

Title Postharvest quality and antioxidant activity of mini sweet peppers as affected by several types of bulk packaging

Author Zoran Ilic

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Abstract

For fresh produce most to the commercially available films used for MAP do not adequately provide gas fluxes or selectivity for achieving optimal conditions, especially in bulk packaging. The main goal of this research was to evaluate the efficacy of XF films for bulk packaging (2kg and 4kg) in compared to microperforated PE (as control) on quality parameters and antioxidants activity on three type of mini sweet peppers (tinkerbelle green, sweetbite orange and tinkerbelle red) during 14 days storage at 7°C and 3d at 20°C (shelf-life). Differences in atmosphere compositions developed in the three package types in spite to the same perforation level indicate that gas exchange properties of the packages were not solely dictated by perforation area, but were also affected by other factors, such as polymer nature, product weight and water condensation in the packaging material. The results show that packing pepper fruits in XF film (in bulk packaging-2kg) resulted in the highest level of CO₂ and the highest quality parameters. In all cultivars, PE films was significantly more effective in reducing weight loss and maintaining firmness fruit. Packaging in XF liners improved the better general appearance of the fruits, inhibited color development, softening, and decay incidence, compared to the PE liner. In both bags, during two weeks storage on 7°C, level of CO₂ did not exceed 2% because the bag was perforated, except during the shelf life (3days on 20°C) when level of CO₂ was around 5%(XF film in bulk packaging with 2kg). The sweet bite orange fruits was observed very high susceptibility to percentages of decay and aggravation of physiological disorders in comparison with tinkerbelle green and red fruit. Antioxidant activity in green fruit immediately after harvest was 3,42 μM TF/g (0,61 LAA and 2,81 HAA) μmol TF/g fr.wt., in orange was 5,42 (1,04 LAA and 4,38 HAA) and in red cultivar TAA was 6,95 (0,37 LAA and 4,41 HAA). After 2 weeks storage at 7 °C+3days on 20°C (shelf/life) total antioxidant activity slowly decreased in all cultivars, depend of film type and bulk packaging. XF films for bulk packaging have been successfully implemented in postharvest practice, for long-distance shipments.