Title Improving postharvest quality and storage life of green olives using CO_2

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Citation Horticulture, Environment, and Biotechnology, 49(6) p. 403-408, 2008.

Keywords Color values; Controlled atmosphere (CA)

Abstract

Green olives (*Olea europeae* L) cvs. Manzanilo, Sevillano, Mission and Shengeh were harvested at the early stage of ripeness, put into netted bags and placed randomly in 70 l sealed polyethylene chambers at 7°C. Different CO_2 concentrations were applied and the degree of CO_2 in the containers was zero (control), 1.6, 3.2, and 6.4 kilo-Pascals (kPa) in combinations with 2 kPa O_2. Fruit quality was evaluated as fruit firmness, color change and the degree of chlorophyll reflection (Chlorophyll Florescence). During the six-week olive storage, decay, physiological disorder, chilling injury and weight loss were not observed. Impact of different concentrations of CO_2 on physiological characteristics of the green fruit demonstrated that the increase of CO_2 up to 6.4 kPa results in retention of fruit firmness, Chroma value, a* value and suppressed respiration rate in all cultivars. Cultivar Mission demonstrated the most hard fruit firmness and cultivar Shengeh showed the highest color change from green to red during storage in various CO_2 levels. Chroma value decreased remarkably at the end of the experiment only in cv. Shengeh. Increase of CO_2 density displayed a meaningful impact on the degree of color maintenance among the cultivars. Mission, Manzanilo and Sevilano cultivars demonstrated suitable reactions in maintenance of physical and chemical features and storage longevity to CO_2 concentrations, respectively. Overall, the cv. Shengeh with lower storage longevity (color change from green to purple) is not suggested for long-term storage before processing.