

Title Biological control of postharvest blue mold of oranges by *Cryptococcus laurentii* (Kufferath) Skinner

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Abstract

Cryptococcus laurentii (Kufferath) Skinner was evaluated for its activity in reducing postharvest blue mold decay of oranges caused by *Penicillium italicum* *in vitro* and *in vivo*. The results showed that washed cell suspensions of yeast provided control of blue mold decay better than yeast in culture broth. Autoclaved cell culture and cell-free culture filtrate failed to provide protection against the pathogen. The concentrations of antagonist had significant effects on biocontrol effectiveness. When the washed yeast cell suspension reached the concentration of 1×10^9 CFU/ml, challenged with pathogen spore suspension at 1×10^4 spores/ml, the blue mold decay was completely inhibited during 5 days of incubation at 20 °C. No complete control was obtained when oranges were stored at 4 °C for 30 days, but the decay was distinctly prevented. Efficacy of *C. laurentii* was maintained when applied simultaneously or prior to inoculation with *P. italicum*. Efficacy was reduced when *C. laurentii* was applied after inoculation. In drop-inoculated wounds of oranges, the populations of *C. laurentii* increased by approximately 50-fold during the first 24 h at 20 °C. The maximum yeast populations, approximately 250-fold over the initial populations, were reached 15 days after inoculation at 4 °C.