

## Isolation and Molecular Identification of Marine *Actinomyces* spp. Isolated from Persian Gulf and their Evaluation for Production of Cytotoxic Anti Breast Cancer Metabolites in *in vitro* condition

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### Abstract

Marine *Actinomyces* have great potential as producers of unique bioactive compounds due to its special adaptation in the harsh environment in the ocean. This study aimed to isolate anti-tumor producing *Actinomyces* from sediments of the Harra island of Persian Gulf and investigate their potential as anti-breast cancer metabolites production in *Actinomyces* bacteria. In this study, 40 Sediments of the Harra island of Persian Gulf were collected in 2015. Samples were diluted and cultured in Starch Casein Agar (SCA) selective media. The *Actinomyces* were isolated and purified using morphological and microscopy methods. 40 strains were cultured in Starch Casein Broth (SCB) and the metabolites were extracted using ethyl acetate. The produced metabolites were extracted from active strains and cytotoxic activities were evaluated against breast cancer cell line. Finally, effective metabolites producing bacteria were identified using molecular method. Of the sediments, 186 strains were isolated and identified. Results showed that the isolates had cytotoxic activities against breast cancer cell line. The results revealed that the strains 2HP and 4HP were shown more anti-cancer activities than the others. Results of this study declared that sediments of the Harra island of Persian Gulf are rich in active *Actinomyces*, in producing of new anti-cancer compounds, that need to be identified and purified. These results give evidence that it is essential to scrutinize these under explored marine microbes in search of new drugs which have great potential to be used in the pharmaceutical fields.

**Keywords:** Persian Gulf, Marine *Actinomyces*, Anti-cancer, Secondary metabolites.