

Abstract

Keratin is a fibrous structural protein that provides essential support and protection in various biological structures. Predominantly found in epithelial cells, it is a key component of mammals' hair, skin (epidermis), nails, and wool. Recent studies have shown keratin has biocompatibility and biodegradability properties that can be applied to the medical field, specifically in tissue engineering wound healing. While typically extracted using harmful chemicals such as acids and bases, this method can cause significant environmental damage due to water contamination, toxic waste accumulation, etc. A sustainable method is microbial fermentation, specifically solid-state fermentation using *Bacillus subtilis*. However, its quality and efficiency output remain lower than that of chemical extraction. This study aims to test and optimize solid-state fermentation (SSF) for eco-friendly keratin extraction by evaluating a *B. subtilis* strain of varying inoculum sizes. Results showed that different amounts had an effect on protein content but in contrast it did not have an effect on weight reduction. Future studies should consider performing keratinase activity tests to directly see the keratinase content of the fermentation for a better understanding and comparison.

Keywords: Chicken Feathers, Keratin, Solid State Fermentation