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Isolation and identification of actinomycetes with antimicrobial activity from soils of the flooded forest from Hunucma, Yucatan#

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Introduction.

A marked increment in pathogen´s resistance to antibiotics has been observed on the last years, thus prompting the search for new active molecules. Alternate sources of these chemicals are microorganism like actinomycetes, largely recognized by their ability to produce antibiotics useful for both humans and animals. In the present work, an analysis of the antimicrobial potential of actinomycetes strains isolated from soils of the Yucatan Peninsula is presented.

Methods.

Soil samples from flooded forests near Hunucmá, Yucatan, were collected and taken to the laboratory to isolate actinomycetes. Putative isolates were tested for antimicrobial activity against *Bacillus subtilis, Staphylococcus aureus, Escherichia coli* and *Candida albicans.* Those positive strains were selected for further morphological and biochemical characterization and sequencing of the 16S rRNA gen.

Results.

A total of 42 isolates were obtained from which 45.23% presented antimicrobial activity against at least one of the tested microorganism (Fig. 1). 73% of the isolates shown characteristics typical of the genus *Streptomyces* while the others seem to be the so-called “rare actinomycetes”. By Sequence analysis based identification, 5 isolated were classified as *Streptomyces* (genus), one as *Streptomyces flaveolus* and the rest could not be identified (Fig. 2).

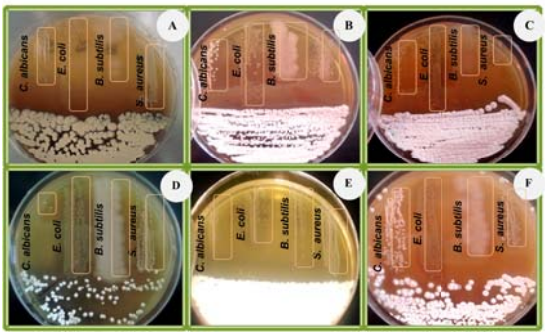

Fig. 1. Antimicrobial essay with indicator strains. A) strain LP1709, B) strain LM1L09, C) strain LM2U09, D) strain LM1J09, E) strain LM3A09, F) strain LM2C09. Rectangles represent the growing area of indicator microorganisms.#

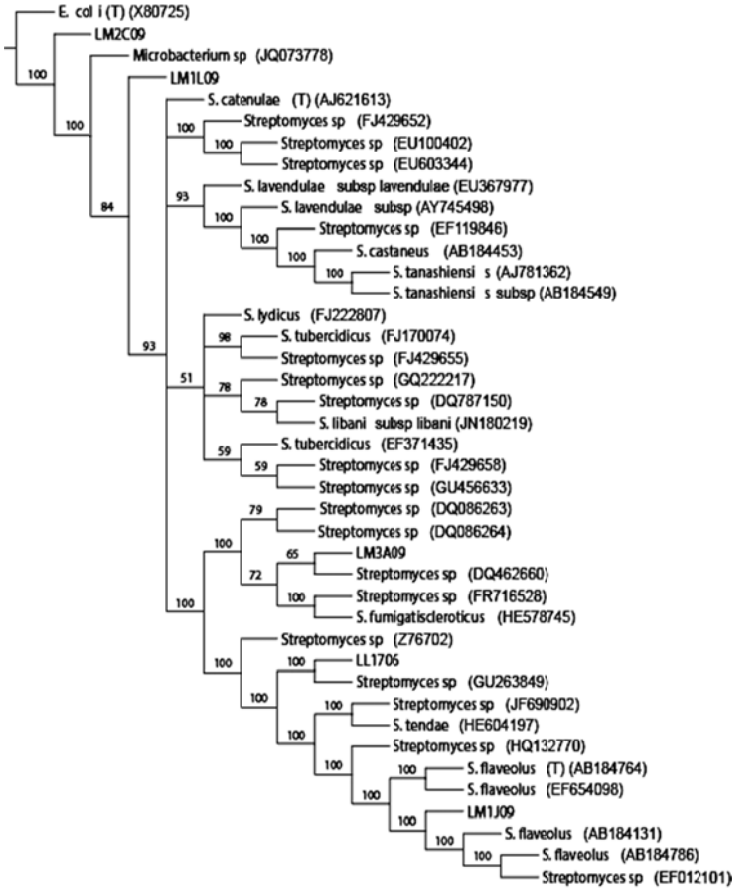

Fig. 2. Phylogenetic analysis of isolated with antimicrobial activity. The analysis was done by the maximum parsimony method and a bootstrap test with 1000 repetitions using the Winclada software.

Conclusions

Actinomycetes obtained from the flooded forest of Yucatan presented antimicrobial activity against pathogen indicators.

References

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