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Radiation Protection by Major Tea Polyphenol, Epicatechin

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ABSTRACT Whole body radiation exposure causes extensive physiological stress which may prove fatal if it is not appropriately managed. The current study is intended to evaluate the radioprotective effects of epicatechin (EC) in terms of amelioration of radiation induced hepatic and testicular oxidative stress. Swiss albino mice were administered with EC for three consecutive days before exposing them to a single dose of 5-Gy ⁶⁰Co gamma (γ) irradiation. Mice were necropsied and liver and testis were taken for biochemical tests for the detection of hepatic and testicular oxidative stress markers. To determine the oxidative stress developed after radiation SGOT, SGPT and ALP were measured to assess the alterations in liver function, reduced glutathione (GSH) content and lipid peroxidation (LPO) were also determined from liver homogenate. To evaluate oxidative stress of testis, LPO, Alkaline Phosphatase (ALP) and Acid Phosphatase (ACP) were also evaluated. Whole body gamma radiation enhanced SGOT, SGPT and ALP level increased as also LPO and depleted GSH level in liver homogenate. Testicular damage was prominent since LPO and ACP level enhanced where as ALP level decreased. Epicatechin pretreatment ameliorated all these gamma radiation mediated alterations and improved the mice from the situation of oxidative stress. Thus, epicatechin pretreatment ameliorated radiation mediated systemic oxidative stress which also prevented liver and testis from further damage.