

The Enhancement of Stability and Quality Characteristics of 'Keropok Lekor' by the Incorporation of Hydrocolloids



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In food industries, hydrocolloids are used as water binder and gel former in order to increase the physical stability of gel based products. Besides fish flavour and odour, texture of the 'keropok लेकर' has been identified as one of the main quality characteristics of the product. The fish content of 'keropok लेकर' varies from 20%-70% of the total weight, and higher fish content will reduce the profit margin. During frying, the 'keropok लेकर' gel expanded and it may explode. The fried product of existing formulation will undergo severe shrinkage within 30 min after frying due to the structural collapse. Therefore, in this study, hydrocolloids are added in the product in order to attain the desired quality characteristics and stability of the product with minimal added cost.

The physicochemical behaviour of the ingredients and their interactions with the fish protein in the gel matrix, which contribute to the quality attributes of the product were investigated and quantified. The results suggested that each hydrocolloid exhibited different degree of influence on the measured parameters. The incorporation of locust bean or carrageenan gum into the basic formulation significantly increased the water binding properties of 'keropok लेकर' gel, and consequently decreased the water activity (A_w) and retard the microbial growth in the product. The shelf-life of refrigerated (4°C) 'keropok लेकर' incorporated with hydrocolloid is approximately 16-20 days as compared to the 2 days of the present commercial products. 2% locust bean gum in a formulation significantly reduced the shrinkage and structure collapse of the product after frying. Xanthan gum significantly decreased the textural properties of the product due to formation of larger cavities and smaller swollen starch granules in the gel. High significant correlation was found between water binding ability and compressive strength of the products. The microstructure observations have elucidated the interactions of the protein fibers, the sago starch and the added hydrocolloids in the gel formation that contribute to the textural characteristics of the studied 'keropok लेकर'. Locustbean gum incorporation gave the most desirable stability and quality characteristics in 'keropok लेकर'. 2% locust bean gave highest scores in all sensory attributes, but was not significantly ($P < 0$) different from commercial 1, and from control except texture. Based on this study, it can be recommended that the incorporation of locust bean followed by carrageenan at 2% level can improve quality and stability of the 'keropok लेकर'. Perhaps, a combination of xanthan and locust bean or carrageenan gum that cause synergetic effect on texture and stability of 'keropok लेकर' can also be looked into.

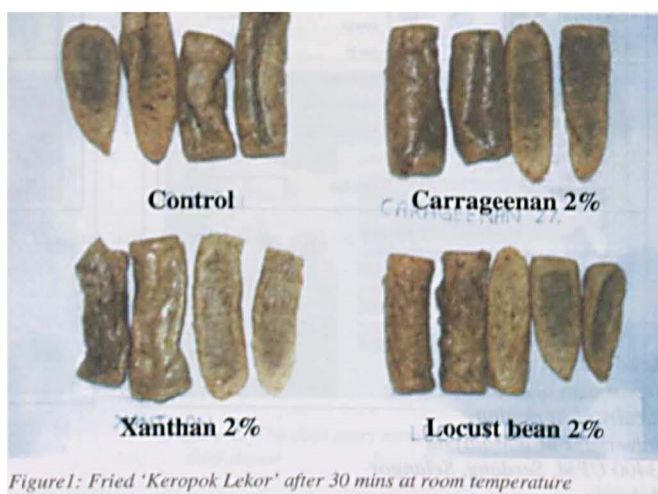


Figure 1: Fried 'Keropok लेकर' after 30 mins at room temperature

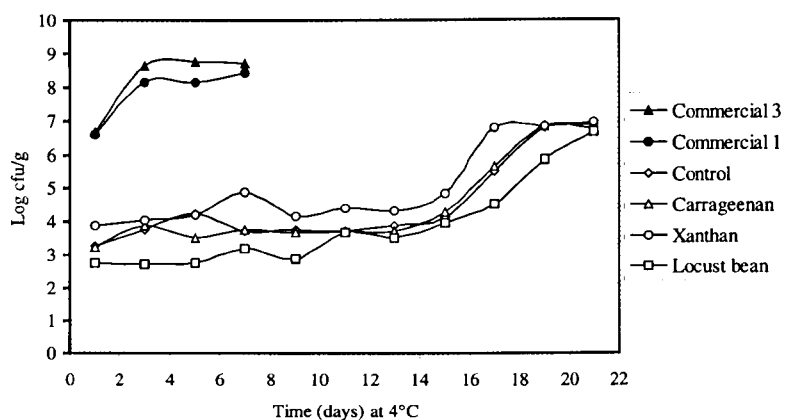


Figure 2: Total Plate Count of Commercial 'Keropok Lekor' and The Products Incorporated with 2% of Different Hydrocolloids at 4°C

Reader Enquiry

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