

Title Postharvest biological control of gray mold decay of strawberry with *Rhodotorula glutinis*
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Abstract

Rhodotorula glutinis was evaluated for its activity in reducing postharvest gray mold decay of strawberry caused by *Botrytis cinerea* in vitro and in vivo. In the test on PDA plates, *R. glutinis* significantly inhibit the growth of *B. cinerea*. Spore germination of pathogens in PDB was greatly controlled in the presence of living cell suspensions. Rapid colonization of the yeast in wounds was observed during the first 3 days at 20 °C, and then the populations stabilized for the remaining storage period. On strawberrywounds kept at 4 °C, the increase in population density of *R. glutinis* was lower than those kept at 20 °C, but continued over 8 days after application of the antagonist until it reached a high level. Number of inoculated strawberryfruit treated with 1×10^8 CFU/ml washed cell suspension of *R. glutinis* was 10% after 2 days at 20 °C, compared to 100%, respectively, in the control. Washed cell suspensions of yeast controlled gray mold better than yeast in culture broth. Treatment of wounds with autoclaved cell cultures or cell-free culture filtrate did not prevent decay. The concentrations of antagonist had significant effects on biocontrol effectiveness: the higher the concentrations of the antagonist, the lower the disease incidence regardless of whether the fruit was stored at 20 °C for 2 days or 4 °C for 7 days. At concentrations of *R. glutinis* 1×10^9 CFU/ml, the incidence of gray mold was reduced by 94.7 or 95%, respectively, compared with control, after storage at 20 °C for 2 days or 4 °C for 7 days, respectively. *R. glutinis* significantly reduced the natural development of decay of fruit following storage at 20 °C for 3 days or 4 °C for 5 days followed by 20 °C for 3 days.