

The Antibacterial and Anticancer Activity of Marine Actinomycete Strain HP411 Isolated in the Northern Coast of Vietnam

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Abstract : Since the marine environmental conditions are extremely different from the other ones, so that marine actinomycetes might produce novel bioactive compounds. Therefore, actinomycete strains were screened from marine water and sediment samples collected from the coastal areas of Northern Vietnam. Ninety-nine actinomycete strains were obtained on starch-casein agar media by dilution technique, only seven strains, named HP112, HP12, HP411, HPN11, HP 11, HPT13 and HPX12, showed significant antibacterial activity against both gram-positive and gram-negative bacteria (*Bacillus subtilis* ATCC 6633, *Staphylococcus epidermidis* ATCC 12228, *Escherichia coli* ATCC 11105). Further studies were carried out with the most active HP411 strain against *Candida albicans* ATCC 10231. This strain could grow rapidly on starch casein agar and other media with high salt containing 7-10% NaCl at 28-30°C. Spore-chain of HP411 showed an elongated and circular shape with 10 to 30 spores/chain. Identification of the strain was carried out by employing the taxonomical studies including the 16S rRNA sequence. Based on phylogenetic and phenotypic evidence it is proposed that HP411 to be belongs to species *Streptomyces variabilis*. The potent of the crude extract of fermentation broth of HP411 that are effective against wide range of pathogens: both gram-positive, gram-negative and fungi. Further studies revealed that the crude extract HP411 could obtain the anticancer activity for cancer cell lines: Hep-G2 (liver cancer cell line); RD (cardiac and skeletal muscle letters cell line); FL (membrane of the uterus cancer cell line). However, the actinomycetes from marine ecosystem will be useful for the discovery of new drugs in the future.

Keywords : marine actinomycetes, antibacterial, anticancer, *Streptomyces variabilis*

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