

Evaluation of cytotoxicity of two Persian Gulf sea cucumber species extracts on K562 and Wehi-164 cell lines and blood granulocyte cells

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Background and Aims: Many of the current antitumor drugs have their origin in nature. Marine animals are among the most important sources of natural products with anticancer activity. In Far East countries numerous compounds were extracted, purified, identified and studied for their antioxidant, antibacterial, cytotoxic and anti-inflammatory effects from sea cucumber. However, very few investigations are available on Persian Gulf sea cucumbers. In this study, cytotoxic activities of two Persian Gulf Holothuria species' extracts were assessed against K562 and Wehi-164 cancer cell lines.

Methods: Two sea cucumbers, Stichopushorrens and Holothurialeucospilota, were collected from Persian Gulf around Khark Island. The hydro-alcoholic crude extract was prepared by maceration of body wall and internal tissues. The prepared extract was washed two times with hexane, chloroform, ethyl acetate and methanol respectively two times. Cytotoxic activity of the above extracts as well as the coelomic fluid on K562 and Wehi-164 cell lines were studied by lactate dehydrogenase assay at 4, 6 and 8 hrs of incubation. Results of cytotoxic effect were assessed by calculating of IC50 values.

Results: According to the result, IC50 values of different extracts against the two tested cell lines were between 41.32 ± 7.12 and 2511.36 ± 422.24 $\mu\text{g/mL}$. The highest cytotoxic effect on Wehi-164 cell line was observed for total aqueous extract ($\text{IC}_{50} = 41.32 \pm 7.12$). The best IC50 value against K562 was obtained for coelomic fluid ($\text{IC}_{50} = 54.72 \pm 4.35$ $\mu\text{g/mL}$). IC50 values of the above mentioned extracts on granulocytes were 168.39 ± 6.3 and 1108.49 ± 78.92 $\mu\text{g/mL}$, respectively.

Conclusions: Results indicate that the coelomic fluid and aqueous extract of Persian Gulf sea cucumbers have a rather good cytotoxic effect on K562 and Wehi-164 cancer cells, respectively.

Keywords: Cytotoxicity; Persian Gulf sea cucumber; K562 and Wehi-164 cells