

Drying of Green Mango Pulp: Effects of Processing Methods on Product Quality and Shelf Life

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Mangoes (*Mangifera indica* L.) are consumed as ripe and unripe fresh fruit as well as various processed products. The processing not only adds value to the products, but also makes the products more convenient to the consumers. Green mango powder is used to add sour fruity flavor in stir-fried dishes, soups, curries and add the nutritional benefits of mangoes when the fresh fruit is out of season. The objective of this research was to define the methodologies for the processing of green mangoes into powder and to monitor the products after processing through physico-chemical, microbiological and sensory evaluation. Green mango (cv: *Haden*) powders were produced using tunnel drying, vacuum oven drying and spray drying and the quality characteristics were assessed in 2 weeks interval for a period of 3 months. The moisture content of the green mango powder ranged from 1.41 to 3.94% on dry weight basis. During drying, a significant reduction ($p < 0.05$) in titratable acidity of 23% and increase in pH of 0.62 units after vacuum drying of mango indicated that some acids were lost due to evaporation during drying. The oxidative loss of ascorbic acid after vacuum drying was 24.1% which was higher than the tunnel drying (14.6%) and spray drying (7.2%) with 80% mango pulp + 20% maltodextrin additive. The maltodextrin formed a film around the mango solids that facilitated the production of non-hygroscopic and fine flowing powder. Microbiological studies revealed that there was no total plate count observed in the dried samples following storage. Ready-to-serve (RTS) green mango beverages were prepared from dried powders and were compared with those prepared from fresh mangoes. The sensory evaluation revealed that there were significant differences ($P < 0.05$) in colour, sweetness, flavour, consistency and overall acceptability between the treatments. Reduction in maltodextrin concentration improved the solubility of the mango powder, when 20% maltodextrin was added to mango pulp, the solubility of powder was 95% whereas adding 40% maltodextrin decreased the solubility to 86%. Based on the results, the spray drying is the best method for producing green mango powder with good nutritional quality and high storage stability.

Keywords: Green mango powder, Maltodextrin, Nutritional quality, Sensory analysis, Spray drying.