

TITLE: EVALUATION OF THE ACTIVITY OF EXTRACT PRODUCED BY *STREPTOMYCES* SPP. AGAINST *Cryptococcus gattii* ATCC 24065

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ABSTRACT:

Actinomycetes are one of the main microorganisms that are components of the microbial populations of the rhizosphere, producing secondary metabolites that benefit plants in promoting growth and self-defense. Actinomycetes, especially those belonging to the genus *Streptomyces* spp., are an important group of soil microbes. They have been singled out as excellent targets for bioprospecting and antimicrobial discovery in pathogens of clinical interest. One of the main reports of pathogens is caused by the basidiomycete yeast known as *Cryptococcus gattii*, this fungus presents high virulence and presents tropism by the neural region, affecting immunocompetent and immunosuppressed individuals. The objective of this project is to evaluate the antimicrobial activity of secondary metabolites produced by *Streptomyces* spp. against *Cryptococcus gattii* ATCC 24065. For this, the soil sample was collected in Balsas-MA and later isolated and purified for classical determination (microculture) methods. Then, the strains were tested in liquid medium assay for antimicrobial activity by the agar diffusion test. The metabolite was extracted with ethyl acetate and the Minimum Inhibitory Concentration (MIC) was evaluated against the fungal pathogen *Cryptococcus gattii* ATCC 24065. After that, a fungicidal test was performed using Minimum Fungicidal Concentration (MFC). The genus of the soil sample lineage was identified as *Streptomyces* sp., due to the structures of the hyphae, vegetative and aerial mycelium evidenced by the microculture. The supernatant in the submerged fermentation was able to provide the zone of inhibition in the diffusion test for *Cryptococcus gattii* ATCC 24065. Here, the fraction of the ethyl acetate extract of the secondary metabolites was evaluated in the MIC, which has a concentration of 250 ug/mL. The MFC test showed a concentration of 500 ug/mL for fungicidal activity. Taken together, these results suggest that secondary metabolites of *Streptomyces* spp. are able to provide new biotechnological opportunities of clinical interest, leading us to bioprospecting microorganisms against virulent pathogens.

Keywords: *Streptomyces*, secondary metabolites, bioprospecting.