

Characterization and Biocontrol Ability of Fusion Chitinase in *Escherichia coli* Carrying Chitinase cDNA from *Trichothecium roseum*

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The antifungal mechanism of mycoparasitic fungi involves fungal cell wall degrading enzymes such as chitinases. *Trichothecium roseum* is an important mycoparasitic fungus with significant antifungal ability, but studies on chitinases of *T. roseum* were poor. Here, we report a novel chitinase cDNA isolated from *T. roseum* by PCR amplification based on conserved chitinase sequences. Southern blot analysis suggested that a single copy of the gene exists in the genome of *T. roseum*. The deduced open reading frame of 1,143 nucleotides encodes a protein of 380 amino acids with a calculated molecular weight of 41.6 kDa. The fusion chitinase expressed in *Escherichia coli* has been purified by single-step chromatography. It has a pI of pH 5.4 and expresses a thermal stability, but is insensitive to pH in a broad pH range. According to expectation, *E. coli* efficiently yielded a high amount of active chitinase. Remarkably, the fusion chitinase offered high antifungal activity.

Key words: Fusion Chitinase, Characterization and Biocontrol Ability, *Trichothecium roseum*