

SKRINING AKTIVITAS ANTIBAKTERI EKSTRAK ETIL ASETAT JAMUR ENDOFIT DARI DAUN DAN BUAH BIWA (*Eriobotrya japonica* (Thunb.)

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ABSTRAK

Meningkatnya kasus resistensi antibiotik pada bakteri patogen, seperti *Staphylococcus aureus* dan *Methicillin-resistant Staphylococcus aureus* (MRSA), mendorong eksplorasi sumber antibakteri baru dari bahan alam, termasuk jamur endofit. Penelitian ini bertujuan untuk mengevaluasi aktivitas antibakteri ekstrak etil asetat jamur endofit yang berasal dari daun dan buah biwa (*Eriobotrya japonica* (Thunb.) Lindl.) terhadap *Escherichia coli* ATCC 25922, *Staphylococcus aureus* ATCC 6538, dan *Methicillin-resistant Staphylococcus aureus* (MRSA) ATCC 33591, menentukan nilai Konsentrasi Hambat Minimum (KHM), serta mengidentifikasi kandungan metabolit sekundernya. Metode penelitian meliputi isolasi jamur endofit dilakukan dengan metode tanam dan tuang pada media *Sabouraud Dextrose Agar* (SDA), dilanjutkan pemurnian serta kultivasi pada media beras. Ekstraksi metabolit dilakukan menggunakan metode maserasi dengan pelarut etil asetat. Uji aktivitas antibakteri dilakukan dengan metode difusi cakram Kirby-Bauer, sedangkan penentuan KHM menggunakan metode mikrodilusi dengan indikator resazurin. Analisis profil senyawa dilakukan melalui Kromatografi Lapis Tipis (KLT) serta uji fitokimia. Hasil penelitian diperoleh 14 isolat jamur endofit, 5 isolat dari buah dan 9 isolat dari daun biwa. Aktivitas antibakteri tertinggi terhadap MRSA ditunjukkan oleh isolat EJB3 dengan diameter zona hambat 17,46 mm, sedangkan terhadap *Staphylococcus aureus* aktivitas tertinggi diperoleh pada isolat EJD9 dengan diameter 13,45 mm. Seluruh ekstrak tidak menunjukkan aktivitas terhadap *Escherichia coli*. Nilai KHM ekstrak EJB3 terhadap MRSA dan ekstrak EJD9 terhadap *Staphylococcus aureus* masing-masing adalah 4000 µg/mL. Hasil skrining fitokimia menunjukkan bahwa ekstrak isolat EJB3 dan EJD9 mengandung senyawa golongan terpenoid/steroid dan fenolik. Kesimpulannya, ekstrak etil asetat jamur endofit dari daun dan buah biwa berpotensi sebagai agen antibakteri, khususnya terhadap bakteri Gram positif seperti MRSA dan *Staphylococcus aureus*.

Kata kunci: Aktivitas Antibakteri, Jamur Endofit, *Eriobotrya japonica*, MRSA, *Staphylococcus aureus*.

**SCREENING OF ANTIBACTERIAL ACTIVITY OF ETHYL ACETATE
EXTRACT OF ENDOPHYTIC FUNGI FROM LEAVES AND FRUITS OF
LOQUAT (*Eriobotrya japonica* (Thunb.) Lindl.)**

ABSTRACT

The increasing incidence of antibiotic resistance in pathogenic bacteria such as *Staphylococcus aureus* and *Methicillin-resistant Staphylococcus aureus* (MRSA) has encouraged the exploration of new antibacterial sources from natural products, including endophytic fungi. This study aimed to evaluate the antibacterial activity of ethyl acetate extracts from endophytic fungi isolated from the leaves and fruits of loquat (*Eriobotrya japonica* (Thunb.) Lindl.) against *Escherichia coli* ATCC 25922, *Staphylococcus aureus* ATCC 6538, and *Methicillin-resistant Staphylococcus aureus* (MRSA) ATCC 33591, determine the minimum inhibitory concentration (MIC) values, and identify their secondary metabolite content. The endophytic fungi were isolated using the pour plate and direct planting methods on *Sabouraud Dextrose Agar* (SDA), followed by purification and cultivation on rice media. Metabolite extraction was performed using the maceration method with ethyl acetate as the solvent. Antibacterial activity was assessed using the Kirby-Bauer disk diffusion method, while MIC determination was carried out using the microdilution method with resazurin as an indicator. Phytochemical profiling was conducted using Thin Layer Chromatography (TLC) and phytochemical screening tests. The results of the study obtained 14 isolates of endophytic fungi, 5 isolates from fruit and 9 isolates from loquat leaves. The highest antibacterial activity against MRSA was shown by isolate EJB3 with an inhibition zone diameter of 17.46 mm, while against *Staphylococcus aureus* the highest activity was obtained by isolate EJD9 with a diameter of 13.45 mm. All extracts showed no activity against *Escherichia coli*. The MIC value of EJB3 extract against MRSA and EJD9 extract against *Staphylococcus aureus* was 4000 µg/mL, respectively. The results of phytochemical screening showed that the extracts of isolates EJB3 and EJD9 contained terpenoid/steroid and phenolic compounds. In conclusion, ethyl acetate extracts of endophytic fungi from loquat leaves and fruit have the potential as antibacterial agents, especially against Gram-positive bacteria such as MRSA and *Staphylococcus aureus*.

Keywords: Antibacterial activity, Endophytic fungi, *Eriobotrya japonica*, MRSA, *Staphylococcus aureus*.