

**Title:** "Identification and isolation of polyether ionosphere antibiotics produced by actinobacteria from the Caatinga biome"

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**Abstract:**

The growing emergence of antibiotic resistant strains of microorganisms commonly used in the various human and veterinary therapies has raised the need for the isolation and identification of new antimicrobial compounds, as well as the evaluation of the mode of action of these new compounds that effectively act in the control of these multidrug-resistant strains. In this regard, the chemistry of microbial natural products is an excellent source for the search for substances with potent antimicrobial activity. Historically, more than 60% of the main antibiotics marketed nowadays are produced by actinobacteria or had their structures inspired by them. The main objective of this work was to explore the potential of actinobacteria isolated from the Caatinga biome as source of novel bioactive substances, since the Caatinga biome is unique in the world and its microorganisms are adapted to high temperatures, excessive UV radiation, water stress and nutrient scarcity. The crude extracts generated from the fermentation of the actinobacteria were submitted to disc-diffusion assays using as biological target bacteria of the genus *Staphylococcus* sp., *Escherichia coli* and *Streptococcus* sp., isolated from the milk of cows with pre-clinical mastitis. The results obtained showed that the crude extract produced by the actinobacteria Caat P11-13 was the most active of the thirty actinobacteria studied. In this way, this actinobacteria was selected for the later studies of fermentation, fractionation and identification of its active compounds. The crude extract obtained by liquid-liquid extraction was fractionation by exclusion chromatography employing Sephadex LH20 resin and methanol as mobile phase. The bioactive fraction was submitted to spectroscopic and spectrometric analyzes, where it was possible to attribute the presence of a class polyether ionosphere antibiotics.

**Keywords:** actinobacteria, antibiotics, Caatinga

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