

## Conference Paper

# Isolation and Characterization of Collagenase from *Bacillus thuringiensis* for Degrading Fish Skin Collagen of Cirata Reservoir Waste

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## Abstract

The objective of this research was to isolate and characterize collagenase of *Bacillus thuringiensis* obtained from the collection of Aquatic Biotechnology Laboratory, Faculty of Fisheries and Marine Science, Padjadjaran University. The substrate of collagen was derived from skin Tilapia waste of Cirata Reservoir. This study showed the presence of clear zone which is a sign of collagenolytic activity of *B. thuringiensis*. The optimum production time of collagenase was 24 hours of incubation. Collagenase of crude extract had collagenase activity of 0.181 units/ml with the protein concentration was 0.640 mg/ml. It was also found that the optimum temperature of collagenase derived from crude extract was 50°C and the optimum pH was 7-9.

**Keywords:** collagenase; *Bacillus thuringiensis*; skin, waste.

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## 1. Introduction

Enzymatic hydrolysis are commonly used to increase nutritional and functional properties from food protein [1]. Fish protein hydrolysate has been known to have antioxidative, antihypertension, antimicrobial and immunomodulatory properties. Antioxidative properties of protein hydrolysate have been a major topic which attract attention from pharmacy, food and health field. Protein hydrolysates from fish which show antioxidant activity include Alaska Pollack skin gelatin [2], yellowfin sole [3] and Allaska Pollack [4].

Main source of collagen production until now are cow's and pork's skin and bones. However, the spread of mad cow disease becomes a concern for the consumers of cow's collagen. In addition, the consumption of pork's collagen have been banned in some areas due to religion reason. Therefore, fish waste such as bones, scales and skin which contain many collagen are now becoming a safer alternative.

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