

EFFECT OF FISH SAUCE AS A SUBSTITUTE FOR REFINED SALT ON THE PHYSICOCHEMICAL AND SENSORY QUALITY OF SMOKED AND COOKED PORK SAUSAGE

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I. OBJECTIVES

Fish sauce is one of the traditional seasonings that people have enjoyed eating in many Asian countries, including Korea, Vietnam, and Thailand. This seasoning contains a high content of salt and has a unique flavor because it is made by fermenting salted seafood. Therefore, this study estimated the effect of fish sauce as a substitute for refined salt on the physicochemical and sensory quality of smoked and cooked pork sausage.

II. MATERIALS AND METHODS

Experimental sausages were prepared for 4 treatments ($n = 3/\text{treatment}$) either with 1.125% refined salt (control), 0.75% refined salt and 1.50% fish sauce (T1), 0.375% refined salt and 3.00% fish sauce (T2), or 4.50% fish sauce (T3). The salinity of fish sauce was 25%, and all sausage treatments contained the same proportion (1.125%) of salt. Pork lean (80% hind leg meat) and fat (20% backfat) were ground using a meat chopper equipped with a 5-mm diameter plate and mixed for 15 min using a vacuum bowl cutter with the following ingredients: 240 g/kg ice, 10 g/kg white sugar, 0.15 g/kg sodium nitrite, 2 g/kg phosphates, 0.5 g/kg ascorbic acid, 15 g/kg white pepper, 0.3 g/kg coriander, 0.3 g/kg nutmeg, 1 g/kg cinnamon, 5 g/kg garlic, 15 g/kg onion, 5 g/kg monosodium glutamate, 15 g/kg baking powder, and 30 g/kg potato starch. The salinity of fish sauce was 25%. After stuffing into 60-mm fibrous casings, sausages were dried and smoked at 55°C, and then cooked to a core temperature of 70°C with steam-heating. The pH value was measured using a pH meter immediately after homogenizing sausage samples with deionized water. Lipid oxidation was expressed as the 2-thiobarbituric acid reactive substances content. The internal color was determined as CIE L^* , a^* , and b^* values. Textural parameters, such as hardness, cohesiveness, springiness, gumminess, and chewiness, were tested using a texture analyzer equipped with a cylindrical probe. The attributes of internal color, aroma, taste, and texture were evaluated by 10 untrained panelists using a 9-point hedonic scale (9 = like extremely, 1 = dislike extremely).

III. RESULTS

The pH value was significantly ($P < 0.05$) higher in the following order: T2 and T3 > T1 > control. There were no significant differences for thiobarbituric acid reactive substances content, hardness, cohesiveness, springiness, gumminess, and chewiness among all sausage treatments. The CIE L^* value was significantly ($P < 0.05$) higher in the following order: control and T1 > T2 > T3. Taste preference and overall liking with sensory evaluation were significantly ($P < 0.05$) higher in the T3 sausage than in the control sausage.

IV. CONCLUSION

These findings suggest that the addition of 4.5% fish sauce as a substitute for 1.125% refined salt improves the sensory attributes of smoked and cooked pork sausage.

Keywords: fish sauce, salt, sausage, color, sensory attributes