

**INFLUENCE OF THE PREPARATION "IMMUNOKOR" ON ANTIBODYGENESIS
AND ORGANS OF IMMUNITY IN THE MOUSES WITH LIVER PATHOLOGY.****Suyarov Akram Amirculovich* and Batirbekov Akram Anvarovich**

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ABSTRACT

It is installed that preparation "Immunokor", received on base of the substances of polysaccharides, chosen from *Bidens tripartitae* restore the oppressed process antibodyproducing to erythrocyte of the sheep in peripheral blood mouses with acute toxic hepatitis. This drug promote the increase of the weight and cells level increasing in central (thymus, marrow) and peripherals (the lymphatic nodes) organ of immunity by immunodeficiency animal with pathology liver.

KEYWORDS: *Bidens tripartitae*, "Immunokor", thymus, marrow, lymphatic nodes, acute toxic hepatitis.**INTRODUCTION**

Increasing existents of organism, withstanding the influence of the unfavorable environmental factors is the most actual problem of the modern medicine. The body state and direction of the processes in the body is controlled by interaction of three systems: immune, nervous and hormonal. In this connection, the significant interest of the researchers to the using of the substances preventing and correcting disorders in the body immune system is justified. The Arsenal of the modern immunomodulators is presented, generally, by synthetic drugs. Only in the last decennial events have begun to pay attention facility of the natural origin. Immunoassay products of the high plants, studied in the least degree, unlike synthetic have a row advantage: soft immunomodulate action, low toxicity, ability to activations function not only иммунной, but also nervous and endocrine systems, due to presence biologically active material, rendering complex influence on organism as a whole.^[1,3,9] Such materials are, in particular, polysaccharides vegetable origin, which do not render some side effect, not toxic and apyrogen and favorable act upon some functions of immune systems.^[2,4]

In the course of called on earlier us experiment was studied immunotrope characteristic of polysaccharides got from *Bidens tripartitae*. It was installed that given material, rendered the stimulate influence upon humeral immune answer and on function lymphoid organ beside animals. On efficiency she several exceed the known foreign vegetable preparation an immunal.^[5-8] In the further study us was received pharmacological preparation under conditional name "Immunokor",

designed on base of the substances of polysaccharides, chosen from *Bidens tripartitae*.

Purpose of the study

Study effect of the preparation "Immunokor" on antibodygenesis and organs of immunity under acute toxic hepatitis.

MATERIAL AND METHODS

In experience used the white non kind of the mouses both flap by mass 18-22 g. Acute toxic hepatitis (ATG) beside mouses caused by means of hepatotropic of the poison – tetrachloride carbon (CCl₄), which entered daily sub dermal in area hip during 3-h days in the manner of 20% oleosum of the solution on 0,2 ml. At day of the last introduction CCl₄ mouses intraperitoneal immunized the erythrocytes of the sheep (ES) in dose 5×10⁶.

The animals were divided into 7 groups on 10 goals. 1-st group - control: intact mouses immunized by ES + distil. water; 2-d group - a mouse with ATG got ES; 3-d group - a mouse with ATG got EB + during 4-s days intrastomach entered the substance of polysaccharides, got from *Bidens tripartitae* (the local raw material) in dose 7,0 mg/kg; 4-s group - a mouse with ATG got ES + during 4-h days intrastomach entered the tablet "Immunokor" (designed on base of the substances have of polysaccharides from *Bidens tripartitae*) in dose 7,0 mg/kg; 5-s group - a mouse with ATG got ES + during 4-s days substance of polysaccharides in dose 14,0 mg/kg; 6-s group - a mouse with ATG got ES + during 4-s days tablet "Immunokor" in dose 14,0 mg/kg; 7-s group - a mouse with ATG got ES + during 4-s days

intrastomac entered the preparation of the comparison immunal in dose 7,0 mg/kg.

On 5-e day after immunization ES mouses rammed and defined the subtitle an antibody to ES in peripheral blood mouses. In central (thymus, bone-whine brain) and peripheral (the mesenteries lymphatic nodes) organ of immunity counted the gross amount of the hutches, as well as defined the weight an organ.

