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Postharvest treatment with nitric oxide influences the physiological and quality attributes of 'Santa Rosa' plums during cold storage

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Abstract

Studies were conducted to observe the effect of nitric oxide (NO) on 'Santa Rosa' plum, a Japanese plum grown extensively in India. 'Santa Rosa' plums were dipped in solution of sodium nitroprusside (SNP @ 0.25, 0.5, 1.0 and 1.5 mM) and distilled water (control) for 5 min. After treatment, fruits were air-dried under fan and stored at 2°C temperature and 90 ± 5% RH for 36 days. Results revealed that SNP treatments significantly delayed the weight loss, fruit softening, and fruit decay in plums. However, minimum weight loss (8.3%), maximum firmness (3.463 N) and lowest fruit decay (0.0%) were recorded in SNP (0.5 mM) treated plums, whereas untreated fruits showed maximum weight loss (13.8%), lowest fruit firmness (1.595 N) and highest decay loss (18%). All SNP treatments significantly suppressed and delayed the rates of respiration and ethylene production by the fruits. Maximum phenolics content (106 mg/100 g pulp) and titratable acidity (1.1%) was observed in SNP @ 0.5 mM treated fruits, while it was lowest (65.3 mg/100 g pulp, 0.8% respectively) in untreated plums. Untreated fruits reached the highest SSC content on 16th day of storage (16.7°Brix) followed by a decline, while SNP (0.5 mM) treated fruits showed slower increase in SSC content. Hence, SNP 0.5 mM treatment can be effectively used for maintenance of desired postharvest quality and extending the market life of 'Santa Rosa' plums up to 36 days when stored at 2°C.

Keywords

Fruit firmness, nitric oxide, plum, quality attributes, respiration rate.