

Title Induction of defense response against *Colletotrichum capsici* in chili fruit by the yeast *Pichia guilliermondii* strain R13

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Abstract

Pichia guilliermondii strain R13, a yeast isolated from Thai rambutan, has been shown to suppress the fungal pathogen *Colletotrichum capsici* in harvested chili. Its multiple modes of action include nutrient competition, tight attachment to the fungus, and hydrolytic enzyme secretion. This study investigated the ability of the *P. guilliermondii* strain R13 to induce resistance against *C. capsici* in chili fruit. The pretreatment of chili with the yeast antagonist, physically separated from the fungus by known distances, significantly reduced disease incidence and lesion diameter caused by *C. capsici*. Compared to the controls, the yeast treatment also significantly enhanced the activities of phenylalanine ammonia-lyase, chitinase, and β -1,3-glucanase, and the accumulation of capsidiol phytoalexin in chili tissue. Scanning electron micrographs showed that the morphology of *C. capsici* spores and hyphae were abnormal and that the pathogen had restricted growth on chili tissue adjacent to the yeast-inoculated sites. The results indicate that the induction of resistance may be another mechanism by which the yeast antagonist suppresses *C. capsici*.