

Effect of controlled atmosphere storage on the quality attributes and volatile organic compounds profile of dragon fruit (*Hylocereus undatus*)

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Abstract

The short shelf-life of dragon fruit is one of the inhibiting factors for the export of Vietnamese dragon fruit to distant markets. This study aimed at finding an optimal controlled atmosphere (CA) storage condition for dragon fruit by studying the effect of CA storage on fruit quality and its volatile organic compounds profile. Dragon fruit were stored at 4 different CA conditions and at ambient air as a control treatment. At harvest and at day 10, 20, 30, 40 and 50, different fruit quality attributes were measured, including scale color, firmness, electrolyte leakage, soluble solids content, total acidity, respiration rate, and disease score. Sensory evaluation and aroma analysis were also performed. The results revealed that CA storage significantly reduced the yellowing of the scales and maintained fruit acidity. The CA condition of 2 kPa O₂ + 5 kPa CO₂ at 6 °C seemed to be optimal for dragon fruit storage. Normal senescence caused the loss of many volatiles, while low O₂ and high CO₂ level had an opposite impact on the concentration of fermentation products. However, these volatile changes did not significantly impact on the sensory quality of the fruit during storage.