

Screening for Biothechnologic Potential of Marine Actinomycetes Collected on the North Coast of São Paulo State, Brazil

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Abstract:

Marine organisms represent an important source for discovery of new potential active and biologically functional natural products, such as compounds that exhibit cytotoxic, antibacterial, antifungal, antiviral and anti-inflammatory activities. Important bioactive with pharmaceutical, veterinary and agricultural applications are synthesized by non-ribosomal peptide synthetases (NRPSs) and modular polyketide synthases (PKSs) and bioprospecting of new bioactive compounds has focused on analyzing genes of PKS-I, PKS-II and NRPS used both to study the diversity of producers as to identify this new natural products. Members of the Actinobacteria class have considerable value as prolific producers of biologically active secondary metabolites, such as antibiotics and other therapeutic compounds. Marine actinomycetes have yielded numerous novel secondary metabolites and new actinomycete taxa of marine origin have also been recovered. The purpose of this work was to screen the 59 actinomycetes, isolated from marine macroorganism, collected from north coast of São Paulo State, Brazil, for potential secondary metabolic production. The amplification of genes of PKS-I, PKS-II and NRPS from actinomycetes were detected in 42, 47 and 28 isolates for PKS-I, PKS-II and NRPS, respectively. Only five actinomycetes *Brevibacterium* (2), *Kocuria* (2) and *Micrococcus* (1) displayed antimicrobial activity against *Micrococcus luteus* in antimicrobial activity determined by agar disc diffusion method. This results alerts to the need for different tools screening to search for new bioactive metabolites and helping to direct the strategies of extraction of compounds for future trials of several activities. In conclusion, as expected, most Actinobacteria were found to contain either PKS or NRPS genes or both and indicate that a high diversity of actinomycetes associated with marine organism associated actinomycetes could be a promising source for bioactive compounds. The identification of these genes provides indirect evidence of potential chemical diversity among these actinobacteria in terms of natural product drug discovery.

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