



Living with Radiation - Engaging with Society



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Antioxidant Status in Chicken Embryo Liver after Low Dose Gamma Irradiation

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It is well known that ionizing radiation at high doses has harmful biological effects. However, at low doses and low dose rates, radiation can stimulate induction of antioxidant defence system. In the avian there is lack of results on antioxidant status in organs of chicken after low dose egg irradiation. This study was performed to investigate the effect of low-dose gamma-irradiation upon activity of glutathione peroxidase (GSH-Px), superoxide dismutase (SOD), catalase (CAT) and level of glutathione (GSH) and lipid peroxide concentration (MDA) in liver of commercial meat chicken line embryo. Fertilized eggs were irradiated with the dose of 0.05, 0.15, 0.3 and 0.5 Gy gamma radiation (source ⁶⁰Co) on the 19th day of incubation. Along with the irradiated chick embryos, there was a control group of non-irradiated chick embryos. The antioxidant

parameters were measured in liver on 1, 3, 6, 12 and 24 hour after eggs irradiation. All parameters were measured spectrophotometrically except intensity of lipid peroxidation which was assessed by HPLC. The acute irradiation of chicken embryos to different doses of gamma radiation resulted in increase in the MDA concentration on the 3th hour after irradiation with doses of 0.15 and 0.30 Gy as well as in decrease in the MDA concentration on the 24th hour after irradiation with the same doses. The SOD and CAT activity were significantly increased on the 1st hour after irradiation with dose of 0.5 Gy while the activity of SOD was increased on the 12th hour after irradiation with doses of 0.15, 0.30 and 0.5 Gy. The GSH level was increased on the 24th hour after irradiation with doses of 0.05, 0.15 and 0.30 while at the same time after irradiation the CAT activity was decreased with doses of 0.05, 0.15 and 0.30. The obtained results suggest that oxidative/antioxidative balance in chicken embryo liver was impaired after irradiation with different low doses of gamma radiation especially at the dose of 0.3 Gy.