Title Effects of pre-storage application of spermidine, calcium chloride and hot water on chilling injury of cold stored pomegranates

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Abstract

Pomegranate (*Punica granatum* L. cv. Malas Yazdi) fruit are very susceptible to chilling injury during cold storage. A series of experiments were conducted to test the effect of polyamine, calcium and hot water on chilling injury of pomegranate. fruit were dipped in 2 and 4% calcium chloride solution alone or in combination with 1 and 2 mM spermidine and / or hot water (45°C) for 4 min. The treated fruit were air-dried at 24±1 °C and stored at 2 °C with 85±5% RH for 4.5 months. The results showed that all treatments had ameliorative effect on chilling injury and keeping quality after shelf life. Moreover, 2% calcium chloride in combination with 2 mM spermidine significantly reduced chilling injury, browning, water loss, electrolyte and K+ leakage. Fruit dipped in cold and hot water had the highest TSS (16.63 and 16.46%, respectively) and the lowest total antioxidant activity (15.3 and 20.3%, respectively). Fruit treated with two percent calcium chloride in combination with 1 or 2 mM spermidine had the highest titratable acidity (1.71 and 1.67%, respectively). The results reported herein, showed that the effect of chemicals on chilling injury was more pronounced than that of heat treatment.