

Extraction and Property Analysis of Collagen from the Body Wall of Sea Cucumber *Holothuria cinerascens*

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ABSTRACT

The body wall of sea cucumber was used as raw materials for extraction of pepsin-solubilized collagen (PSC) and to compare from that from the skin of tilapia and porcine. On proximate compositions, sea cucumber showed the most moisture content 85.84%, lower crude fat 0.3% and crude protein 10.29%. Sea cucumbers belong to one of the high-protein and low-fat invertebrates. The yield of crude collagen from porcine skin 26.12% was the highest, while sea cucumber showed the lowest value. The sea cucumbers placed on the market were almost treated via drying and rehydration processes. Collagen of the market products could not be extracted according the same method. Protein denaturation was speculated during treatment. According to the profiles of SDS-PAGE analyses, the collagens from the three species were type I. Sea cucumber showed the smallest molecular weight (80~90 kDa) among the three products. Maximum peak shown at 230 nm on UV-vis spectroscopy profiles indicated that the collagens contain aromatic amino acids with C=O, COOH and CONH₂ groups. FTIR spectroscopy showed that the collagen from the three species have amide A、I、II、III peaks which were generated by the main functional groups in the proteins. The dominant amino acids of the three extracted collagen were glycine (31%), proline (9~12%) and alanine (10~12%). Differential scanning calorimetry showed the collagen from sea cucumber had the lowest thermal stability. This may related to their growth circumstances. The three collagens exhibited better moisture-retention and moisture-absorption capacity than glycerol, indicating that the collagen molecules are rich in hydrophilic groups. In conclusion, the extraction of collagen from sea cucumber was expensive cost and low yield. But its basic characteristics were better than the others. Further studies were required to retain properties of the extracted collagen during processing or other applications.

Keywords : Sea cucumber、Collagen、Extraction、Characterization

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