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Comparative assessment of clay pot cooler storage for maintaining postharvest quality of leafy vegetables

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Abstract

Leafy vegetables are a highly perishable, cheap, and readily available source of micronutrients. As they are highly perishable, leafy vegetables should be consumed immediately after harvesting. Proper storage methods preserve the quality of leafy vegetables after harvesting. Storage temperature and relative humidity greatly affect the postharvest quality of fresh produce. Low-cost evaporative cooling systems were developed to maintain the quality and extend the shelf-life of fresh produce. The zero-energy clay pot coolers are an eco-friendly system with low construction costs. This technology is based on the principles of a passive evaporative cooling mechanism. Clay pot coolers have been shown to effectively prolong the shelf-life of many fresh produces. The present study was conducted to evaluate the effectiveness of the evaporative clay pot coolers in preserving the postharvest quality of four selected leafy vegetables, including kankun (*Ipomoea aquatica*), gotukola (*Centella asiatica*), lettuce (*Lactuca sativa)* and thampala (*Amaranthus spp.)*. Leafy vegetables that were freshly harvested were sorted into 200 g bundles and subjected to storage under three different conditions: room temperature, refrigeration, and clay pot cooler storage, for a period of seven days. The average temperatures recorded were 27.7 ºC, 7.1 ºC, and 25.6 ºC, respectively, with relative humidity values of 76.1%, 58.2%, and 93.6% observed in each storage condition. The average cooling efficiency of clay pot coolers was 66.7%. The physiological weight losses of leafy vegetables were significantly reduced during the clay pot cooler storage. At the end of the storage period, chlorophyll content, soluble solids content (SSC), color changes, and the visual quality of leafy vegetables were significantly maintained in clay pot cooler storage compared to room temperature storage. The results of this study suggest that the clay pot cooler is a better alternative low-cost storage method to preserve the quality of leafy vegetables during their storage.

Keywords: Clay pot cooler, Leafy vegetables, Quality, Shelf-life

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