Title Effects of modified atmosphere packaging on postharvest quality and storage of mature green and pink tomatoes

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Abstract

The effects of modified atmosphere packaging (MAP) on storage and postharvest quality of FI hybrid tomatoes (Lycopersicon esculentum Mill. cv. Zorro) were investigated. Tomatoes were harvested at mature green and pink stages and packed with Xtend® bags. Air stored fruits were considered as control. All samples were stored at 12°C with 90% RH for 35 days. Weight loss, elasticity, skin color, ethylene production, lycopene, polygalactronase (PG) activity and decay parameters were investigated with the intervals of 7 days.

At the end of the storage, MAP of either mature green or pink fruits reduced the weight loss and decay. Among mature green tomatoes stored in MAP, the amount of decayed fruit was 5.88%, while this level for control fruits was 19.61 %. MAP also delayed the increase of ethylene emission rate (detected by GC) and polygalactronase activity and the higher elasticity obtained from MAP compared to control. At the end of the storage, elasticity values were significantly higher in fruits of both maturity stages stored in MAPs (69.50 and 56.13 shore for mature green and pink fruits, respectively) than those of the control groups (55.73 and 46.53 shore for mature green and pink stages, respectively). Furthermore MAP alleviated the increment of PG activities in fruits of both stages. Mature green fruit had lower weight loss, decay, lycopene accumulation, ethylene production values, whereas they had higher hue angle and elasticity values than pink fruits. The generally qualities of MAP fruits were better than those of air stored fruits. Overall findings indicate that MAP was able to store mature green for 35 days without significant decreases in quality characteristics.