

Title Effect of postharvest treatments and storage temperatures on the quality and shelf life of sweet pepper (*Capsicum annum* L.)

Author T.V. Ramana Rao, Neeta B. Gol and Khilana K. Shah

Citation Scientia Horticulturae, Volume 132, 5 December 2011, Pages 18-26

Keywords *Capsicum annum*; Enzymes; Postharvest; Storage; Treatment

Abstract

The effect of salicylic acid (SA) and calciumchloride (CaCl_2) treatments on the physicochemical characteristics, softening and antioxidative enzyme activities of sweet pepper fruits packaged in plastic (polythene) bags and stored at 25 °C and 10 °C were evaluated at 0, 9 and 18 days of storage period. The activities of cell wall modifying enzymes such as polygalacturonase (PG), pectin methyl esterase (PME), cellulase, β -galactosidase and antioxidant enzymes like peroxidase (POD), catalase (CAT) and ascorbic acid oxidase (AAO) were elucidated in the fruits of experimental sets and they were compared with that of control set. Fruits treated with SA and CaCl_2 showed a significant ($p < 0.05$) delay in changes of weight, total soluble solids (TSS), pH, titrable acidity (TA) and shelf life compared to untreated control fruits. The data of the present study may be an indicative that the lower enzyme activities of PG, PME, cellulase, β -galactosidase in the treated peppers might have been associated with a high integrity of the cell membrane and few changes in the cell wall constituents, which contributed to high levels of crispness and firmness in the peppers during storage. The higher activities of scavenger antioxidant enzymes, including POD and CAT in the treated peppers at the 18 days storage period are probably due to the effect of SA and CaCl_2 . In comparison to the fruits of control set, all the treatments have shown positive effectiveness on the inhibition of AAO. Also the results of the present study suggest that by using SA (1 mM and 2 mM) and CaCl_2 (1.5%), the ripening process can be delayed, and the shelf life of capsicum fruits (stored at 10 °C) can be extended up to 71 days without any spoilage and off-flavour. Thus it may be concluded that the SA and CaCl_2 treatments may aid in delaying the softening process, enhancing the keeping quality while retaining the nutritional quality of sweet peppers more than that of control fruits in both the storage conditions (25 °C and 10 °C).