Title Effects of pre-storage hot air treatments on the post-harvest quality and blue mold control of ´Red Fuji´ apple fruit

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Abstract

Red Fuji (*Malus domestica* Borkh.， cv. Red Fuji) apples were treated with hot air at 38ºC for 4 days, stored at 0ºC for 16 weeks, and then 1 week at 20ºC as shelf life. Compared with control, this treatment could decrease the fruit respiration rate, increase the SSC/TA ratio, and the background color showed more yellow, but the treatment did no significantly affect on the ethylene production, firmness and fracturability of the fruit. Hot air treatment couldn't complete control the activity of *Penicillium expansum* spores. Apples inoculated with the spores heated at 38ºC for 4 days still could decay, and the fungi spores isolated form inoculated apple could growth after the heat treatment of apples. After the storage at 2ºC for 8 weeks, those decay incidence and area was 78.33 % and 16.08 cm^2 on the apples inoculated only with *P. expansum* spores, and the blue mold disease was very severe. Compared with only inoculation, heat treatment before inoculation could reduce 16.67 % of decay incidence and 22.8 % decay area. Heat treatment after inoculation could completely control blue mold disease on the apples. Form above it could be found that the heat treatment could increase the disease resistance of whole 'Red Fuji' apples inoculated with *P. expansum* spores, reduce or complete control the blue mold disease on the apples. However, the antifungal ability of the crude extract of fruit peel decreased after heat treatment, and the storage quality of 'Red Fuji' apples was not significantly improved compared with unheated apples.