ABSTRAK

ISOLASI, ANALISIS FITOKIMIA, DAN EVALUASI TOKSISITAS JAMUR ENDOFIT DARI SEDIMEN TUMBUHAN BAKAU API-API (*Avicennia marina* (forssk.) vierh).

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Latar Belakang: Menurut WHO, kanker menjadi penyebab utama kematian di dunia dan peringkat ke-5 penyakit paling mematikan di Indonesia. Namun 90% kegagalan terapi kanker disebabkan karena resistensi obat sehingga perlu dilakukan eksplorasi senyawa antikanker berbasis bahan alam. Penelitian ini dilakukan untuk mengisolasi jamur endofit yang berasal dari sediman bakau api-api (*Avicennia marina*), mengidentifikasi kandungan kimia, dan mengevaluasi toksisitasnya terhadap larva udang (*Artemia salina*).
Metodologi: Penelitian diawali dengan mengisolasi jamur endofit dari sedimen *A. marina* hingga didapatkan isolat jamur yang murni kemudian diidentifikasi secara molekuler menggunakan PCR (*Polymerase Chain Reaction*). Isolat jamur difermentasi pada media padat beras dan diekstraksi dengan etil asetat dengan cara *shaking* selama 24 jam. Identifikasi kandungan kimia dilakukan dengan menggunakan metode HPLC dan KLT. Evaluasi toksisitas dilakukan dengan metode BSLT (*Brine Shrimp Lethality Test*) hingga didapatkan nilai LC_{50}.
Hasil: Jamur endofit yang telah diisolasi dari sedimen *A. marina* teridentifikasi sebagai spesies *Trichoderma virens*. Pada analisis HPLC terdapat 19 puncak baik dari ekstrak jamur *T. virens* maupun ekstrak media beras namun semua puncak menunjukkan waktu retensi dan pola spektra UV yang berbeda. Profil KLT menunjukkan keberadaan terpenoid atau steroid dan flavonoid. Hasil evaluasi toksisitas menunjukkan ekstrak *T. virens* memiliki nilai LC_{50} sebesar 310,455 ppm yang termasuk kategori toksik.
Kesimpulan: Jamur *T. virens* dinyatakan toksik terhadap larva udang sehingga berpotensi untuk dikembangkan sebagai agen antikanker.

Kata Kunci: *Avicennia marina*, BSLT, Jamur Endofit, Sedimen, *Trichoderma virens.*

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ABSTRACT

ISOLATION, PHYTOCHEMICAL ANALYSIS, AND TOXICITY EVALUATION ENDOPHYTE FUNGUS FROM THE SEDIMENTS OF API-API MANGROVE PLANT (*Avicennia marina* (forssk.) vierh).

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Background: According to WHO, cancer is the main cause of death in the world and is the 5th most death-causing disease in Indonesia. However, 90% of cancer therapy failures due to drug resistance, so it is necessary to explore anticancer compounds based on natural products. This study was carried out to isolate endophytic fungus from mangrove (*Avicennia marina*) sediments, to identify chemical constituents, and to evaluate their toxicity against brine shrimp larvae (*Artemia salina*).

Methodology: The study was initiated by isolating endophytic fungus from *A. marina* to obtain pure fungal isolate which was then identified molecularly by using *Polymerase Chain Reaction* (PCR). Fungal isolate was fermented on solid rice media and extracted with ethyl acetate using maceration method. Identification of chemical content was performed by HPLC and TLC methods. Toxicity evaluation was cunducted using the BSLT (*Brine Shrimp Lethality Test*) method in order to measure the LC_{50} value.

Results: The endophytic fungi isolated from the sediments of *A. marina* identified as *Trichoderma virens*. Based on the HPLC analysis, there were 19 peaks of both the fungal extract and the extract of solid rice media. However, no peaks showed the same retention time and UV spectra. The TLC profile indicated the presence of terpenoids or steroids and flavonoids. The toxicity evaluation showed that the EtOAc extract of *T. virens* had a LC_{50} value of 310,455 ppm, indicating toxic category.

Conclusion: The fungus *T. virens* is toxic against *A. salina* larvae, thereby it has the potential to be developed as an anticancer agent.

Keywords: *Avicennia marina,* BSLT, Endophytic Fungus, Sediments, *Trichoderma virens.*

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