

**ISOLASI DAN IDENTIFIKASI BAKTERI ENDOFUNGAL JAMUR
TIRAM (*Pleurotus ostreatus*) DAN POTENSINYA SEBAGAI
ANTIMIKROBA**

SKRIPSI

Diajukan sebagai salah satu syarat untuk memperoleh gelar Sarjana Sains
Program Studi Biologi



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FAKULTAS PENDIDIKAN MATEMATIKA DAN ILMU PENGETAHUAN ALAM
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ISOLASI DAN IDENTIFIKASI BAKTERI ENDOFUNGAL JAMUR TIRAM (*PLEUROTUS OSTREATUS*) DAN POTENSINYA SEBAGAI ANTIMIKROBA

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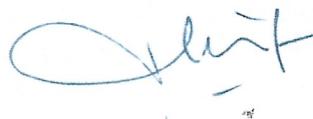
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ISOLASI DAN IDENTIFIKASI BAKTERI ENDOFUNGAL JAMUR
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ANTIMIKROBA

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*Dengan ini saya menyatakan bahwa skripsi yang berjudul, “**ISOLASI DAN IDENTIFIKASI BAKTERI ENDOFUNGAL JAMUR TIRAM (*Pleurotus ostreatus*) DAN POTENSINYA SEBAGAI ANTIMIKROBA**” ini beserta seluruh isinya adalah benar-benar karya saya sendiri dan saya tidak melakukan penjiplakan atau pengutipan dengan cara-cara yang tidak sesuai dengan etika ilmu yang berlaku dalam masyarakat keilmuan. Atas pernyataan tersebut, saya siap menanggung risiko yang dijatuhkan kepada saya apabila di kemudian hari ditemukan adanya pelanggaran etika keilmuan dalam karya ini, atau ada klaim dari pihak lain terhadap keaslian karya saya.*

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ISOLASI DAN IDENTIFIKASI BAKTERI ENDOFUNGAL JAMUR TIRAM (*Pleurotus ostreatus*) DAN POTENSINYA SEBAGAI ANTIMIKROBA

ABSTRAK

Masalah penyakit akibat bakteri *Escherichia coli* dan fungi *Candida albicans* terjadi cukup luas dengan fenomena resistensi patogen tersebut terhadap pengobatan yang sudah umum menyebabkan perlu ditemukan alternatif lain. Bakteri endofungal telah banyak dimanfaatkan sebagai penghasil senyawa antibakteri. Kemudahan produksi serta harga ekonomis dan inang yang mudah didapat mendorong dilakukannya pengujian aktivitas antimikroba dari ekstrak bakteri endofungal jamur tiram (*Pleurotus ostreatus*) terhadap *E. coli* dan *C. albicans*. Penelitian didahului dengan isolasi bakteri endofungal jamur tiram, identifikasi sampai tingkat genus, seleksi isolat potensial penghasil senyawa antimikroba, pengukuran kurva tumbuh, ekstraksi, lalu pengujian aktivitas antimikroba. Pengujian aktivitas antimikroba dilakukan dengan uji DDA, MIC, dan MBC dengan perlakuan konsentrasi ekstrak yaitu 40,0 mg/ml, 10,0 mg/ml, dan 2,5 mg/ml dengan kontrol positif berupa ampicillin 50 µg/ml untuk *E. coli* dan ketoconazole 30 mg/ml untuk *C. albicans*, serta kontrol negatif berupa DMSO 10%. Hasil identifikasi menunjukkan sebanyak enam isolat memiliki karakteristik mendekati genus *Bacillus*, empat isolat mendekati *Acinetobacter*, dua isolat mendekati *Neisseria*, dan masing-masing satu isolat mendekati *Pseudomonas* dan *Lactobacillus*. Diameter zona hambat ekstrak supernatan isolat bakteri endofungal yang berbeda signifikan terhadap *E. coli* dihasilkan sebanyak dua isolat bakteri pada konsentrasi 40,0 mg/ml. Sementara itu, terdapat empat isolat bakteri yang memiliki daya hambat signifikan terhadap *C. albicans* pada konsentrasi 40,0 mg/ml. Hasil uji MIC dan MBC dari semua ekstrak supernatan bakteri menunjukkan nilai konsentrasi MIC dan MBC yang sejalan dengan hasil uji DDA. Dari hasil penelitian terbukti bahwa ekstrak metabolit isolat bakteri endofungal *P. ostreatus* memiliki aktivitas antimikroba terhadap *E. coli* dan *C. albicans*.

Kata kunci: antimikroba, bakteri endofungal, *Candida albicans*, *Escherichia coli*, *Pleurotus ostreatus*.

**ISOLASI DAN IDENTIFIKASI BAKTERI ENDOFUNGAL JAMUR
TIRAM (*Pleurotus ostreatus*) DAN POTENSINYA SEBAGAI
ANTIMIKROBA**

ABSTRACT

The disease problems caused by *Escherichia coli* and *Candida albicans* are quite widespread, with the phenomenon of resistance of these pathogens to common treatments, making it necessary to find other alternatives. Endofungal bacteria have been widely used as producers of antibacterial compounds. The ease of production, economical price, and availability of hosts encouraged testing the antimicrobial activity of the endofungal bacterial extract of oyster mushrooms (*Pleurotus ostreatus*) against *E. coli* and *C. albicans*. The research was proceeded by the isolation of oyster mushroom endofungal bacteria, identification to genus level, selection of potential isolates producing antimicrobial compounds, measurement of growth curves, extraction, and testing of antimicrobial activity. Antimicrobial activity testing was carried out using the DDA, MIC, and MBC tests with treatment extract concentrations of 40.0 mg/ml, 10.0 mg/ml, and 2.5 mg/ml with a positive control in the form of ampicillin 50 µg/ml for *E. coli* and ketoconazole 30 mg/ml for *C. albicans*, as well as a negative control in the form of 10% DMSO. The identification results showed that six isolates had characteristics close to the *Bacillus* genus, four isolates were close to *Acinetobacter*, two isolates were close to *Neisseria*, and one isolate each was close to *Pseudomonas* and *Lactobacillus*. The diameter of the inhibition zone of the supernatant extract of endofungal bacterial isolates which was significantly different from *E. coli* resulted in two bacterial isolates at concentration of 40.0 mg/ml. Meanwhile, four bacterial isolates had significant inhibitory power against *C. albicans* at a concentration of 40.0 mg/ml. The MIC and MBC test results of all bacterial supernatant extracts showed concentration values were in line with the DDA test results. From the research results, it was proven that the metabolite extract of the endofungal bacterial isolate *P. ostreatus* had antimicrobial activity against *E. coli* and *C. albicans*.

Keywords: antimicrobial, *Candida albicans*, endofungal bacteria, *Escherichia coli*, *Pleurotus ostreatus*.

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