

ABSTRACT

Linda Rahmawati, 24020221120001. **Optimization of pH and Temperature for Lipase Enzyme Activity from Bacterial Isolate BK 6 and Its Application in Fabric Bioscouring** (Under the supervision of Wijanarka and Anto Budiharjo).

Lipase (EC 3.1.1.3) is a biocatalyst with significant potential in various industrial biotechnology applications, including its use in the textile industry as an eco-friendly and efficient bioscouring agent prior to fabric dyeing. This study aims to optimize the pH and temperature conditions for the activity of lipase produced by the bacterial isolate BK 6, which was obtained from the haloalkaliphilic environment of Bledug Kesongo. The research utilized a Completely Randomized Design (CRD) with a factorial arrangement involving two factors: pH levels (8, 10, and 11) and incubation temperatures (40 °C, 50 °C, and 60 °C). Enzyme activity was determined using a spectrophotometer at 715 nm and analyzed statistically using ANOVA, followed by post-hoc testing if significant differences were found. The lipase with the highest activity was then applied in the fabric pre-treatment bioscouring process, and its effectiveness was evaluated based on dye absorption strength using spectrophotometric analysis.

Keywords: lipase enzyme, haloalkaliphilic bacteria, optimization, Bledug Kesongo