EXPRESSION OF DEFENSE RELATED GENES IN LEAVES OF TWO SUNFLOWER LINES AFTER INFECTION WITH SPORES OF PLASMOPARA HALSTEDII

Ćurčić NATAŠA [1], Dragan SKORIC [2]

[1] Educons University, Serbia
[2] Serbian Academy Of Sciences And Arts, Serbia

ABSTRACT

Two sunflower lines, susceptible and resistant to downy mildew race 730 were used in this study. Susceptible line was Ha-26 and resistant line was its backcross BC/8 analogue, containing Pl6 gene for downy mildew resistance introduced from initial cross with Ha336. Inoculation with the suspension of *P. halstedii* zoospores, was done on the plants in the phase of first pair of leaves. Twelve days after infection susceptible line developed typical disease symptoms, i.e. leaf chlorosys with or without sporulation, which was not the case with resistant line. In the time period of 2 to 96 hours after treatment leaves were harvested and immediately frozen in liquid nitrogen. Total RNA was isolated by RNAeasy kit (Quiagen). cDNA synthetised by RevertAid First Stand cDNA Synthesis Kit (Fermentas), was used as template in PCR to examine the expression pattern of several defense related genes. The expression of genes for enzymes involved in H2O2 production (Caox; Oxox) was constitutive but significantly higher in resistant line, already 2 h after infection. Similar results were obtained for SODc gene. Higher accumulation of SODp and chitinase transcripts was observed up to 4h after infection in resistant line. PR5 transcript was upregulated in early phases after infection only in resistant line. Our results indicate that the early response to secondary downy mildew infection resembles to hypersensitive-like reaction and is partly responsible for the resistance conferred by Pl6 gene.

Key Words : downy mildew, Pl6, gene expression