

**EFFECT OF GULZOR BALM ON THE IMMUNE RESPONSE IN IRRADIATED
ANIMALS WITH DIFFERENT ACETYLATION TYPES****Rasulov U.M., Rasulov F.Kh.**

Fergana Medical Institute of Public Health

Abstract

Recent advances in clinical sciences, particularly immunology, indicate that the pathogenesis of many diseases is, to varying degrees, associated with immune system dysfunction. Despite significant progress in the development of synthetic drugs, there remains a strong interest in plant-based remedies and their active components with immunotropic properties, especially for the treatment of chronic and long-term illnesses. Herbal immunomodulators serve as alternative therapeutic agents for various diseases, particularly in cases of weakened immune responses or selective immunosuppression, such as autoimmune syndromes.

Objective

To investigate immune responses in animals with different acetylation phenotypes and to evaluate their correction by the herbal preparation Gulzor Balm in irradiated animals.

Materials and Methods

In the first experimental series, the acetylation type of white outbred mice was determined according to the method of L.N. Bulavskaya. After phenotype identification, the mice were exposed to a sublethal dose of ionizing radiation (5 Gy). Five days later, they were immunized with sheep erythrocytes at a dose of 2×10^8 /mL. After another five days, the number of antibody-forming cells (AFCs) in the spleen was determined. Gulzor Balm was administered intraperitoneally once, on the day of immunization, at a dose of 0.25 mL/kg. For comparison, one group of mice received Immunomodulin at a dose of 0.01 mL/kg. Composition of Gulzor Balm: fruits and leaves of papaya, bitter melon juice, willow bark, olive leaves, birch leaves and buds, elecampane rhizomes, seeds of caraway and black cumin, milk thistle, rose hips, guava fruits and leaves, concentrated grape and pomegranate juice, and flower honey.

Results

In intact, non-irradiated slow acetylators (SA) animals, 8854.0 ± 11.0 AFCs were detected in the spleen. Irradiation with 5 Gy caused profound immune suppression, reducing the thymus-dependent response to sheep erythrocytes. In irradiated SA animals, only 1144.0 ± 16.0 AFCs were formed, a 7.7-fold decrease compared to the control. The number of karyocytes in the spleen decreased 3.0-fold, and the number of splenocytes decreased 2.6-fold. A single administration of Gulzor Balm (0.25 mL/kg) to irradiated SA animals significantly increased antibody formation in the spleen 4.5-fold. Under the influence of Gulzor Balm, the number of karyocytes increased 2.0-fold and splenocytes 2.2-fold.

In the group of irradiated mice treated with Immunomodulin (0.01 mL/kg), the immune response increased 4.9-fold, and the number of nucleated spleen cells 2.4-fold. Thus, Gulzor Balm demonstrated immunomodulatory activity comparable to Immunomodulin, a widely used clinical preparation. In intact fast acetylators (FA) animals, 12404.0 ± 12.0 AFCs were detected in the spleen. X-ray exposure (5 Gy) reduced this number 5.6-fold in the control FA group. Administration of

Gulzor Balm to irradiated FA animals significantly increased the number of antibody-forming spleen cells 4.9-fold compared to irradiated controls. Under Gulzor Balm treatment, the number of karyocytes increased 2.0-fold and splenocytes 2.4-fold. In the group treated with Immunomodulin (0.01 mL/kg), the immune response and number of splenocytes increased 4.9- and 2.5-fold, respectively.

Conclusions

1. Irradiation at a dose of 5 Gy in slow acetylators animals causes severe immune dysfunction, reducing their thymus-dependent response to sheep erythrocytes by 7.7-fold.
2. A single administration of Gulzor Balm (0.25 mL/kg) to irradiated SA animals significantly increases antibody formation in the spleen by 4.5-fold.
3. X-ray irradiation at 5 Gy reduces the number of antibody-forming cells in the spleen of fast acetylators animals 5.6-fold.
4. Administration of Gulzor Balm to irradiated FA animals significantly increases the number of antibody-forming cells in the spleen 4.9-fold compared to irradiated controls.
5. The herbal preparation Gulzor Balm effectively corrects radiation-induced secondary immunodeficiency in mice, depending on the acetylation phenotype.