

ABSTRACT

Salma Ramadhiane. 24020121140206. **Enzyme Screening on Lactic Acid Bacteria Isolated from Fruit Peel Ecoenzyme.** Supervised by Siti Nur Jannah and Dwi Retno Fatmawati.

*Fruit peels are often regarded as organic waste without optimal utilization, whereas in fact they can be processed into valuable products such as coenzymes. Ecoenzymes produced from fruit peel fermentation contain enzymes and secondary metabolites that are beneficial for both industry and the environment. This study aimed to isolate and characterize lactic acid bacteria (LAB) from fruit peel-based coenzymes and to evaluate their potential in enzyme production. The coenzymes were fermented for three months, after which LAB isolation was carried out using MRS Broth and MRS Agar media. LAB characterization included morphological, physiological, and molecular identification through 16S rRNA gene amplification, as well as enzyme screening (protease, lipase, amylase, and cellulase). Based on the results, LAB isolates obtained from fruit peel coenzymes demonstrated the ability to produce four types of enzymes with varying activity levels. From the screening of protease, lipase, amylase, and cellulase, isolate A3 consistently exhibited the highest enzymatic index compared to the other isolates, calculated from the ratio of colony diameter to clear zone diameter. The highest average value was observed in the lipase assay, with an enzymatic index of 1.76 mm. Furthermore, molecular identification revealed that isolate A3 was *Lactobacillus pentosus*.*

Keywords: Lactic Acid Bacteria (LAB), Ecoenzyme, Enzymes, Molecular identification