

Health Protection and Restoration Under Low-Level Irradiation Conditions Using a Mycoton Preparation

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The level of radioactivity in the environment grows all over the world. Radioactivity of the environment has increased especially highly over a large area in Ukraine and Byelorussia after the emergency at Chernobyl Nuclear Power Plant. There are two main medical problems, which are connected to the radiological contamination of the environment: removal of radionuclides and hematoimmune homeostasis restoration by pharmacologic agents.

For protection and recovery of health of the people in radioactive contaminated territory, and also the staff of Chernobyl NPP who work in radiation fields, the new effective protector preparation Mycoton was offered. Mycoton is a biopolymer complex from cell walls of Higher Basidiomycetes. It consists of chitin in microfibrillar form, 70%; β -1,3- and β -1,6-glucans, 20%, and melanin pigments, 10%. Owing to its chemical structure, Mycoton possesses valuable medical qualities.

Chitin has a uniquely high capacity to adsorb ions of heavy metals (Pb, Hg, Bi, Cr, etc.) and radionuclides (U, Pu, Am, Sr, etc.). At the same time it does not adsorb the main biogenic microelements (Na, K, Ca, etc.) and does not disturb salt metabolism. In addition, Mycoton adsorbs a large number of endotoxins. Owing to the significant specific square of chitin's microfibrils (more than 1000 m²/g) Mycoton is effective in small doses. Glucans are known as good immunomodulators. Melanin pigments are powerful bioprotectors. They can neutralize free radicals, which appear in the organism under the influence of penetrating radiation, and chemical and bacterial toxins.

Biological and medical investigations have shown that Mycoton is nontoxic. It has the certificate of the Ministry for Health Protection of Ukraine. Taken *per os* during 10 days (0.5 g three times per day), Mycoton reduces Cs radionuclide content by four to five times in people who live in radioactive-polluted territories.

The peripheral blood of 243 men who work at the destroyed Unit 4 of Chernobyl NPP ("Shelter") was investigated. One hundred eighty-three donors from Kiev Blood-Transfusion Station were examined as a "radiation-intact" control group. The parameters of a leukogram were the main indexes of the health status of the people examined.

In analysis of the research results attention is attracted by the broad diapason of the leukogram's parameter changes. There is a vivid tendency to increase in the relative and absolute content of band-neutrophil forms (the upper diapason limit is two times higher) of eosinophils and lymphocytes. Such a peripheral blood picture indicates the presence of nonspecific inflammation. The "Shelter's" personnel affected the leukogram's parameters depending on the accumulated dose.

A Mycoton therapy course decreased the general inflammatory reaction features. The tendency toward reduction in quantity of circulating leucocytes is observed (initially it was higher than normal). There also was a reliable percentage and absolute number decrease of band neutrophils and abrupt T-active cell reduction, sensitized to their own antigens. That is to say we observed the reorganization of the hematoimmune function in the direction of "radiation-intact" diapason terms.

The complex of the results obtained allows us

to recommend this preparation as an adaptogen with a wide activity spectrum, as a remedy of radiotoxication prevention and urgent radiodetoxication, with powerful antioxidation, radi-

osorption, and immunocorrection potentials. From our point of view, Mycoton can be a positive adaptogen preparation in conditions of chronic low-dose radiation effects.