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EFFECT OF POSTHARVEST STORAGE CONDITIONS ON SUGAR PROFILES IN AVOCADO FRUIT

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Once harvested, avocado fruit no longer have a source of carbohydrate for metabolic processes. Avocado is also characterised by a strong respiratory climacteric during ripening. This requires a high and readily available energy source. Carbohydrates, in the form of sugars, are likely to be more readily available than stored lipids. The available carbohydrate pool is therefore important to the metabolic processes during ripening. Previous work has shown that internal quality on ripening after storage tends to be better (less mesocarp discoloration) where fruits were stored at low temperature (2 to 4°C) or modified atmosphere was used. Both, temperature and atmosphere conditions during storage, can be expected to modify respiration and energy reserve usage. It is suggested that should carbohydrate depletion occur during storage, alternative forms of energy for respiration during post storage ripening will be necessary. This may cause cellular damage and thus quality defects. The purpose of this study was therefore to evaluate the readily available carbohydrate (sugar) pool as influenced by storage conditions as an aid to explaining the effects of storage conditions on subsequent quality. Avocado fruit, cv Fuerte were harvested, and subjected to postharvest treatments of waxing, packaging in polypropylene bags (modified atmosphere storage) or untreated control. In each case, storage temperatures of 2°C, 5.5°C and 8°C were used, and fruit stored for 21 days. Net CO₂ exchange of the fruits was measured at the storage temperature during this period. After storage, net CO₂ exchange, and rate of fruit softening was measured. The sugar profile of the fruits was determined by HPLC before and at the end of storage as well as the eating ripe stage. Results indicated that storage conditions modify fruit respiration during and after storage, and that this impacts on the sugar profile with preferential usage of fructose. It is suggested that the energy reserves of fruit in the form of sugars do indeed play a role in subsequent ripening physiology and the incidence of physiological disorders.