

Title The effects of the combination of *Pichia membranefaciens* and BTH on controlling of blue mould decay caused by *Penicillium expansum* in peach fruit

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Abstract

The feasibility of 0.2 g l^{-1} benzo-thiadiazole-7-carbothioic acid S-methyl ester (BTH) to improve the efficacy of *Pichia membranefaciens* in controlling postharvest blue mould decay in peach fruit was investigated. Our results showed that biocontrol activity of *P. membranefaciens* against blue mould caused by *Penicillium expansum* in peach fruit could be enhanced by addition of 0.2 g l^{-1} BTH. The combination of *P. membranefaciens* and BTH resulted in a more effective control of blue mould than individual treatment of *P. membranefaciens* or BTH alone. The combined treatment had a synergistic effect on the induction of superoxide dismutase, catalase, ascorbate peroxidase, chitinase and β -1,3-glucanase activities, which induced stronger disease resistance in fruit than BTH or yeast alone, and resulted in a lower lesion diameter and disease incidence of blue mould decay in peaches. Furthermore, the combined treatment did not impair the quality parameters including fruit firmness and contents of total soluble solids, titratable acidity and vitamin C of peach fruit after 6 days of storage at $20 \text{ }^{\circ}\text{C}$. These results suggested that the use of BTH may be an effective method to improve the biological activity of *P. membranefaciens*.