

Isolation and Evaluation of Cytotoxic and Antioxidant activity of the isolated Actinobacteria from the two Species of Persian Gulf Sea Cucumber (*Holothuria scabra* and *Holothuria leucospilota*)

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Abstract

Marine actinobacteria are the prolific sources of marine natural products. The aims of the present study were to propose a process for selective isolation of actinobacteria from the two species of sea cucumbers *Holothuria scabra* and *Holothuria leucospilota* and also to find isolates that produce antioxidant and cytotoxic metabolites. We collected 2 sea cucumbers species from the Larak Island, Persian Gulf using scuba diving. The selective isolation process was performed by 3 culture media and 7 physical and chemical treatments. Antioxidant activity of extracted metabolites were evaluated using DPPH radical scavenging activity. Evaluation of cytotoxicity of the extracted metabolites was carry out using brine-shrimp microwell cytotoxicity assay. Out of 53 actinobacterial isolates, 58.49% was isolated from sea cucumber *H. leucospilota*. Starch casein nitrate agar medium and heat treatment isolated 22 and 21 actinobacterial isolates of and exhibited maximum efficiency in selective isolation of actinobacteria. Approximately, 37.03 % of the extracted metabolites scavenged DPPH radicals at IC50 ranges from 136.1 to 641.5 µg/ml. While, 33.33 % of the extracted metabolites showed cytotoxic activity against artemia cells at LC50 range from 118.12 to 653.15 µg/ml. These results represented a selective isolation process for sea cucumber associated-actinobacteria and also could provide an evidence that confirms the active association of the actinobacteria with the two species of the Persian Gulf sea cucumber species. The isolated strains could be a potential source for finding pharmaceutical natural products.

Keywords: Sea cucumber-associated actinobacteria, Selective treatments, Secondary metabolites, Biological activity