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MYCOANTAGONISTIC ACTIVITY OF INDIGENOUS ANTIBIOTIC-PRODUCING *PSEUDOMONAS* SPP. AGAINST SUGAR BEET PATHOGENS (*FUSARIUM* SPP., *MACROPHOMINA PHASEOLINA* AND *RHIZOCTONIA SOLANI*)

Effet inhibitif de variétés indigènes de *Pseudomonas* spp., productrices d'antibiotiques contre des agents pathogènes fongiques (*Fusarium* spp., *Macrophomina phaseolina* et *Rhizoctonia solani*) / Hemmende Wirkung einheimischer, antibiotikaproduzierender *Pseudomonas*-Arten gegenüber pilzlichen Krankheitserregern der Zuckerrübe (*Fusarium* spp., *Macrophomina phaseolina* und *Rhizoctonia solani*)

ABSTRACT

Isolation of indigenous *Pseudomonas* spp. from natural disease-suppressive soils allowed the selection of beneficial strains with biocontrol and growth-promoting traits. *Pseudomonas* spp. are well adapted to growing in the rhizosphere and some of them possess bacterial traits and genes contributing to rhizosphere competence and the mechanisms of pathogen suppression. To select isolates with mycoantagonistic activity, 56 fluorescent *Pseudomonas* were isolated from five Serbian disease-suppressive soils. Using PCR, some of antibiotic production genes: phenazine-1-carboxylic acid (PCA), 2,4-diacetylphloroglucinol (DAPG), pyrrolnitrin (PRN) and pyoluteorin (PLT), were detected in 31 indigenous *Pseudomonas* isolates. Mycoantagonistic activity of antibiotic-producing isolates against sugar beet pathogens was tested in vitro on Waksman agar. All tested fungal isolates originated from sugar beet plants were collected from the main growing regions in Republic of Serbia. In pathogenicity tests, typical symptoms were recovered on leaves or roots of artificially inoculated plants, depending on a pathogen. *Fusarium* spp. (SR27/11 and SR7/12) were isolated from roots with symptoms of dry rot and vascular necrosis. Monohyphal isolates of *Macrophomina phaseolina* (62/4) and *Rhizoctonia solani* (SR17/12) were isolated from roots exhibiting characteristic symptoms of charcoal and Rhizoctonia root rot, respectively. The growth inhibition rate ranged from 12 to 68% for *Fusarium* spp., 8 to 52% for *M. phaseolina* and 3 to 86% for *R. solani*. The *Pseudomonas* isolate K38 showed the highest percentage (86%) of growth inhibition of *R. solani*. The most promising indigenous antibiotic-producing *Pseudomonas* isolates will further be investigated for disease suppression of sugar beet pathogenic fungi in field conditions.
