

Increasing Thai steamed egg cake shelf life by active packaging

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Abstract: Thai steamed egg cake, also known as “Kanom Sali” originated from Suphan Buri, is popular for auspicious ceremonies and travel souvenirs. The mold-free shelf life of the cake is typically 3-5 days at ambient conditions. This research aimed to extend the shelf life of the Thai steamed egg cake in order to expand distribution radius and marketing flexibility using active packaging (AP). The explored APs were FDA-approved oxygen scavenger (OS), ethanol emitter (EE) and combination (OS+EE) packaged in gas barrier polyvinylidene chloride-coated nylon pouch. Two sizes of each AP, calculated based on packaging headspace and sample’s water activity and weight, were investigated in comparison with control sample without AP. Microbial growth and quality attributes including moisture content, color and textural parameters were monitored for storage of 25°C, 30 days. Selected samples, based on microbial safety, were sensory evaluated using 9-point hedonic scale by 50 non-trained panelists. The application of OS and OS+EE effectively suppressed microbial growth and extended the shelf life of steamed cake from ~3 days (control) to >30 days. The moisture content was not significantly affected by packaging systems and storage time. AP significantly delay color changes of the cake. At 30th day of storage, total color difference of AP-packaged samples were between 0.45-0.70, which was below human detectable threshold. The result exhibited significant delay in changes of textural parameters; hardness, cohesiveness and adhesiveness by cause of EE and OS over time. Sensory evaluation showed that OS and OS+EE samples were comparable to the freshly made cake in appearance, odor, taste, texture, and overall preference. The established data showed that AP was the effective way to extend stability of highly perishable Thai steamed egg cake without directly addition of chemical additives into the batter. OS and EE synergistically suppressed microbial spoilage and delayed physical and sensorial deteriorations.

Keywords: Active packaging, ethanol emitter, steamed egg cake, shelf life extension

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