Abstract

Thai Banana is one of Thailand's most popular native banana cultivars that are widely cultivated across the country, accounting for approximately 70% of the domestic banana market. As climacteric fruit, bananas are highly perishable and have a short shelf life, resulting in significant postharvest losses. Thus, an effective preservation method is very crucial to extending the shelf life of bananas. Chitosan has gained a lot of attention as a promising biomaterial for edible coatings, with the additional application of nanotechnology. On the other hand, sericin is a biowaste protein secreted from silkworms that is antioxidant, bioavailable, and biodegradable. The versatility of this material allows the integration with polymer or other material, including chitosan. This study aims to provide an overview of the suitability of chitosan and sericin (CS-SE) nanoparticle-based coating by evaluating the effect on the physicochemical properties of Thai bananas throughout 7 days of storage. Findings showed that the incorporation of sericin resulted in a uniform, reduced size and no aggregation in the morphology of the nanoparticle. The chitosan-sericin coating was also able to delay the ripening process until day 3 but failed to prevent the browning reaction when the senescence stage began. The chitosan-sericin coating also managed to provide the best retention of weight loss on days 5 and 7 with better antimicrobial properties compared to the chitosan coating.

Keywords: Banana, Chitosan, Edible Coating, Nanoparticles, Sericin