

## STUDY ON EXPRESSION OF *PHENYLALANINE AMMONIA-L YASE* AND *PATHOGENESIS-RELATED* GENES IN WHEAT SYMBIONT WITH ENDOMYCORRHIZAL FUNGUS *PIRIFORMOSPORA INDICA* AFTER INFECTION WITH POWDERY MILDEW

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### Abstract

Endomycorrhizal fungus *Piriformospora indica* protects host plants against biotic and abiotic stresses via induced systemic resistance. In the present study, the ability of this fungus to induce resistance in wheat against powdery mildew fungus (*Blumeria graminis* f. sp. *Tritici*, *Bgt*) was evaluated. Forty Iranian wheat genotypes were screened for sensitivity to wheat powdery mildew and Falat cultivar was selected as the most susceptible genotype. To investigate the expression patterns of *PR1*, *PR2*, *PR5* and *PAL* defense genes, Falat genotype was colonized by *P. indica* and then exposed to *Bgt* together with non-colonized plants. Results showed peak expression of the resistance genes have at 24 hours after inoculation in both treated and control plants. The expression rate of the evaluated genes increased slowly in control plants but elevated earlier and higher in *P. indica* colonized plants after inoculation with *Bgt*. These results indicate that *P. indica* causes early and faster induction of plant defense genes and their elevation causes induced systemic resistance in plants. At 48 hours after inoculation, transcript levels of early induced genes started to dampen in both groups of experimental plants, indicating effective suppression of defense-associated genes upon haustorium development.

**Keywords:** endomycorrhiza, wheat, powdery mildew, resistance, defense genes

See Persian text for figures and tables (Pages 169-172).

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