

Title Influence of pre and postharvest applications of putrescine on ethylene production, storage life and quality of 'Angelino' plum

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Abstract

Short shelf life plum fruit limits its export to distant markets. Exogenous application of polyamines has been reported to improve fruit firmness in different plum cultivars but no information is available on the effects of putrescine (PUT) application on storage life and fruit quality (total carotenoids, vitamin C and total antioxidants) in plum. The effects of pre or postharvest PUT application on ethylene production, fruit firmness and quality during ripening and after 3 or 6 weeks of storage was investigated. In first experiment plum (*Prunus salicina* L. cv Angelino) trees were sprayed with an aqueous solution of PUT (0.0, 0.1, 1.0 or 2.0 mM + 0.01% Tween-20) one week before anticipated harvest and after harvest a batch of unsprayed fruit was dipped into PUT with the same concentrations for 6 min. Both pre or postharvest treated fruit were allowed to ripen at ambient temperature ($20^{\circ}\pm 1^{\circ}\text{C}$). In the second experiment pre and postharvest PUT treated fruit were stored at $0^{\circ}\pm 1^{\circ}\text{C}$ and $90\pm 5\%$ RH for 3 or 6 weeks. Irrespective of the method of PUT application, in both experiments all the PUT treatments delayed and suppressed climacteric ethylene production and respiration rate. In the first experiment, PUT treatments significantly delayed softening of fruit which also had lower soluble solid concentration (SSC). SSC/acid ratio, total carotenoids, vitamin C and total antioxidants than controls. In the second experiment, PUT treated fruit exhibited higher firmness and titratable acidity while SSC, total carotenoids, vitamin C and total antioxidants remained lower than the control. In both experiments no differences in quality were recorded between pre or postharvest PUT application. In conclusion, PUT (1.0 mM) application either as preharvest spray or as postharvest dip can be used to delay the ethylene production with acceptable fruit quality during ripening at ambient temperature or to extend the storage life of plum up to 6 weeks with minimum loss of fruit quality.