Effect of exogenous ARA treatment for improving postharvest quality in cherry tomato (*Solanum lycopersicum* L.) fruits

Chaozhen Zeng, Piaopiao Tan and Zhixiang Liu

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Abstract

The study aimed to characterize the effects of exogenous arachidonic acid (ARA) treatment on improving postharvest physiological quality in cherry tomato fruits stored at 20 °C (room temperature) for 14 days. Freshly harvested cherry tomato fruits were treated with ARA at the concentrations of 2.5 and 5.0 mg L^{-1}. As compared with the control, ARA reduced the decay and weight loss of cherry tomato fruits, decreased malondialdehyde (MDA) accumulation, and maintained higher activities of polyphenol oxidase (PPO), peroxidase (POD), and catalase (CAT). In addition, the application of ARA in cherry tomato fruits delayed the increase of membrane permeability, kept the integrity of the cell membrane and reduced total soluble solids (TSS) and titratable acidity (TA) loss during the later stage of storage. Therefore, the concentration of 2.5 mg L^{-1} ARA was found to be an optimum ARA treatment for maintaining the storage quality of cherry tomato fruits. These findings may suggest that ARA treatment effectively improve the metabolism and storage quality of cherry tomato fruits stored at 20 °C. The exogenous ARA is a kind of green, safe and non-polluting preservative in the postharvest fruits and vegetables, which has good application value and economic benefit.