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Untersuchungen zum Auftreten von Pflanzenviren in *Epicatus*-Hybriden

Plant viruses in Epicactus hybrids

Viruserkrankungen in Kakteen und in *Epicatus*-Hybriden wurden bislang nur wenig untersucht. So beschrieb Amelunxen (1958) das *Cactus virus X* und Weber (1953) Viruserkrankungen von *Epiphyllum*. Ziel der vorgestellten Untersuchungen ist die Erfassung des Virusstatus von *Epicatus*-Hybriden. Dazu wurden aus Blüten bzw. Blütenstielen auffälliger Pflanzen (z. B. Blütenbrechungssymptome, geflamme Blüten, Blütenaufhellungen) dsRNAs isoliert. Nach cDNA Synthese mit Zufallsprimern und Klonierung in *E. coli* wurden die Sequenzen einzelner Klone bestimmt. Die Analyse der bislang erhaltenen Sequenzen zeigte die Anwesenheit von Viren aus den Familien der Closteroviridae bzw. Flexiviridae. Weiterführende Untersuchungen müssen zeigen, ob es sich um bereits bekannte oder neue Viruspezies handelt. Die bisherigen Ergebnisse erlaubten die Herstellung von spezifischen Oligonukleotiden, deren Eignung für einen Routinenachweis mittels RT-PCR noch verifiziert werden muss.

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Genetic analyses of diversity and taxonomic relatedness among pectolytic enterobacterial strains, and *P. carotovorum* subspecies: subsp. *carotovorum*, subsp. *odoriferum* and subsp. *brasiliense* subsp. nov.

Pectobacterium carotovorum is a heterogeneous species of pectolytic, Gram-negative bacteria that cause soft rot diseases of many agricultural crops and ornamental plants. Amplified fragment length polymorphism (AFLP) markers and multilocus sequence analysis (MLSA) were used to analyse 63 bacterial strains, including 33 reference strains. The results indicate the need for a revision of the previously classified strains, as some potato-derived *Pectobacterium carotovorum* strains were re-identified as *P. wasabiae*. In addition to the two named subspecies, *P. carotovorum* subsp. *carotovorum* and *P. carotovorum* subsp. *odoriferum*, a third subspecies, *P. carotovorum* subsp. *brasiliense*, was previously proposed. DNA-DNA hybridization confirmed that *P. carotovorum* subsp. *brasiliense* is a different species, but is a member of the *P. carotovorum* species. The 16S rRNA gene could not be used to discriminate among the subspecies, although it provided information on their relationships. Multi-locus sequence analysis based on eight house-keeping genes differentiated the subspecies and delineated two *P. carotovorum* subsp. *brasiliense* clades with different geographic background.

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Characterization of resistance induction by single and combined application of silicon and chitosan in tomato against *Ralstonia solanacearum*

Bacterial wilt caused by *Ralstonia solanacearum* [syn. *Pseudomonas solanacearum*] is one of the most destructive diseases of tomato as well as of other commercially important crops such as eggplant, potato, peanut, banana, tobacco, ginger and geraniums. Its wide host range, geographical distribution and subsequent colonisation of different environments worldwide imposes a production problem. Different control strategies ranging from cultural, chemical and regulatory measures and resistance breeding have been used, but no effective control is achieved. Therefore, enhancing plant resistance seems to be a potential approach to suppress the pathogen. We investigated the effects of silicon which is shown to prime the defence capacity of treated silicon-non-accumulator plants against the pathogen and possible synergistic effects when combined with chitosan a natural extract and an homopolymer of deacetylated β -1, 4-linked N-acetylglucosamine extracted from exoskeletons of crustaceans, mainly shrimps. Silicon and chitosan induced resistance in tomato plants against bacterial wilt caused by *Ralstonia solanacearum*. Gene expression analysis conducted at 72 hours post inoculation (hpi) revealed significant regulation of 746 genes mainly related to defense and genes involved in signal transduction pathways and transcription. The highest number of up-regulated genes was observed in combined application of silicon (Si) and chitosan (Chi) in the moderately resistant genotype King Kong 2. Also effects of single application of Si and Chi on gene expression were significantly higher than in the untreated, infected plants. A global