

Warunee Pattarapichit. 2006: The Effect of Essential Oils from Herbs and Packaging Conditions on the Shelf-Life of Steamed Layer Dessert (Kanom Chun). Master of Science (Agro-Industrial Product Development), Major Field: Agro-Industrial Product Development, Department of Product Development. Thesis Advisor: Associate Professor Kamolwan Jangchud, Ph.D. 178 pages.
ISBN 974-16-1694-5

Kanom Chun is a steamed-traditional Thai dessert which has carbohydrate as the main ingredient. It has high moisture content and short shelf-life when kept at room temperature ($33\pm 2^{\circ}\text{C}$). The objective of this study was to extend the shelf-life of Kanom Chun by surveying consumer's attitudes on quality and shelf-life of Kanom Chun, studying the effect of essential oils from herbs and the effect of using humectant together with modified atmosphere packaging (MAP) on the qualities of Kanom Chun. For the survey of consumer's attitudes, the results showed that 83.5% of consumers agreed with replacing herbs in Kanom Chun instead of chemical substance for extending the shelf-life and 80.0% of consumers accepted Kanom Chun if it was added with chemical and some gas that wasn't harmful for extending its shelf-life. For the study on the types of essential oils, three essential oils from herbs were added to Kanom Chun at different concentrations (0.4% lemongrass, 0.6% lemongrass, 0.5% cinnamon, 0.7% cinnamon, 0.4% ginger and 0.6% ginger) and kept at room temperature ($33\pm 2^{\circ}\text{C}$). The results showed that consumers disliked Kanom Chun mixed with essential oil from all herbs because the herbal flavor was unsuitable for Kanom Chun. Kanom Chun mixed with 0.6% lemongrass oil and 0.7% cinnamon oil could extend the shelf-life from less than 1 day to 2 days. The results from the study on the effect of humectant at five different ratios of mixed ingredients to glycerol (100:0, 100:8, 100:10, 100:12 and 100:14) showed that as the amount of glycerol increased, a_w of Kanom Chun decreased from 0.94 to 0.89 and overall liking of it decreased from 7.3 to 4.6. The optimal ratio of mixed ingredients to glycerol was 100:10. For the study on the effect of glycerol addition together with MAP in K-nylon/LLDPE under six conditions (air, vacuum, 100%CO₂, 100%N₂, 60%CO₂:40%N₂ and 40%CO₂:60%N₂) kept at two levels of temperature (33 ± 2 and $4\pm 1^{\circ}\text{C}$), the results showed that the longest shelf-life (12 days) of Kanom Chun at $33\pm 2^{\circ}\text{C}$ was preserved under the conditions of 60%CO₂:40%N₂ and 40%CO₂:60%N₂. The longest shelf-life (28 days) of Kanom Chun at $4\pm 1^{\circ}\text{C}$ was preserved under the conditions of 100%N₂, 60%CO₂:40%N₂ and 40%CO₂:60%N₂. When the storage time was increased, the hardness and gumminess of Kanom Chun stored at two temperatures increased but the springiness and stickiness decreased.

Student's signature

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