Journal of Research in Biology

An International Scientific Research Journal

# Isolation and characterization of feather degrading bacteria from poultry waste

**Authors:**
**Arun Kumar JM[1], Lakshmi A[2], Sangeetha Rani V[2], Sailaja B[2].**

**Institution:**
1. Asst Prof, Dept of Biotechnology, Ballari Institute of Technology and Managment, Bellary.

2. B.E. Scholar, Dept of Biotechnology, Ballari Institute of Technology and Managment, Bellary.

**Corresponding author:**
**Arun Kumar JM.**

**ABSTRACT:**

The aim of this study was to characterize keratinolytic bacteria isolated from feather waste. Feather waste is generated in large amounts as a by-product of commercial poultry processing. This residue is almost pure keratin, which is not easily degradable by common proteolytic enzymes. The crude protein from feather has of high nutrient value and could be used as animal feed for livestock and fish feed in aquaculture. Feather constitutes over 90% protein, the main component being beta-keratin, a fibrous and insoluble structural protein extensively cross linked by disulfide bonds. This renders them resistant to digestion by animals, insects and proteases leading to serious disposal problems. It is degraded only by keratinase enzyme. These enzymes were produced by some species of *Bacillus*. In the present study, *B. licheniformis* was used for degrading keratin substrate such as feathers. Based on morphology and biochemical analysis, the isolates were identified as *Bacillus* spp. Fermentation using feather as a substrate was carried out on minimal salt media for seven days which resulted in almost complete degradation of feather. The optimum conditions for keratinase production were temperature 37°C, pH 7.0 and initial substrate concentration 1%. Maximum enzyme activity was found to be 100 U/L with the protein concentration of 4 µg/ml.

**Keywords:**

Feather, keratin, feather degrading bacterium, poultry waste, keratinase, keratinolytic activity.