

# Improvement of banana postharvest quality using a novel soybean protein isolate/cinnamaldehyde/zinc oxide bionanocomposite coating strategy

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## Abstract

Soybean protein isolate (SPI) based coatings incorporating with plant-sourced cinnamaldehyde (CIN) or facile synthesized flower-like zinc oxide nanoparticle (ZnONP) have been used for the postharvest preservation of bananas. The effects of the pure SPI coating, SPI/CIN coating, and SPI/CIN/ZnONP nanocomposite coating on diverse physicochemical properties of bananas and antifungal performance were studied during the whole storage. Results demonstrated that SPI nanocomposite film could effectively delay ripening rate and weight loss of bananas. Compared with other SPI-based coating treatments, SPI/CIN/ZnONP nanocomposite coating could also hinder the harmful changes in fruit firmness, total soluble sugar, titratable acidity and sensory quality during the whole storage period. Moreover, the antifungal performance of SPI/CIN/ZnONP coating was 1.25-fold stronger than that of SPI/CIN treatment. This could be explained by the oxidative stress-mediated antifungal mechanism for CIN and ZnONP.