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Influence of postharvest application of salicylic acid on ripening and quality of 'Santa Rosa' plums

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Salicylic acid is a new approach to delay the ripening processes and maintain postharvest quality of fruits. This prompted us to study the effects of post harvest salicylic acid dip on 'Santa Rosa' cv. of Japanese plum so as to increase its shelf life while maintaining quality. For this, 'Santa Rosa' plums were harvested in the month of June from a private orchard at Kullu (Himachal Pradesh) and were dipped for 10 minutes in aqueous solutions of salicylic acid (SA) (0.5, 1.0, 1.5 and 2.0 mM) and distilled water (control) at 20°C in the laboratory. The fruits were then dried under fan, packed in plastic punnets (500 g capacity) and then stored at 2°C and 90±2% relative humidity for 36 days.

Results revealed that all the concentrations of salicylic acid dip treatment had significant effect on fruit quality parameters like total phenolics, anthocyanin content and antioxidant capacity. Of different concentrations, SA (2.0 mM) was the most effective in maintaining firmness (5.39 N) compared to control fruits (1.65 N) on the 36th day of storage. This treatment also reduced electrolyte leakage (42%) compared to 74% in control and chilling injury (11%) compared to 53% in control. No decay was observed till the last day of storage in 2mM SA treated plums compared to 18% in control. Respiration and ethylene evolution rates were also significantly suppressed and delayed in SA treated plums. Treatment with SA significantly delayed weight loss (8.6%) compared to 13.4% in control, colour development and disease incidence. The symptoms like discolouration, softening, scalding were the least in fruits dipped in 2 mM SA followed by 1.5 mM, 1.0 mM and 0.5 mM showing a clear concentration dependent effect of SA. This study reflects that salicylic acid dip treatment can be integrated as an effective postharvest practice in the supply chain management of 'Santa Rosa' plums to extend their storage life while maintaining fruit quality during storage at cold conditions (2±1°C and 90±2% RH).

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