Gradual changes in antioxidant activity of cluster tomato during postharvest storage at different temperatures

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Abstract
In human subject feeding studies to evaluate efficacy of fruits and vegetables high in antioxidant activities, the time between harvesting and consumption could be up to several weeks. Therefore quantification of phytochemical reactions and changes in antioxidant activities is critical in designing such studies. Red stage ripen cluster tomatoes (*Lycopersicon esculentum* Mill. cv. Clermon) grown hydroponically in greenhouse were analyzed for the variation of antioxidant activity during two subsequent weeks of storage at 12 and 5°C with comparison to room temperature storage as control. During the first 7 days at 12°C the average increase of antioxidant activity was 0.537µmol TEAC/g/day followed by 0.953µmol TEAC/g/day for storing at 5°C. The overall antioxidant activity of extracts during the 7 days at low temperature 5°C was 1.77 times greater than that at 12°C. Room temperature stored tomatoes showed no significant changes in antioxidant activity. It seems chilling stress affects the pathways involved in the biosynthesis of the secondary metabolites, possibly phenols, into higher levels and higher antioxidant activity.

Keywords: tomato, antioxidant activity, postharvest.