

Title Effect of hot air treatment on postharvest mould decay in Chinese bayberry fruit and the possible mechanisms

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Citation International Journal of Food Microbiology, Volume 141, Issues 1-2, 30 June 2010, Pages 11-16

Keywords Chinese bayberry; Hot air treatment; Fruit decay; Quality; Disease resistance

Abstract

The effect of hot air treatment (HAT) on reducing natural fungal decay and green mould decay caused by *Leptographium abietinum* on postharvest Chinese bayberry fruit and the possible mechanisms were investigated. Freshly harvested Chinese bayberry fruit were firstly pretreated with hot air at 36–60 °C for 1–3 h, and then stored at 20 °C for 3 d or at 1 °C for 12 d to investigate the optimum condition of hot air treatment (HAT) for inhibiting decay development. Results demonstrated that HAT at 48 °C for 3 h was the most effective in reducing natural decay without impairing quality. This treatment also enhanced the resistance of Chinese bayberry fruit against green mould rot caused by *L. abietinum* and reduced the severity of the disease. The activities of defense-related enzymes including chitinase, β -1, 3-glucanase, peroxidase and polyphenol oxidase were significantly enhanced by HAT. In addition, the *in vitro* experiment showed that HAT significantly inhibited spore germination, germ tube elongation and mycelial growth of *L. abietinum*. These results indicate that HAT can effectively reduce fruit decay possibly by directly inhibiting pathogen growth and indirectly inducing disease resistance.