Effect of Salt Compositions on the Quality of Surimi Products

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Summary

Salt is one of the most fundamental food accessory materials, since it plays an important role on enhancing food flavor and preserving food quality. Many papers have been reported that large consumption of sodium salt affects the blood pressure and causes heart diseases in old people. Thus, food manufacturers have tried to reduce the sodium content in cooking salt by substituting with other salt components such as potassium, calcium, and magnesium.

The gelation of fish protein is caused by the dissolution of myofibrillar proteins with the aid of salt. Simultaneouly, dissolved myosin combines with actin filaments to yield macromolecular actomyosin. Both myosin and actomyosin have dominant roles in the gelation of surimi. The gelation of fish proteins cannot be obtained in the absence of salt even if setting is carried out for many hours. The presence of other inorgaic compounds in the salt may influence on textural properties of fish gel products.

The objective of this study was to investigate the effect of salt compositions on the quality such as textural properties, pH, and whiteness of Alaska pollock surimi gels. The following results were obtained through this study.

①Sixteen salt samples including reagent NaCl were used in this study. The extractabilities of myofibrillar proteins from frozen Alaska pollock surimi by 5 % salt solutions were not affected by their compositions.

②Kamaboko gels were prepared with various salt samples. Their breaking force and strain increased with increase of Na ions and decreased with increase of K and Ca ions.

③The textures of setting and kamaboko gels prepared with various salts were not able to be differentiated by stress relaxation test or texture profile analysis.

④The protein subunit compositions were determined by SDS-PAGE technique. The content of polymerized myosin heavy chain in kamaboko gels increased with increasing Na content and decreased with increasing K content.

⑤As a result of sensory evaluation, the taste of kamaboko gels with large amount of K was evaluated as poor.