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MODERN TRENDS IN THE DEVELOPMENT OF RADIATION PROTECTION

The need of the present time is the study and development of new tools for radiation protects therapy effective in conditions of prolonged exposure to low dose, because lately an increasing number of individuals in contact with sources of ionizing radiation. Radiation protective drugs used mainly for personal protection against external irradiation in emergencies (emergency, military terms) and for superior protection of normal tissues in radiotherapy of malignant tumors.

Currently, as a promising direction in this area deals with multifunctional tools, the effect of which is aimed at the protection and treatment of the effects of radiation. So it has been shown that cell-based products multipotential mesenchymal stromal cells imposed locally or systemically have a therapeutic effect on organs and tissues irradiated.

On the other hand actively explores the radiation protective properties of inorganic (salts of selenic acid) and organic compounds of selenium. Experiments have shown that the optimal time of prophylactic inorganic compounds of Selenium is 24 h before irradiation. There has been an increase in the survival rate of fatally irradiated animals on 20-40%. The best effect is marked with the introduction of gypsum sodium (5.0 mg/kg) and manganese gypsum (10.0 mg/kg). Prophylactic use of organic selenium compounds also improves the course and outcome of acute radiation injury. The best results are obtained with the introduction of selenium tetracysteine (STC). The results suggest the prospect of further targeted search bio amongst organic compounds of selenium.

Currently, radiation protect is also considered the effectiveness of various synthetic drugs on indicators of stimulation system of glutathione and reduction of severity of lipid peroxidation. It was show that the original tissue antioxidant status makes a different contribution to the manifestation of radiation protect properties of natural and synthetic antioxidants due to the nonlinearity of the lipid peroxidation processes depending on the dose of radiation and its power.

Thus, the collection of experimental data demonstrates the need for an integrated approach to the assessment of the effectiveness of different drugs and radiation protect accounting temporary factors when used as radiation protectors in radiation lesions of different severity.