

Extraction of Crude Skin Collagen from *Pterygoplichthys pardalis* and Determination of Antioxidant and Metal Chelation Activities of Its Hydrolysates

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Collagens have a great demand in the food industry and fish skin is a safe alternative source of collagen. *Pterygoplichthys pardalis* is a freshwater fish which threatens endemic fish and inland aquaculture, and has no economic benefit. Objective of this study was to extract crude collagen from *P. pardalis* skin with simple and non-toxic method followed by identifying the antioxidant properties of its hydrolysates. Proximate composition was determined in raw fish skins with and without bony plates separately. Acid and Pepsin soluble collagens were extracted from *P. pardalis* skin. As with the pretreatment process of citric acid (CA) and EDTA were tested to decalcify the fish skin. Three different concentrations were used with CA as 1.2, 2.2 and 3.2 kgm⁻³ and for EDTA as 0.1, 0.2 and 0.3 M. Selected crude collagens were subjected to the hydrolysis using Pepsin, Protease and Trypsin enzyme after adjusting to its optimum pH with different time combinations (0, 3, 6, 9, 12 and 24 h) at 37 °C followed by heat inactivation at 100 °C for 15 min. Extracted crude collagen and best hydrolysates were selected by 8% and 15% SDS-PAGE respectively. Antioxidant activity of the best hydrolysates was evaluated using DPPH scavenging assay and metal chelation activity by Fe (II) chelating activity. All treatments were replicated (n=3). Raw fish skins with and without bony plates contained 44.29±3.69%, 58.79±1.05% moisture, 16.40±0.93%, 5.38±1.61% ash, 26.75±8.93%, 26.89±3.25% crude protein respectively. Extracted collagens with CA treatment showed higher yield compared to EDTA treatment (p<0.05). The Antioxidant properties were not significantly different (p>0.05) but metal chelation activities of selected best hydrolysates were higher in CA than EDTA treatment (p<0.05). These results conclude that collagen hydrolysates produced from *P. pardalis* with all three enzymes with 0 h at 37 °C followed by heat inactivation have good antioxidant and metal chelating properties.

Keywords: Fish collagen, Enzyme hydrolysis, Antioxidant, Metal chelating