

Title Effect of yeast antagonist in combination with methyl jasmonate treatment on postharvest anthracnose rot of loquatfruit

Author Shifeng Cao, Yonghua Zheng, Kaituo Wang, Shuangshuang Tang and Huijin Rui

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Abstract

The beneficial effect of methyl jasmonate (MeJA) on the antagonistic yeast *Pichia membranefaciens* for control of anthracnose rot caused by *Colletotrichum acutatum* in postharvest loquatfruit and the possible mechanisms were investigated. The results indicated that the biocontrol activity of *P. membranefaciens* at 1×10^8 colony-forming units ml^{-1} on anthracnose rot was enhanced by 10 μmol MeJA treatment. The combined treatment of *P. membranefaciens* with MeJA resulted in a remarkably improved control of the disease in comparison with the treatment of *P. membranefaciens* or MeJA alone. *P. membranefaciens* in combination with MeJA induced higher activities of two defense-related enzymes chitinase and β -1,3-glucanase in loquatfruit than applying the yeast or MeJA alone. The *in vitro* experiment showed that the addition of 10 $\mu\text{mol l}^{-1}$ MeJA to the suspensions of *P. membranefaciens* significantly inhibited spore germination and germ tube elongation of *C. acutatum* than the yeast or MeJA alone. In addition, MeJA enhanced the population of *P. membranefaciens* both *in vitro* and in the wounds of the loquatfruit. These results suggested that MeJA could improve the biocontrol activity of *P. membranefaciens* on anthracnose rot in loquatfruit and the improved control of the disease by MeJA is directly because of the higher inhibitory effect on pathogen growth and the increased population size of antagonist, and indirectly because of the enhanced disease resistance in loquatfruit by the combination treatment.