

Comparison of Physicochemical Properties of Catfish Myofibrillar and Sarcoplasmic Protein Hydrolysates and Characterization of Their Bioactive Peptides

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Abstract : Sarcoplasmic protein hydrolysates (SPHs) and myofibrillar protein hydrolysates (MPHs) from patin (*Pangasius sutchi*) were produced using two types of proteases: Papain and Alcalase. 1,1-diphenyl-2-picrylhydrazyl (DPPH), 2,2'-azino-bis(3-ethylbenzothiazoline-6-sulphonic acid) diammonium salt (ABTS) radical scavenging activities and metal chelating activity assays for antioxidant activities were carried out on the SPHs and MPHs. The hydrolysates were isolated and purified by ultrafiltration, gel filtration and reverse phase high-performance liquid chromatography (RP-HPLC) and liquid chromatography with tandem mass spectrometry detection (LC-MS/MS) was used in identifying peptide sequences. The results showed that when the DH of MPHs increased, the protein solubility increased, while the highest amount of the protein solubility of SPHs was after 60 min incubation. The effect of DH on antioxidant activities of SPHs and MPHs was investigated. Among the hydrolysates, papain-MPH and Alcalase-SPH, which had the highest antioxidant activities, were purified. The potent fractions obtained from RP-HPLC of sarcoplasmic (SI 3 fraction) and myofibrillar (MI 4 fraction) hydrolysates showed the highest DPPH radical scavenging activity. The FVNQPYLLYSVHMK peptide for MPH and the LVVDIPAALQHA peptide for SPH exhibited the highest antioxidant activity. The presence of hydrophobic and hydrophilic amino acids, namely leucine (L), valine (V), phenylalanine (F), histidine (H) and proline (P), in the peptide sequences of SPH and MPH are believed to contribute to high antioxidant activity. Hence, SPH and MPH from patin have the potential as a natural functional ingredient in food and pharmaceutical industry.

Keywords : patin (*Pangasius sutchi*), protein hydrolysates, antioxidative peptides, mass spectrometry

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