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Inhibition of autolytic activity of lizardfish surimi by proteinase inhibitors

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Abstract

Optimum autolytic activities of lizardfish (*Saurida tumbil*) mince and surimi were at pH 6 and 7, respectively, with optimum temperature at 65 °C. Autolysis of surimi was mainly inhibited by phenylmethanesulfonyl fluoride and *p*-tosyl-L-phenylalanyl-chloromethylketone, indicating the involvement of myofibrillar-associated serine proteinase. Myosin heavy chain (MHC) and tropomyosin were preferentially hydrolyzed, resulting in poor textural properties. Based on TCA-soluble oligopeptide assay, egg white powder (EW) and whey protein concentrate (WPC) showed 77% and 96% inhibition, respectively. However, a significant loss of MHC was found. At any pre-incubation condition (25 °C/4 h, 40 °C/1 h and 65 °C/1 h), EW improved gel-forming ability of lizardfish surimi to a greater extent than WPC. Addition of 1% EW and pre-incubation at 25 °C resulted in an increase of higher molecular weight cross-linked proteins, corresponding to a twofold increase in the breaking force.

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