

Abstract:

Controlled atmosphere (CA) storage of mango fruit (*Mangifera indica* 'Kensington Pride') was studied using three combinations of CO₂ (3, 6 or 9%) and one level of O₂ (2%), as well as normal atmosphere (control) at 13 °C. Fruit were removed 21 and 35 days after storage and allowed to ripen for seven days at 21±1 °C. All the CA treatments significantly reduced the physiological weight loss (PWL) and fruit firmness after 21 and 35 days storage, compared with normal atmosphere storage. The acid content of the fruit was increased with all the CA treatments during storage period up to 35 days, compared with normal atmosphere storage. Reducing, non-reducing, and total sugars content of the fruit improved significantly with CA treatment after 35 days of storage, compared with normal atmosphere storage. The β -carotene content was significantly higher in the CA-stored fruit, compared with normal stored fruit and it was more pronounced after 35 days storage. The β -carotene content tended to increase with increasing in CO₂ concentration in CA storage after 35 days of storage. Elevated levels of CO₂ reduced total aroma volatiles, monoterpenes, sesquiterpenes and aromatics compounds of the ripe fruit, which was more pronounced after 35 days storage whilst esters and norisoprenoid increased as the levels of CO₂ increased. Fruit stored in CA comprising of 2% O₂ and 3% CO₂ resulted in significantly higher total aroma volatiles, monoterpenes and sesquiterpenes, compared with normal storage irrespective of storage period. CA storage did not significantly affect production of aldehydes whilst ketone was significantly higher in the fruit stored under normal atmosphere for 35 days, compared with CA storage. All major aroma volatile compounds in ripe fruit decreased as the level of CO₂ was increased during 21 days of CA storage. CA storage (2% O₂ and 6% CO₂) at 13 °C seemed to be promising for extending the shelf life and maintaining fruit quality of mango, while CA comprised of 2% O₂ and 2% CO₂ seems to be better for maintaining the aroma compounds of ripe fruit.