

A NEW RADIOPROTECTIVE MEANS BY STIMULATING BODY
DEFENSE MECHANISM AND METALLOTHIONEIN INDUCTION

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ABSTRACT

Radioprotective means against damage due to lethal dose of radiation was found by the administration of heavy metals or immunostimulants, or subjecting the organism to some kinds of stresses. Mice were subjected to various treatments prior to the whole body single irradiation of lethal dose X rays, 5 - 9 Gy. Treatments performed were (a) Subcutaneous or intraperitoneal injection of metal ion, e.g. CdCl_2 , MnCl_2 or Zn acetate, (b) Intraperitoneal injection of immunostimulant e.g. OK-432, PS-K or Il-1, or (c) Excision of 2 x 2 cm^2 portion of dorsal skin.

LD_{50} during 30 days of post-irradiation in the pretreated mice were 1.5 - 2.0 Gy higher than that of the irradiated control mice without treatment. Pretreated mice which had showed strong tolerance against radiation had always higher contents of metallothionein in their liver during 0 - 3 days of post-irradiation period, i.e. ten to twenty times of metallothionein level in comparison to the control animal without treatment.

This method provides a new and powerful means of protection against radiation within the body with almost no adverse effect, as the parallel to the usual exogeneous controls of radiation exposure.