ABSTRACT

Aisyah Calisti Humairah. 24020221140067. ***Screening and Isolation of Potential Antibacterial and Antioxidant Compounds from Endophytic Fungi Associated with the Kepel Plant (Stelechocarpus burahol).*** Supervised by Agung Suprihadi and Praptiwi.

This research explores the potential of endophytic fungi from the kepel plant (*Stelechocarpus burahol*), which is ethnobotanically well-known in Indonesia and Southeast Asia for its various traditional benefits, one of which is as an antibacterial and antioxidant agent. This study aimed to investigate the potential antibacterial and antioxidant activities of 27 isolates of endophytic fungi obtained from 7 different parts of the kepel plant (*Stelechocarpus burahol*). Screening of antibacterial and antioxidant activities using the thin-layer chromatography (TLC) bioautography method. Antibacterial activity was tested against *Escherichia coli* (InaCC-B4) and *Staphylococcus aureus* (InaCC-B5), while antioxidant activity was evaluated using the 2,2-diphenyl-1-picrylhydrazyl (DPPH) method. The active extracts were tested against both bacterial strains to obtain the minimum inhibitory concentration (MIC). The Inhibitory Concentration 50 (IC_{50}) values of active extracts were determined using the microdilution method in liquid media. The results of TLC bioautography screening showed that 13 extracts exhibited inhibitory activity against *E. coli*, 15 extracts inhibited *S. aureus*, 9 extracts inhibited both bacteria, and 3 extracts showed antioxidant activity. The extract coded SbDbCb-1 exhibited the highest antibacterial activity, with a <50 µg/mL MIC value against *E. coli* and *S. aureus*. This extract also had the highest antioxidant activity, with an IC_{50} value of <50 µg/mL and an Antioxidant Activity Index (AAI) of <1. Isolation of compounds from endophytic fungus code SbDbCb-1 using methanol solvent resulted in three fractions with similar chromatogram and bioautogram profiles, which were then combined into a target fraction. The MIC value of the target fraction was 1 µg/mL against both *E. coli* and *S. aureus*. The IC_{50} value obtained was 523 µg/mL, with an AAI of 0.05.

Key word: *Endophytic fungi, kepel, Stelechocarpus burahol, antibacterial, antioxidant*