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BOOK OF ABSTRACTS

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"TOWARDS SUSTAINABLE AGRICULTURE: AN INTERDISCIPLINARY APPROACH"

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EFFECTIVENESS OF *PSEUDOMONAS CHLORORAPHIS* IN SUPPRESSION OF PHYTOPATHOGENIC FUNGI IN VEGETABLES

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Natural disease-suppressive soils are associated with diverse bacteria that are antagonistic towards a phytopathogen. The *Pseudomonas* genus is represented by multiple species isolated from different host rhizospheres which showed antagonistic activities towards diverse phytopathogenic fungi. Certain strains have an important role in the disease suppression due to production of several extracellular metabolites. In this study, *Pseudomonas* strain effective in growth inhibition of three pathogenic fungi isolated from vegetables was selected. The *in vitro* experiment was conducted on Waksman agar plates using culture of bacteria optimized to 10^6 $CFUmL^{-1}$, cell-free supernatant (CFS) and heat-stable metabolites of supernatant (hsCFS). The inhibition ranged from 60.03-17.22% toward *Alternaria solani* and 72.87-19.9% for *Fusarium oxysporum* f. sp. *lycopersici*, pathogens of tomato, as well as 58.9-44.75% toward *Verticillium dahliae* isolated from paprika. The highest inhibition values were observed in bacterial culture, due to the increased concentration of active substances caused by bacterial growth during the incubation phase. Differences in inhibition by extracellular metabolites from CFS and hsCFS indicated the involvement of multiple substances. This strain was characterized as Gram-negative, aerobic, motile, rod-shaped and non-diffusible green and orange pigment producing bacteria. Plant growth promoting (PGP) traits such as siderophore, lytic enzymes and HCN were observed. To examine the presence of genes related to antibiotics production, specific primers were used for PCRs and amplicons for 2,4-diacetylphloroglucinol (DAPG), pyrrolnitrin and 2-hydroxy-phenazine-1-carboxylic acid (2-OH-PCA) were detected. Each of these characteristics has potential to contribute to biocontrol capabilities of this strain. Sequence analysis of the 16S rRNA gene indicated 98% sequence similarity to *P. chlororaphis* species. The *P. chlororaphis* strain K27 indicated good potential in the development of biocontrol strategy in vegetable production.