

Title Inhibitory mechanisms induced by the endophytic bacterium MGY2 in controlling anthracnose of papaya

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Citation Biological Control, Volume 56, Issue 1, January 2011, Pages 2-8

Keywords Papaya fruit; *P. putida*; *C. gloeosporioides*; Disease resistance; Defense enzymes

Abstract

An endophytic bacterium named *Pseudomonas putida* MGY2 was isolated from papaya fruit. The effect of MGY2 on reducing anthracnose caused by *Colletotrichum gloeosporioides* infection in harvested papaya fruit and the possible mechanisms involved were investigated. Fruit treated with MGY2 showed a significant lower disease index, disease incidence, and lesion diameter than the control. MGY2 reduced the decrease in firmness and delayed the peak of ethylene production of harvested papaya fruit stored at 25 °C. MGY2 also significantly enhanced the activities of phenylalanine ammonia-lyase (PAL), catalase (CAT), and peroxidase (POD) and increased the phenolic content. The expression levels of *PAL1*, *CAT1*, and *POD* genes were obviously elevated in MGY2-treated fruit. These results suggested that papaya fruit is capable of responding to the endophyte *P. putida* MGY2, which could activate defensive enzymes and genes and thereby induce host disease resistance.