

Title Effect of oxygen on aroma volatiles and quality of fresh-cut cantaloupe and honeydew melons

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Abstract

Cantaloupe and honeydew melon cultivars were processed and stored under a high oxygen passive modified atmosphere packaging (MAP) or reduced oxygen controlled atmosphere (CA; 5 kPa O₂ + 10 kPa CO₂ and balance N₂) for 14 days at 5 °C. Atmosphere did not affect softening rate or soluble solids content and had a negligible effect on colour. Volatile compounds known as flavour-important in melons were extracted using stir bar sorptive extraction (SBSE) and quantified via GC–MS. Acetate esters increased more in MAP than in CA. Non-acetate esters increased markedly in both cultivars and storage types. Alcohols were more abundant in honeydew than in cantaloupe. Aldehydes decreased during storage in both cultivars and storage types. Lower O₂ availability under CA conditions likely suppressed some of the esters relevant to the aroma of fresh-cut melon. Results suggest that package O₂ levels are more important in determining aroma than other quality attributes of fresh-cut melon, and high O₂ levels may be required to reveal desirable aroma compounds.