

The Mechanisms of Mushroom Glucan Activity in the Mycoton Preparation

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The greatest attention is given to glucans from mushrooms. The preparation Mycoton, obtained from cell walls of mushrooms (Aphyllophorales, Higher Basidiomycetes) is represented by chitin–glucan–melanin fibrous material. The unique combination of these three natural mushroom biopolymers gives the preparation many valuable properties. Each component strengthens the action of the other. Therefore, in efficiency of action Mycoton surpasses other known glucan, chitin, and melanin drugs. The research on usage of this preparation in medicine was conducted in two directions—external application and oral administration. Many therapeutic properties of Mycoton lead to the glucan action. The consideration of mechanisms of mushroom glucan activity in different illness treatments is of great concern.

In external application Mycoton has shown high performance in treatment of wounds of varying etiology—from fresh surgical and traumatic wounds and infected purulent wounds to nonhealing trophic ulcers. Mycoton depresses the development of the main components of bacterial flora of ulcers: *Staphylococcus aureus*, *St. epidermalis*, *Escherichia coli*, *Proteus vulgaris*, and *Pseudomonas aeruginosae*. It is possible to explain its operation in that glucans activate the synthesis of lysosomal enzymes determining antibacterial properties, and also liberate an angiogenesis factor, which boosts vacuolization of injured tissues.

Analysis of the immunomodulating action of Mycoton *in vivo* demonstrates that the preparation directly influences immunocompetent cells. There is an increase in quantity of phagocytes, T-lymphocytes, and cytokines. Glucans strengthen the

chemotactic properties of macrophages and promote their conglomeration in staggered sites of tissues. Glucans have an affinity with receptors on the surface of macrophages. They change the morphology of the surface of macrophage cells. Their linkage is a releaser for activation of macrophages, which play an exclusive role in bringing about the immune reaction and depressing the inflammatory process.

Endogenic intoxication is a leading syndrome of chronic hepatitis seen in clinics. It produces a disturbance of immunoregulatory mechanisms and causes development of secondary immunodeficiency. The application of Mycoton promoted an increase of albumin levels and normalization of its transport function. The normalization of blood parameters—decrease in the level of bilirubin, normalization activity of alanine aminotransferase, aspartate aminotransferase, alkaline phosphatase, and thymol test—was marked also. It is possible to explain normalization of the listed parameters by the high sorbate properties of chitin and by the effect of the “glucan component.” Mycoton rendered a positive effect on such immunological parameters as the content of T and B lymphocytes, level of immunoglobulins, increase of absorption activity of phagocytes and normalization of interleukin-1 production. In the presence of Mycoton there are changes only in those parameters that differ from the norm.

In patients with acute and chronic pathology of the liver, gallbladder, bile duct, and pancreas the level of cholesterol in the blood was reduced by glucans from Mycoton, and the spectrum of cholic acids changed in terms of absolute and percentage increase of cholic acid. This is evi-

dence of improvement of the synthetic function of the liver. The protection of hemato-immune homeostasis at all levels of control mechanisms from a single cell up to an organism has special urgency. Together with melanins, glucans play a

prominent role in protection of macrophages against free radicals after irradiation.

These data allow us to offer Mycoton as a preventive means for improvement of health status.