The got data subjected to statistical processing, using package of the applied programs of the statistical analysis Excel-2003 with calculate compute middle arithmetic (M), average square-law deflection (σ), standard error (m), relative values (the frequency, %), criterion Students (t) with calculation of probability of the error (P). The differences average vivificated

considered reliable at level of value $P < 0,05$. It is herewith the existing instructions supporting under on statistical data processing clinical and laboratory studies.

RESULTS AND DISCUSSION

In table 1 are presented given on study of the influence to substances of polysaccharides and tablets "Immunokor" in miscellaneous dose on subtitle antibody to ES in peripheral blood beside mouses with ATG. On 5 day after immunization subtitle antibody to ES in checking group forms $4,0 \pm 0,2$. In process modulated ATG subtitle antibody to ES in blood in contrast with checking realistically decreases in 1, 82 times ($2, 2 \pm 0,1$). All studied substances of polysaccharides, tablets "Immunokor" and immunal realistically in 1, 23-1, 50 times raise the subtitle an antibody to ES in peripheral blood mouses with ATG.

The Table 1

The influence to substances of polysaccharides and tablets "Immunokor" on subtitle antibody to erythrocyte of the sheep in whey shelters mouses with ATG ($M \pm m$, $n=10$).

№	Group	Dose, mg/kg	Titer of antibody (\log_2)	IC
1.	Control	-	$4,0 \pm 0,2$	-
2.	ATG	-	$2,2 \pm 0,1^*$	-1,82
3.	ATG+ substances of polysaccharides.	7,0	$2,8 \pm 0,2^{***}$	+1,27
4.	ATG+ tablets "Immunokor"	7,0	$2,7 \pm 0,2^{***}$	+1,23
5.	ATG+ substances of polysaccharides	14,0	$3,2 \pm 0,2^{***}$	+1,45
6.	ATG+ tablets "Immunokor"	14,0	$3,0 \pm 0,1^{***}$	+1,36
7.	ATG+ immunal	7,0	$3,3 \pm 0,2^{***}$	+1,50

The: IC - an index of the correlation, (-) - to 1 gr., (+) - to 2 gr., * - realistically to 1 gr. ($p < 0,05$), ** - realistically to 2 gr. ($p < 0,05$).

Thereby, substance of polysaccharides and tablets "Immunokor" to have ability to raise the subtitle an antibody to ES in peripheral blood shelters beside mouses with ATG.

Hereinafter studied the effect to substances of polysaccharides and tablets "Immunokor" in different dose on the gross amount of the hutches in central (thymus, marrow) and peripheral (the lymphatic nodes) organs of immunity beside mouses with ATG (the table 2).

The Table 2.

Influence to substances of polysaccharides and tablets "Immunokor" amount of the hutches in central and peripheral organ of immunity beside mouses with ATG ($M \pm m$, $n=10$).

№	Group	Dose, mg/kg	Cells of thymus $\times 10^6$	IC	Cells of marrow $\times 10^6$	IC	Cells of lymphatic nodes $\times 10^6$	IC
1.	Control.	-	$185,6 \pm 4,0$	-	$9,8 \pm 0,3$	-	$58,7 \pm 1,9$	-
2.	ATG	-	$69,3 \pm 2,5^*$	-2,68	$6,6 \pm 0,2^*$	-1,48	$31,0 \pm 3,3^*$	-1,89
3.	ATG + substances of polysaccharides	7,0	$81,1 \pm 3,1^{***}$	+1,17	$8,1 \pm 0,2^{***}$	+1,23	$41,8 \pm 2,2^{***}$	+1,35
4.	ATG + tablets "Immunokor"	7,0	$79,0 \pm 1,6^{***}$	+1,14	$7,9 \pm 0,2^{***}$	+1,20	$39,8 \pm 2,3^{***}$	+1,28
5.	ATG + substances of polysaccharides	14,0	$93,2 \pm 1,4^{***}$	+1,34	$8,5 \pm 0,2^{***}$	+1,29	$45,1 \pm 1,5^{***}$	+1,45
6.	ATG + tablets "Immunokor"	14,0	$87,1 \pm 2,6^{***}$	+1,26	$8,3 \pm 0,2^{***}$	+1,26	$43,0 \pm 1,6^{***}$	+1,39
7.	ATG + immunal	7,0	$92,2 \pm 3,5^{***}$	+1,30	$9,0 \pm 0,2^{***}$	+1,36	$43,7 \pm 2,3^{***}$	+1,41

