

Modified atmosphere packaging combined with CO₂ and 1-methylcyclopropene prolong the storability and maintain antioxidant properties of cherry tomato

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Abstract

Cherry tomato is a perishable fruit vegetable that requires packaging for a relatively long distribution period. In this study, we combined the effects of changing the normal composition of air in the package and short-term pre-storage treatment of fruits with 1-methylcyclopropene (1-MCP) and high CO₂ to maintain quality and extend the distribution period of 'Unicorn' cherry tomato. The treatments were modified atmosphere packaging (MAP), active modified atmosphere packaging (AMAP), high CO₂ + MAP, and 1-MCP + MAP. All the treatments were sealed with 40,000 cc/m² day atm oxygen transmission rate (OTR) film and stored at 20 and 10 °C up to 11 and 15 days, respectively. Based on the observed results of physicochemical and antioxidant parameters, the order of importance to prolong storability and maintain antioxidant properties of cherry tomatoes could be MAP + CO₂ > MAP + 1-MCP > AMAP > MAP. The current study provides important practical information on the packaging systems of cherry tomatoes to extend the distribution period and maintain antioxidant properties for the satisfaction of either the domestic or the neighboring overseas consumers.