fungus comb* yang diekstraksi dengan etil asetat berpotensi sebagai agen antijamur. Namun, penerapan ekstrak ini sebagai agen antijamur dalam makanan perlu diteliti lebih lanjut.

Kata kunci : *A. flavus*, aktivitas antijamur, *Macrotermes gilvus*, ekstrak fungus combs, MIC, MFC

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