The note: IC - an index of the correlation, (-) - to 1 gr., (+) - to 2 gr., * - realistically to 1 gr. ($p < 0,05$), ** - realistically to 2 gr. ($p < 0,05$).

It is installed that beside animal with ATG number of the hutches in thymus realistically decreases in 2, 68 times (checking - $185,6 \pm 4,0 \times 10^6$, experience - $69,3 \pm 2,5 \times 10^6$). The substance of polysaccharides in dose 7,0 mg/kg in 1,17 times ($p < 0,05$) raises the level of thymocytes

beside mouses with pathology liver, but tablets "Immunokor" in this dose raise the number of thymocytes in 1,14 times ($p < 0,05$). The substance of polysaccharides in dose 14,0 mg/kg realistically in 1,34 times raises the number of cells in thymus of mouses with ATG, but tablets "Immunokor" in this dose in 1,26 times raise the number of thymocytes. The drug of the comparison immunal raises the reduced level of thymocytes in 1,30 times beside mouses with secondary immunodeficiency by condition, induced CCL₄. With increasing of the dose entering drugs of the facilities their stimulate activity in respect of thymocytes to increase.

In the another central organ of immunity - a marrow general volume of cells after entering CCL₄ decreases in 1,48 times ($9,8 \pm 0,3 \times 10^6$ - a checking, $6,6 \pm 0,2 \times 10^6$ - an experience). The substance of polysaccharides and tablets "Immunokor" in dose 7,0 mg/kg realistically raise the number of marrow cells in 1,23 accordingly and 1,20 times. The substance of polysaccharides in dose 14,0 mg/kg realistically raises the number of the cells of the bone marrow beside mouses with ATG in 1,29 times ($8,5 \pm 0,2 \times 10^6$), but tablets "Immunokor" in dose 14,0 mg/kg - in 1,26 times ($8,3 \pm 0,2 \times 10^6$). Immunal raises the number of the cells of the marrow in 1,36 times.

Thereby, substance of polysaccharides and tablets "Immunokor" in studied dose possess the ability to raise the number of the cells in marrow of the mouses with ATG.

Change exists by pathology liver and in peripheral organs of immunity - a lymphatic node. Beside intact animal number of cells in lymphatic nodes is $58,7 \pm 1,9 \times 10^6$, but beside mouses with ATG their level falls in 1,89 times ($31,0 \pm 3,3 \times 10^6$). In group of the mouses with ATG, got substitution of polysaccharides and tablets "Immunokor" in dose 7,0 mg/kg, number of cells in lymphatic nodes in contrast with not treated by group realistically increases in 1,35 accordingly and 1,28 times.

With increasing of the dose stimulates effect of the studied facilities increases. So, substance of polysaccharides in dose 14,0 mg/kg raises the number of the cells in lymphatic nodes of the mouses with ATG in 1,45 times, but tablets "Immunokor" - in 1,39 times. Under influence of immunal amount of the cells in lymphatic nodes of the mouses with ATG increase in 1,41 times.

The got results are indicative of that the most expressing-whole stimulating effect to substances of polysaccharides and tablets "Immunokor" is registered in respect of peripheral organ of immunity - a lymphatic node (IC=1,28-1,45); then follow thymus and marrow. The cells of the lymphatic nodes turned out to be the most sensitive to stimulating effect of the studied facilities in contrast with thymocytes and marrow cells. Herewith well reveals itself dose-dependency level of stimulation - "dose-effect".

