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Title :

Effects of Palm-Based Edible Coating on The Postharvest Life of Guava (*Psidium Guajava* L.) and Palm-Based Chitosan Film on Cherry Tomato (*Solanum Lycopersicum* C.)

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This study was conducted to determine the potential of palm stearin (PS) as edible coating materials for fruits. The palm stearin was blended with 20-80% palm kernel olein (PKOo) and the properties of the blends were evaluated in terms of the slip melting point (SMP), solid fat content (SFC), fatty acid and triacylglycerol compositions (TAG), and polymorphism. Blending of PS with PKOo reduced the SMP, SFC, altered the FAC and TAG composition and changed the crystal polymorphism from β to mixture of β and β' . The changes in the physicochemical properties of PS were due to the replacement of the high melting TAG in PS with medium chain TAG in PKOo. From the analysis, 1:1 and 3:2 were the better PSPKOo blend formulations in slowing down the weight loss, respiration gases and gave better appearance when compared to other PSPKOo blends formulations. These two different coating formulations, 1:1 and 3:2 PSPKOo blends were applied onto guava by hand-wiping techniques, stored at 10°C and 20°C and were compared to beeswax (commercial coating) in terms of respiration gases, cohesiveness, weight loss, glossiness, colour and appearance. Guavas coated with 1:1 PSPKOo blend showed the lowest weight loss, while coating with 3:2 PSPKOo showed the best guava appearance at 20°C. Both the PSPKOo coating blends significantly reduced ($p < 0.05$) the weight loss, loss of O₂ and CO₂, glossiness, lightness, greenness and yellowness of guava stored at 20°C for 21 days when compared to beeswax. No significant difference ($p > 0.05$) was observed between the two coating formulations in terms of weight loss, ethylene gas concentrations, lightness, greenness and yellowness of guava for both storage temperatures. However, both coating resulted in better guava appearance than beeswax at both storage temperatures. The PSPKOo blend (at 31%) was incorporated into chitosan of different degree of deacetylation (DD) (85% and 95%) and molecular weight (MW) (100.000 and 300.000 Da) to form films and the films were evaluated in terms of particle size, diameter and stability of emulsion and also thickness and tensile strength. The chitosan with 85% DD (MW 300.000 Da) + 31% PSPKOo blend resulted in the strongest film and thus this chitosan was added with 15.5% and 31% PSPKOo blends for comparison of physical properties of film. Emulsion blend containing 85% DD (MW 300.000 Da) and 31% PSPKOo blend of chitosan gave the biggest particle size, highest viscosity and the most stable emulsion, resulting in the thickest film with the highest TS and EM. The film was applied on cherry tomato and stored at 20°C for 9 days. The chitosan film with 85% DD (MW 300.000 Da) + 31% PSPKOo blend was the most effective in reducing weight loss, maintaining firmness and redness of cherry tomato compared to the other two films. Hence, PS showed potential to be used as a moisture barrier in fruit coating.