

Title Biocontrol of *Botrytis cinerea* in apple fruit by *Cryptococcus laurentii* and indole-3-acetic acid

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Abstract

This study evaluated the effect of a yeast antagonist *Cryptococcus laurentii* and a plant regulator indole-3-acetic acid (IAA) on inhibition of *Botrytis cinerea* infection in harvested apple fruit. The results showed that the combined treatment with *C. laurentii* and IAA at 20 µg/ml was a more effective approach to reduce the gray mold rot in apple wounds than the *C. laurentii* alone. After 4 days of incubation, gray mold incidence in the combined treatment with *C. laurentii* and IAA was about 18%, which was a 50% reduction in incidence compared to the treatment with *C. laurentii* alone. Although IAA had no direct antifungal activity against *B. cinerea* infection when the time interval between IAA treatment and pathogen inoculation was within 2 h, application of IAA strongly reduced gray mold infection when IAA was applied 24 h prior to inoculation with *B. cinerea* in apple fruit wounds. Moreover, combination of IAA and *C. laurentii* stimulated the activities of superoxide dismutase, catalase and peroxidase with above 1.5-fold higher than that treatment with *C. laurentii* alone at 48 h. Therefore, combination of *C. laurentii* with IAA, which integrated the dual biological activity from the antagonistic yeast and plant regulator, might be developed to be a useful approach to control gray mold in harvested apple fruit.