MECHANISM OF RESISTANCE TOWARDS *RHIZOCTONIA SOLANI* IN TRANSGENIC COTTON PLANTS EXPRESSING AN ENDOCHITINASE GENE FROM *TRICHODERMA VIRENS*

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Abstract

We have reported previously that cotton plants expressing an endochitinase gene from *Trichoderma virens* were highly resistant to *Rhizoctonia solani*. We are investigating the nature of the defense response in these plants and trying to understand the mechanism of resistance at molecular and biochemical levels. The transgenic tissues, in general, showed higher levels of basal activities of defense-related enzymes such as chitinases and glucanases. These enzymes were also induced at greater levels upon infection in the transgenic plants. In addition, transgenic endochitinase and various endogenous chitinases are also secreted by the roots of the transgenic plants providing a protective barrier. Activities of various genes involved in defending plants against pathogens were analyzed by RT-PCR and many genes were found to be up-regulated in the transformants. The results suggest that the endochitinase-expressing cotton plants are protected by a shield provided by the transgenic endochitinase. In addition, these plants show a rapid and elevated defense response when challenged with *R. solani*.