OSMO-AIR DEHYDRATION OF PAPAYA SLICES

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Osmotic dehydration of fruits often uses sucrose as the osmotic agent. However, this may limit the attractiveness of such preserved fruits to weight-conscious consumers. Hence this study was done to investigate the possibility of using two low caloric osmotic substitutes for sucrose. The slices of 4 x 3 x 1 cm were obtained from the ripened papaya fruits (var. Red lady) and immersed in the syrups of sucrose, liquid glucose (LG) and sorbitol with 1% citric acid in an increasing concentration gradient of 50° Brix, 60° Brix, and 70° Brix within 24 hr intervals. The treated slices were air dried at 0.4167 g/cm^2 tray load density initially at 55 °C up to 70 °C at the end of 8 hrs. The dried products were packaged in 200 gauge Polypropylene (PP) pouches and stored under ambient conditions (27±2 °C). The products were assessed for Moisture content (MC), Total Soluble Solids (TSS), pH, Titratable Acidity (TA), and organoleptic properties both initially and after one month of storage.

Results revealed that moisture reduction due to osmo-air dehydration was 85% and the MCs were 8.5%, 7.4% and 5.6% whereas the TSS was increased from 7° Brix to 28.5° Brix, 36° Brix, and 56° Brix for papaya slices osmosis from sucrose, LG, and sorbitol respectively. Due to the osmo-air dehydration, pH of the papaya slices was decreased from 5.5 to 3.7, 3.5, and 3.4, whilst TA was increased from 0.064% to 0.14%, 0.25% and 0.41% for papaya slices osmosis from sucrose, LG, and sorbitol respectively. The sensory evaluation results revealed that highest overall acceptability was in the slices osmosis from sucrose and lowest from LG. After one month of storage, the MCs of the dried products were increased by 1%, whilst the TSS, pH, and TA remained unchanged. Sensory evaluation results at the end of one month storage revealed that highest overall acceptability was in the slices osmosis from sorbitol whilst lowest from LG. The total plate counts of the dried products remained within the acceptable level throughout the storage period. Based on the above results it could be concluded that sorbitol is the most suitable osmotic substitute in producing low caloric fruit products, though it is costlier than sucrose.

Key words: Papaya, Osmo-air dehydration, Sucrose, Liquid glucose, Sorbitol