EFFECT OF OSMOTIC DEHYDRATION WITH ADDITIVES ON THE RETENTION OF CAROTENOIDS AND VITAMIN C IN MANGO

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Introduction: Mango is a tropical fruit containing significant amounts of carotenoids and vitamin C that can be easily lost during drying. The need of quality improvement of dried products has led to application of the osmotic dehydration (OD) as a pre-treatment before hot air drying. Addition of vitamin C and calcium on osmotic solutions may improve the nutritional value and texture of the dried fruits. The objective of this study was to evaluate the effect of OD on the nutritional quality of mango.

Methodology: OD of fresh medium ripe mango was carried out in 45 °Brix sucrose solutions with and without 1% (w/w) calcium chloride (ODCa) or 1% (w/w) ascorbic acid (ODAA). Vitamin C and carotenoids in the mango were analyzed by HPLC methods.

Results and Discussion: Addition of calcium chloride and vitamin C resulted in higher mass change and water loss during OD, while the sugar gain was slightly lower. All-trans-ß-carotene was the main carotenoid identified with small amounts of 13-cis-ß-carotene. Both all-trans-ß-carotene and vitamin C were lost during the OD treatment. Compared with fresh fruits the percentage retention of all-trans-ß-carotene was 70.6±4.4 (ODCa), 73.1±6.3 (OD) and 79.1±6.0 (ODAA). For vitamin C the percentage retention was 37.3±1.4 and 48.7±1.3 after OD and ODCa, respectively.

Conclusions: It was concluded that the retention of all-trans-ß-carotene was not affected by the osmotic treatment while the retention of vitamin C was significantly higher in an OD-solution with added calcium chloride.