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Isolation and Identification of a Streptomyces Isolate that shows Antagonism against Sclerotinia sclerotiorum and Macrophomina phaseolina

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Abstract: Streptomyces is the most abundant and diverse genus of actinomycetes. They are spore-producing bacteria that inhabit many different environments and are able to produce a great variety of secondary metabolites. In this work we explored their potential use for the control of plant pathogens, such as M. phaseolina y S. sclerotiorum in vitro and in plant. A collection of 127 Stretomyces-like microorganisms were screened for pathogen antagonism. Isolate "q" showed antagonism against S. sclerotiorum y M. phaseolina in vitro, and was identified as a species related to Streptomyces flavogriseus by DNA sequencing. However, this strain was only effective against S. sclerotiorum, but not M. phaseolina, when challenged on common bean leaves, which indicates that the plant host plays a role in the plant-microorganisms interaction. Antagonism against S. sclerotiorum was also demonstrated in common bean under field conditions. The results of the antagonism assays with extracts of the bacteria culture media obtained with different solvent systems suggest that the active compound (s) produced by isolate "q" is an apolar molecule since only the ethyl acetate extract showed antagonism against S. sclerotiorum. These results suggest that species of Streptomyces can be used as biological control agents against phytopathogens.

Keywords: Stretomyces, antagonism, Sclerotinia sclerotiorum, Macrophomina phaseolina.

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