



Title: Expression of TGF- β and IFN- γ genes on rat lymphocytes after low dose gamma whole body irradiation

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Nobody can deny the deleterious health effects of high doses of radiation, although there is no consensus about the health impact of low dose of ionizing radiation. This study aimed to discuss the effect a range of ionizing radiation doses (including low doses) on the changes of gene expression and serum protein levels of two immune factors TGF- β and IFN- γ in rats.

After 24 hours of irradiation of rats with the doses of 1000, 500, 100, 50 and 20mGy, the gene expression of TGF- β and IFN- γ in lymphocytes was assessed using QPCR. Besides, the protein level of these two factors in lymphocyte plasma was determined by ELISA kits.

Significant increases in the expression levels of TGF- β and IFN- γ genes were observed by increasing the dose from 100mGy to 500mGy and then 1000mGy compared to the controls ($p < 0.05$). The ELISA tests showed significant differences in the serum level of TGF- β cytokine in the dose of 1000mGy, while the serum level of IFN- γ cytokine showed significant differences in doses of 20mGy and 1000mGy compared to the controls ($p < 0.05$).

The results of this study showed the changes in the expression of TGF- β and IFN- γ genes after irradiation more than 100mGy in lymphocytes compared to the control group; , the changes in the serum levels of these cytokines only occurred in the specific doses compared to the control group.