

## عنوان مقاله:

Effects of Ionizing Radiation on Human Peripheral Blood Mononuclear Cells (PBMCs) in the Presence of Mentha-Pulegium Essential Oil: A Study on the Radioprotective Effect

## محل انتشار:

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## خلاصه مقاله:

Background: The Mentha-Pulegium essential oil (MP-EO) contains different antioxidant compounds and reduces the indirect effects of dispersed ionizing radiation on biological systems. Objective: The current study aimed to assess a possible radio-protective effect of MP-EO on peripheral blood mononuclear cells (PBMCs). Material and Methods: In this experimental study, MP-EO was firstly prepared and PBMCs were then irradiated in various groups with doses of 25 and 200 cGy of X-rays in the presence of IC<sub>10</sub> of MP-EO. After incubation times of 4h and 24h, the survival, apoptosis, and necrosis percentages of PBMCs were determined by MTT assay and flow cytometry analyses; the radio-protective effect of MP-EO was examined. Results: In the presence of 10 µg/ml (IC<sub>10</sub>) MP-EO, the mean survival percentage of irradiated PBMCs by radiation doses of 25 and 200 cGy was significantly increased after 4h of incubation compared with the control. At 24h of incubation, the mean survival percentage of irradiated PBMCs was significantly increased only at 25 cGy. The percentage of apoptosis and necrosis of PBMCs was significantly reduced in the presence of the MP-EO at both incubation times and radiation doses; therefore, the highest reduction was at 200 cGy and 4h incubation compared to the control. Conclusion: MP-EO as a natural, non-toxic, and cost-effective compound can exhibit a favorable in-vitro radio-protective effect by increasing the survival and decreasing the percentage of apoptosis and necrosis of irradiated PBMCs.

## کلمات کلیدی:

Lymphocytes, Mentha Pulegium Essential Oil, Radiation, Ionizing, Radioprotective, apoptosis, Necrosis

