

Title Postharvest chilling induces oxidative stress response in the dwarf tomato cultivar Micro-Tom

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Abstract

Oxidative stress is involved in the response of *Lycopersicon esculentum* fruits (cultivar Micro-Tom) to chilling. Changes in activated oxygen scavenging enzymes, superoxide dismutase (SOD, EC 1.15.1.1), catalase (CAT, EC 1.11.1.6), ascorbate peroxidase (APX, EC 1.11.1.11), and glutathione reductase (GR, EC 1.6.4.2) were examined during ripening after postharvest chilling. Also, lipid peroxidation, respiration, and pigment contents were determined. These parameters were affected by chilling, especially the lycopene content and the respiration rate that showed a high value when the fruits were transferred to higher temperatures. CAT activity increased the day after the fruits were re-warmed, while the activity of GR was higher in the chilled than in the non-chilled green fruits. Lipid peroxidation was more evident at the 'pre-chilled' yellow and red fruits. APX and SOD were not affected by previous chilling in ripening fruits. These results indicate that oxidative stress is generated by conservation at 4 degree C. The antioxidant response of tomato fruit could be mediated by CAT and GR but not by SOD or APX. Moreover, CAT seemed to respond to the increase in the respiration rate.