

عنوان مقاله:

INF/IL- $\gamma$  increases after the low doses of gamma radiation in BALB/c spleen lymphocytes

محل انتشار:

مجله فیزیک پزشکی ایران، دوره 16، شماره 4 (سال: 1398)

تعداد صفحات اصل مقاله: 6

نویسندگان:

Mohammad Taghi Bahreyni Toossi - Medical Physics Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

Maryam Najafi Amiri - Medical Physics Department, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

Mojtaba Sankian - Immunobiochemistry lab, Bu-Ali (Avecina) Research center, Mashhad University

Hosein Azimian - Medical Physics Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

Sepide Abdollahi Dehkordi - Medical Physics Department, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

SARA KHADEMI - Department of Radiology Technology, School of Paramedical Sciences, Mashhad University of Medical Sciences, Mashhad, Iran

خلاصه مقاله:

**Introduction:** The effects of the low dose of ionizing radiation are not thoroughly evident due to an unavoidable increase of occupational exposure and the widespread application of ionizing radiation in medical and industrial fields. The aim of this study was to investigate immune system responses following the low doses of ionizing radiation. **Material and Methods:** BALB/c mice were exposed to Whole Body Irradiation of 20, 50, and 100 mGy through a  $^{60}\text{Co}$  source. Lymphocytes extraction were operated 24 h after irradiation. Afterwards, gene expression analysis was performed with relative quantitative Real-Time polymerase chain reaction to IL- $\gamma$ , IFN- $\gamma$ , and TGF- $\beta$  expression levels. Moreover, IFN- $\gamma$ /IL- $\gamma$  ratio was computed, and the independent sample t-test was performed for the statistical analysis. **Results:** Whereas IL- $\gamma$ , IFN- $\gamma$ , and TGF- $\beta$  expression levels decrease after the radiation of the low doses of gamma rays, the IFN- $\gamma$ /IL- $\gamma$  ratio increased significantly after irradiation of 20 mGy ( $P\text{-Value} < 0.05$ ). However, this ratio did not vary following the gamma irradiation of 50 and 100 mGy. **Conclusion:** The positive effects of the low dose of ionizing radiation can be observed through significant alterations in gene expression and the activation of protection mechanisms. This process was caused by the modulation of cellular immune responses after the exposure to 20 mGy. Although the irradiation of higher doses (50 and 100 mGy) induced alterations in the IFN- $\gamma$ /IL- $\gamma$  ratio was insignificant. These findings did not confirm the linear no-threshold model theory, and demonstrated that the low dose of ionizing radiation could be the cause of the hormesis phenomenon

کلمات کلیدی:

BALB/c mice, Ionizing radiation, IFN-gamma, Interleukin- $\gamma$ , TGF-beta

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1738930>



