

عنوان مقاله:

Mesobuthus eupeus venom induced injury in the colorectal carcinoma cell line (HT29) through altering the mitochondria membrane stability

محل انتشار:

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تعداد صفحات اصل مقاله: 8

نویسندگان:

Massood Valizade - *Cell & Molecular Research Center, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran*
Toxicology Research Center, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

Atefeh Raesi Vanani - *Toxicology Research Center, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran*
Department of Toxicology, School of Pharmacy, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

Mohsen Rezaei - *Toxicology Research Center, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran*
Department of Toxicology, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran

Layasadat Khorsandi - *Cell & Molecular Research Center, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran*
Department of Anatomical Sciences, Faculty of Medicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

خلاصه مقاله:

Objective(s): The purpose of this study was to investigate cytotoxicity and membrane toxicity effects induced by Mesobuthus eupeus venom (MEV) on the HT-29 cell line. **Materials and Methods:** To determine the in vitro cytotoxicity via MTT assays, HT-29 (as cancer cell line) and Hek-293T (as normal cell) were treated through different concentrations of MEV, and cytotoxicity effects were then measured through assessment of mitochondrial membrane potential ($\Delta\Psi_m$), reactive oxygen species (ROS) generation, and apoptosis induction. The colony formation assay was performed to measure the antiproliferative effect of MEV on HT-29 cells. Nuclei alterations were also observed during apoptosis following DAPI staining. Besides, atomic force microscopy (AFM) was used to detect alterations in morphology and ultrastructure of the cells at a nanoscale level. **Results:** According to MTT and clonogenic assays, MEV caused a significant decrease in cell viability and proliferation of HT-29 cells while it did not have any impact on normal cells and the IC50 value was found to be 10 $\mu\text{g/ml}$. Induction of apoptosis was also confirmed by flowcytometric analysis in HT-29 cells. Moreover, the results indicated that MEV had led to a suppression of proliferation and induction of apoptosis through increased ROS and depolarization of mitochondria. Furthermore, AFM imaging demonstrated apoptosis cell death after being treated with MEV in HT-29 cells. **Conclusion:** This study showed that MEV had an antiproliferative effect on HT-29 cells by inducing apoptosis through the mitochondria signaling pathway. These findings suggested that MEV could be used as a promising natural remedy for cancer treatment.

کلمات کلیدی:

AFM, Apoptosis, HT-29 cancer cell, Mesobuthus eupeus venom, Mitochondrial membrane potential, ROS

