

Título: ANTIMICROBIAL AND ENTOMOPATHOGENIC POTENTIAL OF *Streptomyces longwoodensis* ISOLATED FROM THE INTERTIDAL REGION OF ILHA DO MEL, PR, BRAZIL

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Resumo:

Isolated actinomycetes of marine areas are one of the most efficient producers groups of secondary metabolites. From the Gram positive actinobacteria isolated *Streptomyces longwoodensis* / Genbank: JX997145, we obtained the metabolites in liquid Sabouraud. The analysis of macro-dilution results indicates that the crude extract has potent antimicrobial activity against *S. aureus*, MRSA and *C. albicans*. The MICs were observed from 50µg/mL for MRSA, 250µg/mL for *S. aureus*, and 500µg/mL for *C. albicans*. The fermentation broth was subjected to various chromatographic techniques, using suitable polar solvents for isolating substances of interest. The isolated compounds presented an orange color are amorphous and soluble in chloroform; nuclear magnetic resonance data showed that they belong to the class of actinomycins complex Z. To evaluate the effects from the interaction between the substances of interest and a cell line, Vero cells (isolated from epithelial tissue of monkey kidney) were grown in 96 well microtiter plates with two fold serial dilutions of compounds at different concentrations ranging from 0.98 to 500 µg/mL and 1% DMSO. In this test, cytotoxicity results showed a statistically difference compared to the control without extract, to the lowest tested concentration of 0.98 µg /mL in Vero cells for 96 h of incubation, presented a $CC^{50} < 0.98$ µg/mL. Forward of results obtained in this preliminary study, we investigated the entomopathogenic biological activity. Chemical insecticides are widely used in agriculture. However, the excessive use of these chemicals has affected human health, environmental pollution, damaging the ecosystem and favoring the development of resistance of target organisms such as insects. The culture of kale (*Brassica oleracea* var *acephala*) is affected by infestations of various pests, including the aphid *Brevicoryne brassicae* (Hemiptera: Aphididae). Thus, the biological control by entomopathogenic bacteria is a viable alternative and can be used in order to reduce the use of chemical insecticides. The LC_{50} of 0.32×10^6 UFC/mL obtained to *S. longwoodensis* is indicative of its entomopathogenic action. As the reduction in excretion of honeydew observed for *B. brassicae* antifeedant activity may indicate *S. longwoodensis* action. Isolated actinobacteria from intertidal region has potential for production of biologically active substances.

Keywords: *Streptomyces*, marine sediment, bioactive compounds, antimicrobial, entomopathogen

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