

Title Reduction of chilling injury in tomato (*Solanum lycopersicum*) using different postharvest (pre-storage) treatments

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Abstract

Chilling injury is a serious disorder that can be observed in plant tissues especially those of tropical and subtropical origin. One of the most susceptible produces to chilling injury is tomato which resulted in the irregular ripening of the peel from the exposure to temperature lower than 10°C. However the critical temperature at which chilling injury symptoms are manifested varies among different cultivars and commodities. Chilling injury causes the release of metabolites such as amino acids and sugar, and minerals from cells and together with the degradation of cell structure. This study was carried out to investigate the effect of different postharvest (pre-storage) treatments in the reduction of chilling injury in tomatoes (*Solanum lycopersicum*). The treatments involved were hot water treatment, anoxic treatment, force air cooling treatment and fruits without any treatment served as control. Control and treated tomatoes were stored at 9±1°C; RH 85-90% for 30 days. The physico-chemical analyses and the manifestation of chilling injury were observed at 3 days intervals up to 12 days and continued with 6 day intervals until day 30. The chilling injury score, color Lab values, lipid peroxidation, total soluble solid (TSS), titratable acidity (TA), and ascorbic acid value were increased and firmness decreased over the storage. The chilling injury symptom started to occur on day 18 for Control and hot water treatment and day 24 for anoxic treatment. Therefore, among all the treatments, the best treatment which can prolong the shelf life and reduce the manifestation of chilling injury in tomatoes was observed to be force air cooling treatment where other treatments showed the chilling injury symptoms of uneven ripening that cannot be accepted during storage at 9±1°C.