

## Abstract

Chicken feathers contain roughly around 90% protein in the form of keratin, which has a lot of uses in the production of goods such as animal feed, biofilm, fertilizer, and wood adhesive. Common disposal methods like burning require energy and emit carbon dioxide, while dumping and burying may result in the spread of pathogens. On the other hand, currently available extraction methods such as hydrolysis, dissolution in ionic liquids, microwave technique, steam explosion technique, and thermal hydrolysis have numerous downsides. Thus, the aim of this research was to explore a more environmentally friendly and efficient method to extract keratin by using bacteria. The first step was to screen for the best bacterial strain from the genus *Bacillus* that can degrade chicken feathers to extract keratin through the use of keratinase enzyme. Afterwards, nutrients for the strain were optimized in an attempt to increase keratin yield and quality. After screening, the *Bacillus subtilis* strain N10ND was chosen for nutrient optimization using supplementary NaCl (sodium chloride) and MgSO<sub>4</sub> (magnesium sulfate). It was found that the addition of NaCl and MgSO<sub>4</sub> had no significant impact on the quantity and quality of the keratin yield.

Keywords: Chicken feathers, Keratin, keratinase, *Bacillus*, MgSO<sub>4</sub>, NaCl