

Title Hot water dip and preconditioning treatments to reduce chilling injury and maintain postharvest quality of Navel and Valencia oranges during cold quarantine

Author Magdi Bassal and Mohamed El-Hamahmy

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Abstract

Effects of hot water dipping (HWD) at 41 ± 1 °C for 20 min or at 50 ± 1 °C for 5 min, and pre-storage conditioning (6 days at 16–18 °C and 45–65% RH), treatments to control chilling injury (CI) in W. Navel and Valencia Late oranges during cold quarantine at 1 °C and 85–90% RH for 20 days, subsequent storage at 10 °C and 85–90% RH for 20 days (as a transit period) and an additional 20 days of simulated marketing period (SMP) at 20 ± 2 °C and 40–65% RH, were investigated. Untreated fruit were used as controls.

HWD treatments reduced % chilling injury in both cultivars, especially HWD at 41 °C for 20 min, also enhancing peroxidase (POX) and catalase (CAT) activities in both fruit peel and juice, and the level of free phenols in juice compared with control and other treatments. These treatments did not affect other postharvest qualities such as weight loss, juice %, soluble solids content (SSC)/total acidity (TA), ascorbic acid (VC), or reducing sugars.