Isolation and Identification of Antibiotic Producer Actinomycetes from Northern Region of Persian Gulf

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Background & Objectives: More than 70% of our planet's surface is covered by oceans and life on earth has its origin in the sea. Actinomycetes, among the microorganism, hold a prominent position due to their diversity and proven ability to produce new compounds. Marine actinobacteria are the most economically as well as biotechnologically valuable prokaryotes. The living conditions to which marine actinomycetes had to adapt during evolution, is likely that this is reflected in the genetic and metabolic diversity of marine actinomycetes.

Methods: After isolation of actinomyces, they were assessed for their antagonistic activity against test microorganism and this performed by using agar well diffusion methods. Molecular identification was carried out by PCR technique for amplification of 16s rRNA gene. The biochemical identification has been carry out. Extraction and thin layer chromatography (TLC) and MIC will carry out for isolates with antifungal activity.

Results: Eighteen genera of Actinomycets were isolated from the marine sediment sample. Among them seven isolate showed antagonistic activity againt test microorganism. The best three isolate were selected for further biochemical and molecular testing.

Conclusion: Because of the immense biological diversity in the sea as a whole, it is increasingly recognized that a large number of novel chemical entities exists in the oceans. As marine microorganisms, particularly actinomycetes, have evolved the greatest genomic and metabolic diversity, efforts should be directed towards exploring marine actinomycetes as a source for the discovery of novel secondary metabolites.The exploitation of marine actinomycetes as a source for novel secondary metabolites production is in its infancy. Even with the limited screening efforts that have been dedicated to date to marine actinomycetes, the discovery rate of novel secondary metabolites from marine actinomycetes has recently surpassed that of their terrestrial counterparts, as evident by the isolation of many new chemical entities from marine actinomycetes.

Keywords: Actinomyces; Antibiotics; Persian Gulf