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STUDYING OF SEVERAL *Pathogenesis-related genes* ROLE IN RICE RESISTANCE TO *Bipolaris oryzae* *

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Abstract

The rice brown spot disease caused by *Bipolaris oryzae* is distributed in most of rice cultivated regions and some time causes economic recession. Plants are under attack by diverse pests and pathogens. They have evolved different mechanisms to survive against invaders. Similar to the other plants, rice employs structural and chemical barriers to defense against pathogens. The pathogenesis- related proteins have crucial role in chemical defense. In this survey, the expression pattern of several resistance genes (*Thionin, Defensing, Allen oxide synthase, Proxidase*) were considered in two rice cultivars under treatment of *B. oryzae* fungus, using Quantitative Real Time PCR. The Tarom and Khazar cultivars have been selected as susceptible and resistance cultivars, respectively. Results showed considerable increase in expression rate of all genes in both genotypes after inoculation than that of control plant in every hours. Data analysis using T-student test program also showed that there are significant differences between Tarom and Khazar cultivars with the expression of mentioned genes. The findings proves that *Thionin, Defensin, Allen oxide synthase* and *Proxidase* genes play a prominent role in rice resistance to *B. oryzae.* This result can be an introduction to use of mentioned genes for overexpression and generate resistant rice to destructive brown spot disease in breeding program.

Keywords: Rice, Brown spot disease, PR-protein, QPCR.

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