

## ABSTRACT

Deswita Theodora Hutauruk. 24020221140047. Phenotypic Characterization and Enzymatic Activity Assay of Bacteria Isolates from Fermented Dage Food. Supervised by Arina Tri Lunggani and Nurhayati.

Indonesia has a rich diversity of traditional fermented foods, one of which is *dage*, a specialty from Banyumas made from tofu dregs. The fermentation process of *dage* involves not only fungi but also bacteria that help break down complex compound. This study aimed to characterize bacterial isolates from *dage* and evaluate their ability to produce amylase, protease, lipase, and cellulase enzymes, both qualitatively and quantitatively. A total of five bacterial isolates were obtained, designated as D1 through D5. Phenotypic characterization was conducted on all isolates, and based on profile matching, isolates D1, D3, and D5 were presumptively identified as belonging to the genus *Lactobacillus*, while isolates D2 and D4 were presumptively identified as belonging to the genus *Enterococcus*. Screening tests for amylase, protease, lipase, and cellulase activity were conducted on five isolates, with protease enzymes showing the greatest potential. Qualitative protease tests were performed on skim milk agar media by measuring the ratio of the diameter of the clear zone to the diameter of the bacterial colony. Based on the qualitative protease test, isolate D2 produced the highest proteolytic index of 7.55, so it was followed by a quantitative protease test to calculate the unit activity of the protease enzyme. The quantitative protease test used the Folin-Ciocalteu method with a wavelength of 660 nm. Isolate D2 produced the highest protease enzyme at 24 hours during incubation with an enzyme activity unit of 0.0073 U/ml. Bacterial isolates from *dage* are potential microbes as an alternative source of protease enzyme production.

*Keyword* : bacteria, *dage*, fermentation, *Lactobacillus*, *Enterococcus*, protease