Results: Differential reactions among host genotypes infiltrated with semi purified extracts were observed. Extracts digested by proteases lost their activity.
Conclusion: Losing activity after digestion and particle size in extracts suggest that necrotrophic factor in our extracts is proteinaceus in nature. This finding is in agreement with literature data. Differential susceptible reaction among triticale genotypes shows that proteinaceus toxins have an impact on symptom expression in triticale as well as in wheat seedling leaves.

P PPI 29

Dynamic subcellular changes in glutathione and its precursor levels in plants under different environmental conditions

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Introduction: Glutathione and its precursors are the most important antioxidants in plants. They are involved in the detoxification of reactive oxygen species (ROS), redox signaling, in the modulation of defense gene expression and they are important for the regulation of enzymatic activities. For these reasons levels of glutathione and their precursors are often used as stress markers in plants.
Objectives: In our studies we focused our interest on the dynamic compartment specific changes of glutathione and its precursors, to gain thorough knowledge about the subcellular distribution of these antioxidants in plants and on the importance of these antioxidants in certain cell compartments during stress situations.
Material and methods: Different agricultural plants (*Cucurbita, Nicotiana*), as well as *Arabidopsis* were used as model plants under different environmental conditions. For this purpose beside other techniques an immunogold cytohistochemical approach was developed and adapted to different plant material in order to detect and quantify subcellular glutathione and its precursors with computer-supported transmission electron microscopy.
Results: The development and application of these methods to various plants under different environmental conditions revealed that glutathione precursors (especially cysteine) limit the operation of glutathione metabolism. The modification (increase) of cysteine contents in plants resulted in a strong increase in glutathione contents and subsequently in a higher stress tolerance.
Conclusion: These studies and methods can now be used for the development of new defense strategies for agricultural use in the future, and can protect farmers from possible crop losses induced by environmental stress situations in the future.
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P PPI 30

Detection, Taxonomy and Genetic Variability of Alder Yellows Phytoplasma in Black Alder in Spreewald Habitat

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Introduction: Phytoplasmas are cell wall-less bacteria and obligate parasites colonizing the phloem of plants. Diseases caused by phytoplasmas are associated to more than 1,000 plant species worldwide, including economically important crops and forest trees. Alder yellows phytoplasma (AldY), which frequently infects *Alnus* spp. (alder), is closely related to quarantine pathogen Flavescence dorée (FD) in grapevines. Only few *A. glutinosa* (black alder) trees are exhibiting typical symptoms such as yellowing or decline.
Objectives: This study aims to determine the prevalence of AldY infection in black alder not exhibiting infection-associated symptoms in a riparian forest and the phylogenetic relatedness between determined and previously described strains, based on 16S *rRNA* and methionine aminopeptidase (*map*) gene.
Materials and methods: Leaf samples from fifty-seven black alder at different ages were harvested during summer for DNA-isolation followed by PCR on partial *rRNA*-operon and *map*. RFLP analysis was performed on 16S rDNA using *TaqI* for classification to 16SrV-C on all samples. Sequencing of 16S rRNA and *map* genes from selected strains was performed for phylogenetic analyses.
Results: AldY phytoplasmas (16SrV-C) were detected in all samples by PCR-RFLP and sequence analyses of 16S rDNA. *Map* analyses revealed diversity of the strains present in the analysed samples as well as several samples with mixed infections of closely-related AldY strains. The determined strains were assigned to phylogenetic clusters close to Palatinate grapevine yellows, AldY or FD.
Conclusion: Black alders of the Spreewald area are in general infected with AldY phytoplasma without symptom exhibition. Our results support the presence of an established common balanced phytoplasma infection in black alder.