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Protein oxidation in silver carp (*Hypophthalmichthys molitrix*) minces during surimi washing processing

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Statement of Purpose: Protein oxidation in surimi processing has an effect on the gel strength, color, taste, nutritional quality of surimi product. Protein oxidation involves types of raw materials and processing conditions. The study in recent years has pointed out that protein oxidation took place before heat treatment destroys the activity of the protein. In the gel phase, a certain extent of protein oxidation contributes to the gel network formation. The protein oxidation in surimi processing has been rarely studied, this paper aims at monitoring the degree of protein oxidation in washing, reseaching the regular pattern of protein oxidation and controling protein oxidation before heat treatment.

Methods: Silver carp mince was washed with four volumes of water at different temperature and time, washed mince were obtained. The content of carbonyl groups, total sulfhydryl groups, dityrosine in protein were detected by chemical methods. The degree of degradation and aggregation were analysised by SDS-PAGE. The secondary protein structure was determined by near infrared spectroscopy. Then the regular pattern of protein oxidation would been brought by analysising these indices.

Findings: Higher temperature and longer time gave rise to the accumulation of carbonyl groups, dityrosine, the percentage composition of random coil decreased and the decrease of total sulfhydryl and the percentage composition of β-sheet.

Conclusion: In the washing process, the oxidation of silver carp protein took place. Under the condition of low temperature, protein oxidized slowly, under the condition of high temperature the protein oxidation showed significant. The content carbonyl groups and the change of secondary protein structure could act as good notable indices to test the protein oxidation in washing. Low temperature is beneficial to maintain activity and processing characteristics of protein by contorling protein oxidation

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