

ABSTRACT

Permana Krida Satriawan. 24020221130025. **Application of Keratinase from *Halomonas* sp. Bacteria for Unhairing Process of Leather Tanning.** Under guidance of Anto Budiharjo and Nurhayati.

Keratinase (EC.3.4.21/EC.3.4.24/EC.3.4.99.11) is an enzyme that can be used as an eco-friendly solution in the unhairing process in leather tanning industry. Keratinase can degrade keratin substrates in hair that are difficult to degrade naturally. This study aims to determine the potential Bledug Kesongo bacterial isolates to produce keratinase, identify the effect of temperature and pH on keratinase activity, and determine its application in hair removal on cowhide and goathide. The research conducted includes screening of Bledug Kesongo bacterial isolates producing keratinase, keratinase production, keratinase activity testing, and application testing. Screenings of keratinase-producing bacteria were carried out using Skim Milk Agar and Minimum Salt Medium with goathide and chicken feather carbon sources. Keratinase was produced in a 200 mL Erlenmeyer flask with Feather Meal Broth media inoculated with *Halomonas* sp. starter. The activity of the fermentation culture supernatant was tested using keratin substrate from *feather meal*. Research conducted using a Completely Randomized Design (CRD) factorial with temperature treatments of 20 °C, 30 °C, 40 °C and pH 5, 7, 9, and 11. The application test of crude keratinase extract was carried out on cow and goat skin by the swabbing method at an incubation temperature of 30 °C and 40 °C. Optimum activity was achieved at 40 °C and pH 5, 7, and 9 based on Analysis of Variance and Duncan's Multiple Range Test. The application test results showed that keratinase was able to help shed hair most effectively at 40 °C with a shedding time of 24 hours on goat skin and 48 hours on cow skin. Based on the research conducted, the bacteria *Halomonas* sp. from Bledug Kesongo could produce keratinase and it could be applied for goat and cow skin unhairing effectively at a temperature of 40°C.

Keywords: *Bledug Kesongo Bacteria, hide dehairing, enzyme applications, Halomonas* sp., *keratinase*