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# Optimization of Keratinase Production by The Natural Isolate *Bacillus cereus*

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**Abstract**: Keratin is an insoluble and protein-rich epidermal substance (eg, beak, claw, feather, horn, wool, hair, nail). It is produced in significant quantities as a by-product in animal processing plants. Microbial keratinases have major potential to degrade keratin waste for sustainable recycling of the protein and amino acids. In this study, 35 *Bacillus* strains were isolated from poultry waste and showed proteolytic activity on Skim-Milk Agar medium. The Keratin-Azure substrate was used to determine the keratinolytic activity. MHK-60 strain was chosen the best keratinase producer and identified as *Bacillus cereus* with microscopic (Gram +, endospor +, bacil) and molecular analysis (16S rRNA, 99%). Some conditions for enzyme production was optimized with basal medium($MgSO_4x7H_2O$ 0.2g/L, $K_2HPO_4$ 1g/L, $CaCl_2$ 0.1g/L, $KH_2PO_4$ 0.4g/L). The highest keratinase production was carried out at pH:7.00, 30°C for 120 hours shaking 200 rpm by adding 10 g/L feather into the basal medium.

**Keywords:** Keratinase, *Bacillus,* Optimization, Keratin-Azure

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