

**Title** Biocontrol of blue and gray mold diseases of pear fruit by integration of antagonistic yeast with salicylic acid

**Author** Ting Yu, Jishuang Chen, Rongle Chen, Bin Huang, Donghong Liu and Xiaodong Zheng

**Citation** International Journal of Food Microbiology, Volume 116, Issue 3, 30 May 2007, Pages 339-345

**Keywords** Biological control; *Cryptococcus laurentii*; Induced resistance; Pear fruit; Postharvest; Salicylic acid; Yeast antagonist

### Abstract

This study was conducted to evaluate the efficacy of the biocontrol yeast *Cryptococcus laurentii* and salicylic acid (SA) in suppressing the blue and gray mould rots in pear fruit and to explore possible mode of action involved. Our results showed that the combined treatment of pear fruit with *C. laurentii* with SA at  $100 \mu\text{g ml}^{-1}$  resulted in a remarkably improved control of *Penicillium expansum* and *Botrytis cinerea* infections, including the pre-inoculated *P. expansum*, in comparison with the application of *C. laurentii* or SA alone. The biocontrol yeast *C. laurentii* proliferated rapidly within the first 24 h of incubation in pear fruit wounds. Although SA at  $100 \mu\text{g ml}^{-1}$  neither affected the population growth of *C. laurentii* nor directly inhibited the blue mold when the inoculation concentrations of *P. expansum* were above  $5 \times 10^2$  spore per ml *in vivo*, it induced the fruit resistance to the blue and gray mold rots when the time interval between SA treatment and pathogens inoculation was more than 48 h, being associated with a rapid and strong activation of the peroxidase activity in pear fruit. Thus we assume that SA may be regarded as a secondary defense line in a combination of *C. laurentii* and SA, which could reinforce the biocontrol efficacy of *C. laurentii* by induction of the fruit natural resistance.