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Integrated Postharvest Technologies for Improved Postharvest Handling of Mango

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Abstract

Food and nutrition security poses a major challenge to sustainable development in sub-Saharan Africa. Abundant intake of fruit and vegetables is essential for human health and, particularly, mango is a good source of phytochemicals which are recommended to be included in the daily diet due to its high amounts of carotenoids potentially serving as Vitamin A precursors. Consequently mango fruit consumption can contribute to eliminating Vitamin A deficiency, however, mango fruits are highly perishable due to limited alternatives in postharvest technologies. In Sub-Saharan African countries, storage and ripening of mangoes is carried out, but continues to be a challenging problem experienced by small scale farmers. Large quantities of mango produced are transported with trucks without cold chain or mechanical protection or recommended postharvest treatment. This results in significant amount of quantitative and qualitative losses, due to mechanical damages, over maturation, and postharvest diseases before reaching the consumer. However, wide range of existing food processing and postharvest technologies is expensive and often not accessible or adaptable to sub-Saharan African countries. Therefore, there is an urgent need to develop appropriate affordable technologies that can empower the smallholder farmers to preserve the quality of produce, support the food security, and generate income via horticulture by reducing postharvest losses of mango. Although, refrigeration is generally recognised as a key tool for successful marketing of perishable products, such sophisticated cooling systems are unavailable or non-existent for African smallholder farmers due to financial constraints and lack of electric power. The aim of the present study was the analysis of the effect of storage conditions (cooling and low oxygen limit) on the carotenoids profile measured by means of high pressure liquid chromatography as well as non-destructively by means of diffuse reflectance spectroscopy. Results provide the information on the positive effects on the nutritional value of the mango fruits stored with the new technology. Moreover, such technology can easily be adopted by small scale farmers to preserve the quality of mango fruits and contributing to food and nutrition security.

Keywords: Carotenoids, food security, mango, nutrition, postharvest technology