

To Investigate the Effect of Nano Edible Coating on Shelf Life of Guava

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Abstract

Guava (*Psidium guajava*) is one of the popular fruits in Sri Lanka. Due to high perishability postharvest losses are high as 40 %. Study was designed to formulate nano edible coat using varying quantities of bee wax (0.005 %, 0.001 %, 0.015 %), nutmeg essential oil (50 μ l, 100 μ L, 150 μ L), with aloe vera, coconut oil and Tween 20. The nano emulsions were prepared with an ultrasonic cell crusher (Labtrone, China) at 20Kz for 20 minutes. The experiment consists with three treatments with positive (Coated guava + KMnO₄ 1g sachet) and negative control (Uncoated guava). Guava samples were placed in perforated corrugated boxes and stored under (25 \pm 2 $^{\circ}$ C). Physical (colour, firmness, weight loss, marketability) physiochemical (brix value, total ascorbic acid content, total acidity) and sensory properties (5-point hedonics scale) were evaluated with 3 days intervals. The data were analysed with one-way ANOVA (p=0.05). The result revealed that Treatment 2 (0.001% bee wax+ 100 μ L nutmeg essential oil) had the lowest brix value (6.00 \pm 0.00) was significantly difference from the positive and negative controls (p>0.05). Lowest marketable percentage was observed in the negative control group, that was significantly different (0.83 \pm 0.05%) from the coated guava (p>0.05). Lowest weight loss (0.23 \pm 0.02g) of Treatment 02 was significantly different between the two controls (p>0.05). Treatment 02 was exhibited the maximum firmness value (717 \pm 186g), the lowest pH value (4.12 \pm 0.02), the lowest acidity (6.00 \pm 0.64 mg/100g) and ascorbic acid content (1.18 \pm 0.36 mg/100g). It has recorded highest score for all the sensory attributes during 15 days of storage period at 25 \pm 2 $^{\circ}$ C.

Keywords: *Edible coating, Nano technology, Nutmeg oil, Post harvesting management, Shelf life*