

Effect of packaging materials on weight loss and nutrient quality changes of recharged sweet potatoes (*Ipomoea batatas* Poir) during short-term storage

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ABSTRACT

The effects of packaging materials on weight loss and nutrient quality changes of recharged (submerged in clean tap water) sweet potatoes (*Ipomoea batatas* Poir) roots during storage were determined. Sweet potatoes from two genotypes, 'KEMB 10' and 'Yanshu' were recharged for 14 hours and packaged in perforated polyethylene bags (0.02 mm), Kraft paper bags (0.025 mm) and nylon gunnysacks, with roots placed on open plate as control. The packages were then stored at prevailing ambient conditions (23 ± 2 °C, 77.5 ± 5.5 % relative humidity (RH)) for 21 days. During storage the sweet potatoes' change in weight was determined every 3 days. Change in reduced ascorbic acid, β -carotene, total sugars and total soluble solids contents were determined every 7 days. There was a significant ($p \leq 0.05$) weight loss as well as reduced ascorbic acid loss, but total sugars and β -carotene contents increased during storage. Although total sugars showed an apparent gradual increase in all packages and genotypes during storage, the increase was not significant ($p \leq 0.05$). Perforated polyethylene bags significantly ($p \leq 0.05$) prevented weight loss (up to 1.8 %) as well as allowed for the most retention in reduced ascorbic acid (13.45 g/100 g fresh weight), and increase in β -carotene (4.9 mg/100 g fresh weight) and total sugar (6.4 g/100 g dry weight) contents than Kraft paper bags and nylon gunnysacks. Roots packaged in Kraft paper bags were not different in weight and nutrient quality changes from those packaged in nylon gunnysacks. The control sweet potatoes always showed the highest losses in weight (up to 27.8 %) and nutrient quality. Packaging materials did not affect total soluble solids content during storage. The results show that packaging in perforated polyethylene bags can improve shelf life of recharged sweet potatoes by 14 days.

KEY WORDS: *Ipomoea batatas*, packaging, weight loss