STUDY OF ROLE OF AbreAtr₁ GENE IN PROTECTIVE MECHANISM AND PATHOGENICITY OF Alternaria brassicae, THE CAUSAL AGENT OF LEAF SPOT IN CANOLA, USING REAL TIME PCR

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Abstract

Alternaria brassicae is one of the most important seed borne pathogens and causal agents of canola leaf spot. In pathogenicity process of A. brassicae, AbreAtr₁ genes correspond to pathogenicity cluster NRPS-ABC transporter and have been introduced as an encoding of pathogenicity factor. The presence of these proteins in organisms prevents the accumulation of toxic compounds caused by them, and protects them against toxins, thus enhancing the growth of pathogen. The role of this gene in growth of A. brassicae and amount of pathogenicity of this fungus has not yet been considered. In order to study this role, the amount of AbreAtr₁ transcription in six isolates of A. brassicae was compared by Real time PCR method. The daily growth rate in each isolate in PDA medium and the amount of pathogenicity was also studied. There was a significant difference among isolates at 1% level in the growth rate and amount of pathogenicity. Also, there was a significant difference among isolates in the amount of AbreAtr₁ transcription. The role of AbreAtr₁ in protective mechanism of A. brassicae against the produced phytotoxins, the correlation between the growth rate, amount of pathogenicity and transcription pattern of AbreAtr₁ were determined in each isolate. There was a positive relation between growth rate, amount of pathogenicity and transcription pattern of AbreAtr₁ at 1% level. It is thought that growth and pathogenicity of A. brassicae is affected by the ABC transporter encoded by the AbreAtr₁. Over-expression of AbreAtr₁ can lead to reduce toxic effect of secondary metabolites in this pathogen, thus giving more pathogenicity in the isolate.

Keywords: Alternaria brassicae, AbreAtr₁, ABC transporter, Pathogenicity, Hyphal growth, Canola.

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