

ABSTRACT

Saidah, Afif Nur. 2014. **Isolation of Thermophilic Bacteria Proteolytic Hot Pacet Mojokerto and Protease Enzyme Testing**. Thesis. Department of Biology, Faculty of Science and Technology of the State Islamic University (UIN) Maulana Malik Ibrahim Malang. Supervisor I: Anik Maunatin, MP and Advisor II: Mujahideen Ahmad, M.Sc.

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Thermophilic bacteria are microbes that are generally defined as organisms that live at temperatures above 45°C. Thermophilic bacteria potential as sources of typical enzyme that can be used in the processing of waste and mineral weathering. Protease is an enzyme that plays a role in the biocatalyst reaction that causes the breakdown of protein. Heat-stable protease is needed in food and non food industry and biotechnological applications because it reduces the possibility of contaminants in addition to the more economical. This study aims to determine the type of proteolytic thermophilic bacteria found in hot springs Pacet Mojokerto by isolation and identification as well as to determine the activity of the protease enzyme.

This research is a qualitative descriptive study. The data obtained are presented in descriptive includes characteristic macroscopic, microscopic, protease activity assay qualitatively and quantitatively as well as identification to the species level using Microbact Kit. Test potential proteolytic qualitatively by measuring the diameter of clear zone around the colonies generated. While quantitatively in enzyme activity assay using casein as a substrate.

The results obtained five isolates isolation proteolytic thermophilic bacteria have the ability to proteolysis with clear zone on the substrate casein. Based on the microscopic characteristics and test Microbact, obtained 5 isolates and only 2 different species that isolates AP1, AP3, and AP4 including *Bacillus firmus*. While isolates AP2 and AP5 including *Bacillus cereus*. Test results are qualitatively proteolytic activity of 5 isolates were able to produce a clear zone around the colony that AP1 has a value of 9,6 mm qualitative activity, AP2 has a value of 4 mm qualitative activity, AP3 has a value of 14 mm qualitative activity, AP4 has a value of 25 mm qualitative activity and AP5 has a value of 12 mm qualitative activity. While the protease enzyme activity quantitatively AP1 isolates of 0,4870 U/mL, AP2 of 0,4615 U/mL, AP3 of 0,3850 U/mL, AP4 of 0,4020 U/mL and AP5 of 0,6910 U/mL. Qualitatively, the highest clear zone is owned by AP4 isolates at 25 mm. While the highest enzyme activity AP5 isolates possessed the amount of 0,6910 U/mL.