Up-regulation of Pathogenesis-related Proteins in the Apoplast of *Malus domestica* after Application of a Non-pathogenic Bacterium

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The intercellular washing fluid (IWF) of *Malus domestica* cv. Holsteiner Cox before and after application of the non-pathogenic bacterium *Pseudomonas fluorescens* Bk3 to the leaves was investigated in a comparative manner. SDS-PAGE in combination with ESI Q-ToF mass spectrometry, and homology search in relevant data bases revealed the highly up-regulated expression of several pathogenesis-related plant proteins in the apoplast of the leaves treated with *P. fluorescens*. These proteins were β-1,3-glucanase, chitinase, thaumatin-like protein, ribonuclease-like protein, and a hevein-like protein. Moreover, a 9 kDa non-specific lipid transfer protein was significantly reduced after the application of *P. fluorescens*. The possible relevance of a pre-treatment of apple cultivars with the non-pathogenic bacterium *P. fluorescens* Bk3, as an alternative method to the treatment with fungicides, for increasing the resistance of susceptible apple cultivars against an infection with the fungus *Venturia inaequalis* is discussed.

Key words: Apoplast, Biological Control, Pathogenesis-related Proteins