

Comparative Study of The Yield and Physicochemical Properties of Collagen from Sea Cucumber (*Holothuria scabra*), Obtained through Dialysis and the Ultrafiltration Membrane

ABSTRACT

Collagen was extracted from the body wall of sea cucumber (*Holothuria scabra*) using the pepsin-solubilized collagen method followed by isolation using dialysis and the ultrafiltration membrane. The yield and physicochemical properties of the collagen obtained from both isolation methods, denoted as D-PSC and UF-PSC, were compared. The ultrafiltration method affords a higher yield of collagen (11.39%) than that of the dialysis (5.15%). The isolated collagens have almost the same amino acid composition, while their functional groups, referred to as amide A, B, I, II, and III bands, were in accordance with commercial collagen, as verified by Fourier Transform Infrared (FT-IR) spectroscopy. The UV-Vis absorption peaks at 240 nm and 220 nm, respectively, indicated that the collagens produced are type-I collagen. The D-PSC showed interconnecting sheet-like fibrils, while the UF-PSC exhibited a flaky structure with flat-sheets arranged very close to each other. The higher yield and comparable physicochemical properties of the collagen obtained by ultrafiltration as compared with dialysis indicate that the membrane process has high potential to be used in large-scale collagen production for food and pharmaceutical applications.