

Pre-harvest CaCl_2 and GA_3 treatments improve postharvest quality of green bell peppers (*Capsicum annum* L.) during storage period

Majid Bagnazari, Mehdi Saidi, Meysam Mohammadi, Orang Khademi and Geetha Nagaraja

Scientia Horticulturae 240: 258-267. (2018)

Abstract

The present study investigated the effects of CaCl_2 (0.5%) and GA_3 (0.05 g L^{-1}) pre-harvest treatments both at two (2T) and three spraying times (3T) on some qualitative characteristics of green bell pepper stored for 0, 10 and 20 d at 1 and 10 °C. The purpose of this study was to mitigate postharvest lesions and increase chilling injury resistance in peppers. Weight loss, firmness, total soluble solids (TSS), vitamin C (VitC), phenolics, electrolyte leakage (EL), malondialdehyde (MDA), chilling injury, chlorophyll and calcium contents, peroxidase (POD), catalase (CAT) and antioxidant activities were measured. The highest and lowest weight losses were observed after 20 d at 1 and 10 °C on control and CaCl_2 treatments respectively. The highest (30.8 at 1 and 21.4 N at 10 °C) and lowest (23.5 at 1 and 14.2 N at 10 °C) firmness was measured in fruit from the CaCl_2 (3T) treatment and control, respectively. The amount of VitC and phenolics were higher in the control compared to all other treatments. After 20 d, the highest amount of MDA and EL, as well as the lowest amounts of calcium were measured in the control, gibberellin and calcium treatments, respectively. Chilling injury increased after 20 d of storage at 1 °C. However, all treatments with no significant difference had less chilling injury and TSS and more antioxidant enzymes (POD and CAT) and chlorophyll than the control. The results reveal that all CaCl_2 and GA_3 treatments increased overall quality of pepper at harvest time and preserved the quality and reduced the chilling injury during the storage period. Hence, these treatments can be commercially effective strategy to improve shelf life and maintain the quality of green bell pepper fruit during harvest and postharvest.