

Title Volatile composition and quality of fresh-cut *Cucumis melo* var *Cantaloupensis* and *Inodorus*, as affected by modified and controlled atmospheres

Author Ana L. Amaro, John C. Beaulieu, domingos P.F. Almeida and F. Xavier Malcata

Citation Abstracts Book, 6th International Postharvest symposium, 8-12 April 2009, Antalya, Turkey. 256 pages.

Keyword Melon; fresh-cut; MAP

Abstract

Melons are frequently used as fresh-cut fruits. Among melon cultivars, *Cantaloupensis* are colorful, aromatic and fast senescing, whereas *Inodorus* have less odor and are generally slower senescing. Modified atmosphere packaging (MAP) is largely use in fresh-cut produce to reduce respiration rate and water loss, and thus extend shelf-life. However, the reduction of atmospheric O₂ concentration may alter the metabolism and the profile of volatile compounds. In this research effort, the effects of passive MAP and controlled atmosphere (CA) (i. e. 5 kPa O₂ + 10 kPa CO₂) were assessed upon quality and volatile production by fresh-cut cantaloupe and honeydew melons, stored at 5 °C for 14 days. The O₂ inside the MAP packages decreased in partial pressure, during the 14 days, to 11.1 kPa and 14.2 kPa, in cantaloupe and honeydew, respectively. CO₂ levels increased to 11.3 kPa and 7.9 kPa during storage, for cantaloupe and honeydew, respectively. Cantaloupe cubes in MAP softened during the first 4 day of storage, at a higher rate (1.99 N.day⁻¹) than honeydew cubes (0.85 N.day⁻¹); conversely in CA, fresh-cut honeydew soften faster (1.92 N.day⁻¹) than fresh-cut cantaloupe (0.90 N.day⁻¹) which, softened faster between days 4 and 7 (2.12 N.day⁻¹). Cantaloupe respiration on day 0 was 17.49 ml CO₂.kg⁻¹.h⁻¹, which increased to 63.82 and 43.38 ml CO₂.kg⁻¹.h⁻¹ when stored in CA and MAP, respectively. Honeydew respiration at day 0 was 7.72 ml CO₂.kg⁻¹.h⁻¹, and increased to 55.45 and 30.03 ml, CO₂.kg⁻¹.h⁻¹ when stored in CA and MAP, respectively. Atmospheric conditions had little to no effect on color and soluble solid content, in both melons. Several volatile compounds that are known to be important to flavor in melons, were extracted using a relatively recent technique (Stir Bar Sorptive Extraction) and quantified via GC-MS. The production of acetate ester increased in both melons stored in MAP, but decreased under CA conditions. Non-acetate esters increased in both cultivars and storage conditions. Alcohols initially more abundant in honeydew than cantaloupe, underwent a decrease throughout storage, under both conditions. Aldehydes were initially more abundant in cantaloupe than honeydew, but decreased in both melons for both storage conditions. The lower O₂ availability of fresh-cut fruit, under CA conditions (as used in this experiment) likely, suppressed some of the acetate esters relevant to the aroma of fresh-cut melon.