

Aphid-induced pathogenesis-related proteins: tissue localization and role in resistance

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Pathogenesis-related proteins (PR-proteins) are proteins with anti-microbial activity produced by plants upon infection by microorganisms. In barley, infestation by the bird cherry-oat aphid (*Rhopalosiphum padi*) or rose-grain aphid (*Metopolophium dirhodum*) induced new synthesis of various PR-proteins: the hydrolases, chitinase and acidic and basic β -1,3-glucanase as well as PR-1a and thaumatin-like protein with unknown functions. The aphid-induced synthesis of these proteins was investigated in a number of barley cultivars and breeding lines and it was found that synthesis induced by *R. padi* was generally more strong in breeding lines classified as resistant to *R. padi* than in susceptible plants. The relative degree of induction of the different proteins varied between lines, suggesting that the genes are not coordinately activated. The tissue localisation of the induced proteins indicated that they are restricted to the vicinity of aphid probing and feeding.