

# The effectiveness of a combination of edible coating (bemul-wax) and calcium chloride dip to improve the quality of *Ipomea batatas* stored at low temperatures

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## Abstract

Sweet potato (*Ipomea batatas* L.) is a highly perishable crop with limited storage techniques. Some endogenous spoilage enzymes and antioxidant biomolecules in the treated tubers were employed to assess the effectiveness of treating the tuber with calcium chloride dip, bemul-wax and combinations of the two at 2 weeks interval for improving its qualities during 10 weeks low-temperature (10°-15 °C and 91-96 %RH.) storage. A significant weight reduction (P<0.05) in the tubers treated with bemul-wax and the combined treatments was manifested in 10 weeks. The tubers also exhibited a reduced tendency to sprout, as evidenced by the significant reduction (P<0.05) in  $\alpha$ -amylase activities for 4 weeks. A significant reduction (P<0.05) also occurred in the polyphenol oxidase activities of the tubers treated with bemul-wax, combination treatment and calcium chloride dip over 4, 4 and 10 weeks of storage, respectively. The ascorbic acid levels, phenylalanine ammonia lyase, alcohol dehydrogenase and pectin esterase activities were relatively stable in all treated tubers. The combination of the two treatments, which could provide a non-genetic approach to eliminate or reduce sprout development, seems to be the most effective treatment for preventing spoilage under these storage conditions.

**Keywords:** Edible coating, bemul-wax, calcium chloride dip, sweet potato, quality, storage.