

Rosjarin Prabpree 2010: Effect of Tapioca Starch and Hydrocolloid on Quality of Fresh and Frozen Fish Sausages. Master of Science (Agro-Industrial Product Development), Major Field: Agro-Industrial Product Development, Department of Product Development. Thesis Advisor: Associate Professor Rungnaphar Pongsawatmanit, D.Agr. 86 pages.

In this study, the effect of tapioca starch (TS) and hydrocolloid on the quality of both fresh and frozen storage stability of fish sausage was investigated. Fish sausage was prepared from fish flesh of small scale mud carp (*Cirrhina microlepis*) containing TS and corn starch (CS). No significant difference in textural properties and sensory scores were found between sausages containing CS and TS ($p \geq 0.05$) used in the formulation. The effect of TS concentration (3.5, 7.0, 10.5 and 14.0%) on fish sausage quality was evaluated. The qualities of sausages were determined before frozen storage and after selected freeze-thawed cycles (3, 6 and 9). Water holding capacity of fresh prepared fish sausages increased with TS content in the formulations. Fish sausages containing TS higher than 7.0% exhibited lower cooking loss ($p < 0.05$). The shear force, hardness and gumminess of fish sausages increased with TS content ($p < 0.05$). Mean scores of firmness and overall liking from sensory evaluation of fish sausages containing TS up to 10.5% exhibited no significant difference ($p \geq 0.05$). After freezing, drip loss and cooking loss of sausages containing different TS content increased with increasing repeated freeze-thaw cycles but at a selected freeze-thaw cycle both values decreased with TS contents. Shear force and hardness of thawed sausages increased with TS contents. Hardness values of thawed sausages exhibited almost constant after freeze-thawing from 3 to 9 cycles. Addition of 0.25% xanthan gum (Xan), xanthan gum/locust bean gum (Xan/LBG) (mixing ratio = 1:1) and i-carrageenan (i-cgn) into fish sausage formulation enhanced frozen sausages quality with lower drip loss. Sausages with hydrocolloid addition exhibited higher overall liking scores than that of sausage without hydrocolloid after 9 cycles of freeze-thaw treatment. The storage stability of frozen sausages depends on the types of hydrocolloid application due to the structure-function relationship in the product. The results suggest that addition of TS and hydrocolloids could be used for enhancing the quality and improving freeze-thaw stability of fish sausage in industry.

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