

IMPROVING THE SHELF LIFE AND CONSUMER ACCEPTABILITY OF OSMODEHYDRATED THREE SEASONAL FRUITS IN SRI LANKA; *AVERRHOA CARAMBOLA* ('KAMARANGA'), *SPONDIAS DULCIS* ('AMBERALLA') AND *PHYLLANTHUS EMBLICA* ('NELLI')

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Due to lack of preservation and storage facilities, postharvest loss of fruits frequently remained at a higher level in Sri Lanka. Osmotic dehydration is a cost saving drying technology which helps to extend the shelf life and to improve the sensorial, nutritional and organo-leptic properties of food. In the present study three seasonal fruits *Averrhoa carambola* (Kamaranga), *Spondias dulcis* (Amberalla) and *Phyllanthus emblica* (Nelli) were osmotically dehydrated changing different parameters such as sugar concentration in hypertonic solution, immersing time of the fruit sample in hypertonic solution and temperature of the hypertonic solution. Fruit slices with ~1cm thickness, sucrose concentrations ranging from 20 to 70 % w/v immersing times varying from 8 to 24 hours, hypertonic solution temperature varying from 30 to 70°C were used for the experiments. Three replicates were done for each experiment. To test the effect of preservatives, one set of samples was osmo-dehydrated in the sucrose solution 60 % w/v containing 100 ppm sodium benzoate. After the treatments, weight loss, moisture loss and solid gain were monitored. Water loss and solids gain increased with the increase of temperature, solution concentration and immersing time. Sucrose solution 60 % w/v, 16 hours immersing time, and room temperature as immersing temperature were identified as the optimum conditions for osmo-dehydration. At the 60 % w/v sucrose level, moisture loss of fruits was in following order; kamaranga (69.13 %), amberalla (66.00 %) and nelli (57.89 %). Fruit samples osmo-dehydrated using sodium benzoate as a preservative did not show any microbial contamination during 3 months storage period.

Freeze drying and hot air drying methods were used for drying the fruit samples. Dried samples were packed under nitrogen or under vacuum and stored at room temperature (27-31°C) for 3 months. Freeze dried samples were found to be more susceptible for microbial contamination than the hot air dried samples. Samples packed under vacuum were less contaminated with microorganisms than those packed under nitrogen. Ash content, phosphorus content and fibre content of all the dried samples remained same over the 3 months period for each treatment. Analysis on nutritional content showed total acidity, ash content, phosphorus content and fibre content of all the dried samples remained almost the same. Only ascorbic acid content was decreased by 35, 38 and 48 % in Amberalla, Kamaranga and Nelli respectively. Fruit samples osmo-dehydrated using sodium benzoate as a preservative showed no any microbial contamination during whole storage period of 3 months. Sensory evaluation test showed that quality of freeze dried samples were better than hot air dried samples in terms of colour, taste, texture as well as total acceptability. Osmodehydrating in 60 % w/v sucrose solution for 16 hours fortified with 100ppm sodium benzoate as a preservative and subsequent freeze drying lead to longer shelf life of Amberalla, Kamaranga and Nelli with better consumer acceptability.