

TITLE: *Streptomyces capoamus* PERFORMANCE ON AN IN VITRO BIOFILM ESSAY

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ABSTRACT:

Microbial biofilms are well known for their relation to the enhancement of microbial resistance to antibiotics. However, some biofilm producers may use this form of growth to improve the synthesis of molecules with potential pharmaceutical uses as microbial inhibitors. *Streptomyces capoamus* was previously described to produce antifungal compounds and as such, it has been studied to improve the production methods. The present work aimed to evaluate the biofilm formation by *Streptomyces capoamus* in a microscale essay with a further goal to associate this species with other potential candidates for screening of bioactive molecules. The target strain was donated by the Federal University of Pernambuco, Brazil. Primary inoculation was in ISP2-broth, a special recipe designed to grow this strain. To improve cell growth, an aliquot of 200 µL was transferred to a test tube with 10 mL BHI and incubated for 24h at 35±2 °C. A Neubauer chamber was used to determine the inoculum at 10⁸ BC/mL. The microbial suspension (50 µL/well) was used to inoculate 2 series of microplates (96 wells each) containing either TSB-D or ISP-2 as metabolic growth medium (50 µL/well). All plates were incubated for 24, 48 and 72h, at 35±2 °C. The planktonic and adhered growth was monitored by a microplate reader (630 nm) at baseline (T_0), after 24h (T_{24}), 48h (T_{48}), 72h (T_{72}) and after washing out the supernatant and staining the biofilm with a crystal violet solution (0,06%) of each plate (T_B). *S. capoamus* was able to grow in each broth used in this study. The best score of planktonic growth was achieved at T_{24} in TSB-D (0.352±0.05), while the best biofilm production was detected also at T_{24} (0.175±0.02), but in ISP-2 medium no biofilm was detected on any time intervals measured in this study. Overall *S. capoamus* was considered a weak biofilm builder and should be studied under different conditions not dependent of cell adhesion to gain more information about the biotechnological and pharmaceutical potential of this species.

Keywords: biofilm, actinobacteria, *Streptomyces capoamus*.

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