

Evaluation of postharvest quality of three southern highbush blueberry (*Vaccinium corymbosum* hybrid) cultivars subjected to heat pre-treatment

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Abstract

Fresh blueberries are delicious and nutritious but easily perishable under natural conditions. Southern Highbush blueberries are low chill cultivars and three cultivars namely 'Misty', 'O'Neal' and 'Sharpblue' are popular in the south of China. The effects of thermal pre-treatments on the shelf life of fresh berries of 'Misty', 'O'Neal' and 'Sharpblue' fruits were studied. The results show that the decay rate of fruit subjected to elevated temperatures not exceeding 50°C for 30 min and stored at 5°C was the lowest for all three cultivars. The decay rate of fruit subjected to cooling below 5°C for 30 min and 5°C for 30 min was the lowest for berries stored at room temperature. At the early stage of fruit storage, superoxide dismutase (SOD) activity and malondialdehyde (MDA) content in fruits increased gradually slowly. This demonstrated that the thermal pre-treatment was capable of increasing SOD activity in fresh blueberries. At a later stage of fruit storage, SOD activity decreased and MDA content increased gradually. The results of this study indicate that the thermal pre-treatment and especially the temporary increase of temperature could inhibit the decrease of SOD activity and the increase of MDA content in the blueberry fruits. And the thermal pre-treatments can prevent the upward trend of respiration rate and inhibit the decrease of anthocyanin content of fruits effectively in the postharvest storage period. Thus, the thermal pre-treatment appears to be a useful method for prolonging the shelf-life of fresh blueberries and preserving the berry quality.