A study on the relationship between perceived saltiness and texture of surimi- based products

The Dissertation Summary

専　攻 Major	Applied Marine Biosciences	氏　名 Name	Tran Thi My Hanh (トラン ティ ミ ハン)
論文題目 Title	A study on the relationship between perceived saltiness and texture of surimi-based products （すり身加工品で感知される塩味強度とテクスチャーの関係に関する研究）		

Purpose: The present study was aimed to clarify the effect of texture on the perceived saltiness of surimi-based products, and to clarify what kind of texture is concerned to this matter. As a base of the study on the relationship between perceived saltiness and texture of surimi-based products, related literature review was conducted in chapter 1. Relationship between the physical properties and perceived saltiness of various surimi gels prepared by different setting conditions was conducted in chapter 2. Relationship between the physical properties and perceived saltiness of various surimi gels prepared by different modori conditions was studied in chapter 3. Assessment of fragmentation by mastication and the saltiness of surimi gels prepared with various heating conditions was conducted in chapter 4.

Methodology: To prepare various types of gels having different physical properties from the same material, surimi gels were prepared with different salt concentrations (1, 2, and 3%), heating conditions include setting at 30ºC (suwari) and heat-induced degradation at 60ºC (modori). The physical properties of surimi gels were evaluated by puncture test, two-bite texture profile analysis, and measurement of expressible moisture. The temporal change in saltiness during consumption of gel was also evaluated (time-intensity method) using trained sensory panels. The size and number of surimi fragments after mastication were analysed by WinROOF software.

Experiments/analysis: All instrumental determinations were performed in quadruplicate, at minimum. Data are expressed as means ± standard deviations. Analyses of variance (ANOVA) were performed using SPSS software (SPSS 16.0 for Windows). Differences among the mean

values of various treatments were measured by Duncan's multiple range test ($p<0.05$). The sensory evaluation data were analyzed using PanelCheck V.1.4.0.

Conclusion: In this study, it was also confirmed that the amount of salt in kamaboko is relatively large and salty taste efficiency was relatively low. Actually, most surimi seafood products contain about 2 g of salt per 100 g. On the other hand, some other products have a slightly higher salt content of up to 3 g per 100 g such as ham or sausage. Normally, two to three slices of surimi seafood are eaten a day, which amounts to 0.1–0.2 g of salt. Therefore, it is question to suppose that the consumption of surimi seafood significantly increases salt intake and the risk of developing disease such as hypertension. The risk of salt intake should be discussed including not only concentrations in food but also the amount of intake. Furthermore, people need to understand that the production of surimi-based product requires the addition of sodium chloride to solubilize myosin and actin for gel network (texture) formation; therefore, it is not so easy to reduce the amount of sodium chloride maintaining the characteristic favorable texture of surimi-based products. Demand for marine products worldwide has been increasing sharply, and the intake of surimi-based productss is also the similar trend in many countries. On the contrary to this, the intake of surimi-based product is decreasing year by year in Japan. Surimi-based product is rich in fish protein which has a superior nutritive value and high functionality. It is expected that the result of this research will contribute to the appropriate consumption with correctly understanding of the merits and demerits of surimi-based products.