

Abstract

Plum (*Prunus salicina* Lindl. cv. Blackstar) fruit were harvested at the pre-climacteric stage of ripeness. After being treated with calcium (calcium chloride at 1 mM) or heat at 45 °C (hot water dip immersion for 10 min), fruit were mechanically damaged at three equatorial zones with a given force of 50 N and then held at 20 °C under controlled conditions. Results revealed that both treatments led to a reduction of the mechanical damage, and in turn alleviated the physiological responses that occurred in mechanically damaged plums. A reduction of "wound-induced" ethylene and respiration rates, which were detected just a few hours following mechanical damage, was observed for treated plums. During storage, mechanical damage advanced the climacteric ethylene and respiration peaks, while a delay in those plums previously treated either with calcium or heat was found. Thereafter, control plums exhibited an accumulation of free spermidine and abscisic acid in mechanically damaged flesh, which could be considered a physiological response to mechanical stress. These changes were minimised in calcium- and heat-treated damaged plums, indicating that these treatments would induce a significant resistance to mechanical damage in plum.