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Bioactive coatings of chitosan and neem oil for preservation of cactus fruit Pitaya in postharvest

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Stenocereus pruinosus (pitaya) is an endemic cactus of Mexico. Pitaya is sweet and tasty, contains phenols and betalains with high antioxidant activities. Nevertheless, the consumption is limited for its highly perishability. Therefore, the use of coatings based on naturally occurring bioactive compounds is an alternative to extend its postharvest life. In this study the chitosan (Q) and neem oil (N) were used taking advantage of their physicochemical and antimicrobial properties. Q was obtained by biological and chemical methods from shrimp wastes, with degree of acetylation of 9.91% and molecular weight of 285kDa. Q was crosslinked to hydroxypropylmethylcellulose (Q-g-H) and the blend of Q with mesquite gum (MG) were used as polymer matrices for the microencapsulation of N (NQ-g-H and NQMG). NQ-g-H produced unstable emulsion with Z-potential close to zero, on the contrary of NQMG. NQ-g-H and NQMG were applied on fruits as coatings. During 15d of storage, the largest physiological weight loss (PFP) was determined in control fruits (6.7%) and the lowest with NQ-g-H (4.63%). The fungal contamination and firmness of flesh were significantly different for treated fruits with NQ-g-H (4.5 CFU/g and 0.61N) than control (5.41 CFU/g and 0.36N). The color of epicarps were retained with NQ-g-H and NQMG coatings, whereas the control became dark. The release of azadirachtin of N was determined by Ultraperformance Convergence Chromatography in the coatings of epicarps of fruits. NQ-g-H released azadirachtin at storage conditions of 10±2°C and relative humidity of 75±5%.

Biography

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