

SYSTEM ASPECTS OF CHANGES PROOXIDANT-ANTIOXIDANT SYSTEM AT THE ACTION OF EXTREME FACTORS ON THE BODY

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It is known that the impact of extreme factors (the action of ionizing radiation) on the body causes changes in the functioning of bioantioxidants (BAO), which is closely associated with changes of lipid peroxidation (LPO). Changes in the nature and functioning of the LPO BAO have distinct features of the system response of the organism. The literature describes the systemic aspects related to changes in the values of total antioxidant activity of the organism (AOA) and its individual components. Patterns of the regulation of these processes at different levels of the organization have not yet fully opened. In this connection for the problem in question are extremely important aspects of the most common systemic determinant of prooxidant-antioxidant homeostasis processes maintain a dynamic equilibrium. Purely practical, it is connected, in particular, with not sufficiently informative to estimation the nature of the processes according to the values of individual parameters measured at the particular time.

Research methods included: building a multi-agent model (heuristic conceptual modeling), carrying out with the help of this model, numerical experiments (phase portraits) and a comparison of their results with the results of statistical processing of real material. This approach seems to be perspective for the development of methods for rapid assessment of the extent of damage under the action of radiation.

Numerical experiments of adaptive mechanisms of biosystems were conducted using the heuristic conceptual modeling allowed to find the relationship between the close connection of the system parameters of lipid peroxidation and antioxidant system, its efficiency and reliability. The relevant working hypothesis was formulated and was tested on experimental data: smaller (compared to tocopherol) stability with radiation exposure on rats compared with the control should be observed of the total antioxidant activity. If radiation exposure is carried out in conjunction with the intake of antioxidants - wheat germ oil, this aspect of the difference between the experiment and the control will be much less pronounced.