

Partial characterization of bioactive compounds obtained from crude extracts produced by *Streptomyces sp.* isolates with activity against *Bipolaris sorokiniana*

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Abstract:

The microorganisms of *Streptomyces* genus are known for the production of a greater variety of biologically active compounds that show distinct structures and mechanisms of action. In this group, the antibiotics are produced in small quantities in initial phases of development between vegetative and aerial mycelium. Nevertheless, many factors may interfere in the activity of a biological molecule, including pH, temperature, incubation time and substrate concentration. Hence, the aim of this study was to characterize partially the crude extract produced by *Streptomyces* isolates with activity against *Bipolaris sorokiniana* in different incubation temperatures, pHs, proteases, and EDTA concentrations; and perform the taxonomic classification of these isolates. The 6(2), 16(3) and R18(6) *Streptomyces* isolates that showed broad antifungal activity against *Bipolaris sorokiniana* and production of several metabolites of physiological and enzymatic origin, were selected. In order to determinate their biomass curve and the production of metabolites, the actinobacteria were submitted to a growth in submerge culture. The crude extract was obtained and its stability in different temperatures (30, 40, 50, 60, 70, 80, 100 and 121°C), pHs (5.0, 6.0, 7.0, 8.0, 9.0 and 10.0), proteases (proteinase K, pepsina, tripsina and papaína) and EDTA concentrations (100 µM, 500 µM and 1 mM) was evaluated. Afterwards, through well-agar-diffusion technique, the extracts were submitted to antibiosis tests against five isolates of *B. sorokiniana*. The residual activity (RA%) was determined in all assays, that were performed in triplicate, and the data were submitted to the variance analysis. The results regarding the sequencing of about 1400 nucleotides of rRNA 16S, performed in three isolates, indicated that they belong to the *Streptomyces* genus, whereas the species determination was not possible. The greater production of drought biomass occurred in the end of growth exponential period and the highest antifungal activity for the isolate 6(2) was observed in this phase; on the other hand, for 6(4) and R18(6) isolates the higher antifungal activity was showed during the stationary phase. The crude extract of the three *Streptomyces* isolates, when submitted to the different proteases and to the pH 6 and 10 showed RA higher than 70% and 80%, respectively. The isolate R18(6) showed higher stability at the 60-100°C, pH (88%), proteases (78%) and EDTA (90%) than another isolates.

Keywords: bioactive compounds, *Bipolaris sorokiniana*, endophytic actinobacteria

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