عنوان مقاله:

In vitro Apoptosis Induction in Prostate Cancer Cells (PC-3) using Bacillus licheniformis Supernatant

محل انتشار:

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خلاصه مقاله:

Background: Cancer is one of the most common causes of death in humans. Therefore, there is a need for new cytotoxic compounds from natural sources such as native bacteria. The current study aimed at investigating the cytotoxic effects of compounds obtained from gram-positive terricolous bacteria on the apoptosis of cells in prostate cancer (PC-3). Materials & Methods: A total of 70 soil samples were obtained from various locations in Chaharmahal & Bakhtiari province (Iran, Spring 2020) and were cultured on Nutrient agar and Trypticase soy agar. After identification of gram-positive species, the best species in regards to microbial activity was identified using 16S rRNA gene sequencing. Then, in order to investigate the cytotoxic activity, PC-3 cell line was treated in different concentrations of the supernatant from the selected species for different durations while viability and apoptosis were determined using MTS and Annexin tests. Results: A total of 467 gram-positive bacteria were extracted from 70 soil samples, among which 9 species had antimicrobial capabilities. Among these selected species, Bacillus licheniformis which had the best antimicrobial compounds, was selected for further investigation of its viability and apoptosis effects on PC-3 cell line. The MTS with incubation time of 24, 48 and 72 hours of the treated cells indicated that the viability is dependent on the dosage an increase in the concentration can result in significant decrease in the viability compared to the control group ($P<0.05$). The amount of apoptosis induction in PC-3 cells also significantly increased with increase in supernatant concentration dependent on dosage and time ($P<0.05$). The largest effect was observed at supernatant concentration of 20 mg/mL at 72 hours after cell treatment. Conclusion: Using compounds obtained from gram positive terricolous bacteria can help in treatment of prostate cancer cells.

کلمات کلیدی:

Soil, Bacillus licheniformis, Prostate Cancer, MTS, Apoptosis, خاک, Bacillus licheniformis, سرطان پروستات, MTS, آپوپتوز