

Trisodium phosphate delays softening of jujube fruit by inhibiting cell wall-degrading enzyme activities during ambient storage

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Abstract

The purpose of this study was to evaluate the effects of trisodium phosphate (TSP) (0.5 g L^{-1}) treatment on softening of harvested jujube fruit during storage at $20 \pm 2 \text{ }^\circ\text{C}$ with a relative humidity of 50–55 %. The results showed that jujube fruit treated with TSP showed a higher firmness. The activity of pectin methylesterase, polygalacturonase, cellulase and β -glucosidase was also suppressed by TSP treatment. The results demonstrated that the content of water soluble pectin in jujube fruit treated with TSP was lower than in the control (dipped in distilled water) during storage. TSP treated fruits had higher pectin content than control fruits. The results of atomic force microscopy showed that water soluble pectin structure treated by TSP was denser compared with the control. Taken together, these results demonstrated that TSP could delay softening of jujube fruit by regulating cell wall-degrading enzymes activities and controlling the pectin substances.