عنوان مقاله:

Cucumber Response to Sphaerotheca fuliginea: Differences in Antioxidant Enzymes Activity and Pathogenesis-Related Gene Expression in Susceptible and Resistant Genotypes

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خلاصه مقاله:

Cucurbits powdery mildew is one of the most detrimental diseases of cucumber plants worldwide. A detailed insight into the biological processes leading to resistance or susceptibility to the pathogen would pave the road for an efficient disease-resistance breeding program. In the present study, the molecular and biochemical responses of a resistant vs. a susceptible cucumber cultivar infected with Sphaerotheca fuliginea were investigated. The alterations in the activity of two antioxidant enzymes i.e. superoxide dismutase (SOD) and catalase (CAT) were analyzed during different time courses. The changing pattern of the expression of PR-8 gene (chitinase class III) was evaluated through qPCR. Results showed that the PR-8 gene expression was raised in the leaves of both cultivars 96 hours post inoculation (hpi), however, with a 6 times higher expression rate in resistant cultivar compared to the susceptible one. The results imply that PR-8 may be a key factor of resistance to the pathogen. For both cultivars, SOD showed similar activity pattern and was raised at the early hours post inoculation and showed a peak 6 hours post inoculation with higher activity in the resistant cultivar.In contrast, CAT showed distinct activity patterns between cultivars and showed comparatively higher activity in the susceptible host. The possible reasons for these differences are discussed. The results of the present work give a more clarified insight into the possible mechanisms behind the resistance to cucumber powdery mildew caused by S. fuliginea

کلمات کلیدی:

Cucumber, Chitinase class III, Antioxidant activity; PR-8 gene