Research Article

Extraction of Crude Collagen from Yellowfin Tuna (*Thunnus albacares*) Skin and Determination of the Functional Properties of Its Hydrolysates

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Abstract

Collagen is a dominant protein in connective tissues and is valuable in food industry. Objective of this study was to develop a simple non-toxic method to extract collagen from Yellowfin tuna skin and to check functional properties of its hydrolysates. Extraction procedure was conducted using acetic, citric acid with 0.5 M concentrations. Based on 8% SDS-PAGE gel, type I collagen were identified. Enzymatic hydrolysis was done with protease, trypsin and pepsin with 0, 3, 6, 9, 12 and 24 hours times at 37°C after adjusting its optimum pH level. Best hydrolysate was selected for antioxidant activity with DPPH radical scavenging activity and TBARS assay. Iron chelating activity was evaluated using ferrozine indicator method and Antimicrobial activity was done using agar well diffusion method. Proximate analysis of raw skin was done for determine moisture, ash, protein, fat content and 59.44±0.013%, 1.91±0.37%, 28.55±1.19%, 6.83±0.30% values were obtained respectively. Hydrolysates produced after incubating for 0 hours at 37°C followed by heat inactivation was selected for further analysis. Hydrolyzed produced by collagen using citric acid showed lower scavenging activity compared to acetic acid ($p<0.05$). In TBARS assay citric acid showed high antioxidant activity than acetic acid ($p<0.05$). Both acetic acid and citric acid extractions did not show significant difference among the treatments in Fe^{2+} chelating activity ($p>0.05$). Good antimicrobial activity was obtained with acetic acid than citric acid ($p<0.05$). Accordingly, the hydrolysates incubated at 0 hours at 37°C showed good antioxidant activity with acetic acid extraction. This concludes that collagen hydrolysates produced using acetic acid showed good antioxidant activity.

Keywords: *Fish collagen, Yellowfin tuna, antioxidant activity, hydrolysates, non toxic*