ABSTRACT

Novita WijiSetyaningsih, 24020222120014. **Testing the Antioxidant Activity of Lactic Acid Bacteria Isolates (LAB) from the Fermentation of Peda Selar Fish (*Selaroides leptolepis*)**. Under the supervision of Endang Kusdiyantini and Sri Pujiyanto.

The rise in cases of degenerative diseases such as cancer, diabetes, and cardiovascular disease is caused by oxidative stress resulting from the accumulation of free radicals. Free radicals are reduced by antioxidants, which act as scavengers. Given the importance of these antioxidants, efforts to identify sources of antioxidants continue to intensify. Lactic acid bacteria (LAB) are known to produce secondary metabolites that have the potential to act as natural antioxidants. This study aims to determine the characteristics of LAB isolates from the fermentation of peda selar fish and to measure their antioxidant activity using the DPPH method. LAB isolation was performed using MRSA+CaCO3 0.75% medium through serial dilutions. Characterization of the isolates included colony morphology observation, Gram staining, catalase test, and fermentation type test. Antioxidant activity testing was performed on the isolate samples using the DPPH method at a wavelength of 517 nm. Analysis of secondary metabolites was also performed using Thin Layer Chromatography (TLC). The isolation yielded 12 bacterial isolates with different characteristics, however only 4 isolates is FB33, FB36, FB41, and FB43 met the criteria for LAB, namely Gram-positive and catalase-negative. The DPPH assay results showed that all strains had antioxidant activity with IC_{50} values of 16.81 ppm (FB33), 13.66 ppm (FB36), 19.73 ppm (FB41), and 14.08 ppm (FB43), respectively. Isolate FB36 exhibited the highest antioxidant activity because it had the lowest IC_{50} value. Statistical analysis using two-way ANOVA showed that the isolates, concentrations, and their interaction had a significant effect on antioxidant activity ($p<0.05$). The results of this study indicate that the LAB isolate from the fermentation of peda selar fish has potential as a source of natural antioxidants.

Keywords: *Antioxidants, DPPH, IC50, LAB TLC*