

Title Effect of pre- and postharvest treatments of salicylic and gibberellic acid on ripening and some physicochemical properties of 'Mashhad' sweet cherry (*Prunus avium L.*) fruit

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Abstract

The effect of pre- and postharvest treatments of salicylic acid (SA) and pre-harvest treatment of gibberellic acid (GA₃) on physical and chemical properties, ethylene production and ripening indices of sweet cherry fruit were studied. This experiment was carried out in two sections. In the first experiment, five concentrations of SA including 0, 0.5, 1, 2 and 3 mmol/L were used three weeks before harvest as well as at harvesting time and both timing treatments were combined all in three replicates. In the second experiment, four concentrations of GA₃ comprising 0, 10, 20 and 30 mg/L were applied in three replicates. Fruits were sprayed three weeks before harvest when their color started to change from green to yellow. Some fruit quality attributes including ethylene production, flesh firmness, soluble solids concentrations, total acidity, weight and size of fruits were measured immediately after harvest. These measurements were repeated at 7, 14, 21, 28 and 35 days after storing fruits in cold temperature. Statistical analysis showed that, GA₃ treatment significantly delayed fruit ripening while increased fruit size. Ethylene production, flesh softening, weight loss, stem browning, PH and fungal rot of fruits decreased by GA₃ treatment but anthocyanine content and total acidity of fruits increased, so that, 10 mg/L GA₃ caused higher fruit firmness and lower fungal infection. Anthocyanine content, flesh firmness, total acidity and stem freshness of fruits were significantly increased with application of SA, but ethylene production, PH and fungal infection were reduced. In terms of application times, combining pre- and postharvest treatments was the most effective one when 2 and 3 mmol/L SA were used. Both gibberellic acid and salicylic acid treatments kept fruit quality but SA was more effective in decreasing ethylene production and prolonging stem green color compared with the GA₃ treatments.