

Calcium and magnesium affect the postharvest quality of cape gooseberry (*Physalis peruviana* L.) fruits

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Abstract

The cape gooseberry is an exotic tropical fruit and, nowadays, is the second most exported fruit from Colombia. Therefore, the high demand for quality necessitates the search for a better understanding of fruit behavior. Furthermore, postharvest quality properties play an important role in meeting consumer demands. The cape gooseberry fruits were developed under plastic greenhouse conditions with plants maintained in 25 L plastic pots filled with quartz sand and irrigated with a nutrient solution lacking phosphorus (P), magnesium (Mg) and calcium (Ca) as compared with the complete control solution. The fruits were stored at 1°C (cold storage, 91% relative humidity [RH]) or 19°C (room temperature, 68% RH) for a period of 30 days in order to test the chemical, physical and sensory changes, evaluating fruits every 3 days. One hundred grams of fruit with calyx were packed in fruit baskets and covered with a vinipel plastic film. At the beginning of storage, the control fruits reached the highest fresh weight; the fruit cracking was higher in the Mg-deficient fruits, with 11.30%, than in the Ca-deficient and P-deficient fruits with only 0.79 and 0.10%, respectively. Supposedly, in the cape gooseberry, Mg²⁺ is very important for maintaining pectic acids as insoluble in the cell wall, even more so than calcium. During storage, the fruits deficient in P showed the greatest losses of fresh weight. The fruits stored at room temperature showed the highest values of total titratable acidity (TTA), while the total soluble solids (TSS) were lower compared to the fruits kept in the cold storage (1°C). Because of this behavior, the maturity index (TSS/TTA) was higher in fruits stored at 1°C. In the sensory evaluation, the fruits of the control, maintained at 19°C, were better in appearance and color, while those kept at 1°C had better taste (aroma and flavor). The fruits stored at this low temperature and lacking in Mg showed good aroma and flavor, but those deficient in P and Ca were less acceptable. Although the Mg-deficient fruits had a better taste than the P- and Ca-

deficient ones, their appearance was not well accepted by the sensorial panelists. P deficiency constrained the physical, chemical and sensory quality of the cape gooseberry fruits, as reflected in the lowest values for most of the studied variables.