Thereby, substance of polysaccharides and tablets «Immunokor» has possibility of correlated breaches in organ of immunity beside animal with pathology liver.

Hereinafter, there was studied effect to substances of polysaccharides and tablets "Immunokor" on weight of thymus, spleen and lymphatic nodes beside mouses with ATG (the indicator panel. 3).

Under ATG weight of thymus realistically falls in 1,43 times. In group of animals with pathology liver, got substance of polysaccharides in dose 7,0 mg/kg weight of thymus realistically increases in 1,17 times, but when entering tablets "Immunokor" in this weight of thymus does not change. The substance of the polysaccharides and tablets "Immunokor" in dose 14,0 mg/kg realistically raise the weight of thymus in 1,32 accordingly and 1,25 times. Immunal raises the weight of thymus in 1,27 times.

Table 3. Influence to substances of polysaccharides and tablets "Immunokor" on weight of thymus, spleens and lymphatic nodes beside mouses with ATG ($M \pm m$, $n=10$)

№	Group	Dose, mg/kg	Weight of thymus (mg)	IC	Weight of Spleen (mg)	IC	Weight of lymphatic nodes (mg)	IC
1.	Control	-	$53,6 \pm 1,9$	-	$80,3 \pm 1,9$	-	$73,0 \pm 2,7$	-
2.	ATG	-	$37,4 \pm 1,3^*$	-1,43	$51,4 \pm 1,8^*$	-1,56	$45,1 \pm 2,6^*$	-1,62
3.	ATG+ Substances of polysaccharides	7,0	$43,7 \pm 1,6^{***}$	+1,17	$61,1 \pm 1,7^{***}$	+1,19	$54,3 \pm 1,9^{***}$	+1,20
4.	ATG + tablets "Immunokor"	7,0	$40,2 \pm 1,9^*$	+1,07	$58,7 \pm 1,7^{***}$	+1,14	$52,3 \pm 1,3^{***}$	+1,14
5.	ATG + substances of polysaccharides	14,0	$49,4 \pm 1,8^{**}$	+1,32	$70,1 \pm 1,7^{***}$	+1,36	$64,4 \pm 2,0^{***}$	+1,43
6.	ATG + tablets "Immunokor"	14,0	$46,7 \pm 1,2^{***}$	+1,25	$66,8 \pm 2,5^{***}$	+1,30	$59,1 \pm 1,9^{***}$	+1,31
7.	ATG + immunal	7,0	$47,5 \pm 1,6^{***}$	+1,27	$71,3 \pm 2,4^{***}$	+1,39	$66,4 \pm 1,4^{***}$	+1,47

The note: IC - an index of the correlation, (-) - to 1 gr., (+) - to 2 gr., * - realistically to 1 gr. ($p < 0,05$), ** - realistically to 2 gr. ($p < 0,05$).

The weight spleen under ATG realistically falls in 1,56 times ($80,3 \pm 1,9$ mg – a checking, $51,4 \pm 1,8$ mg - ATG). The substance of polysaccharides in dose 7,0 mg/kg in contrast with previous group raises the weight of the spleen in 1,19 times ($p < 0,05$), but tablets "Immunokor" - in 1,14 times ($p < 0,05$). These facility in dose 14,0 mg/kg realistically raise the weight of the spleen in 1,36 accordingly and 1,30 times. Immunol raises the weight of the spleen in 1,39 times ($p < 0,05$).

It is installed that weight of the lymphatic nodes under ATG decreases in 1,62 times ($73,0 \pm 2,7$ mg – a checking, $45,1 \pm 2,6$ mg - ATG). When entering mouse with ATG substances of polysaccharides and tablets "Immunokor" in dose 7,0 mg/kg weight of the lymphatic nodes in 1,20 realistically and 1,14 times raise the weight of lymphatic nodes. These facility in dose 14,0 mg/kg raise the weight lymphatic of the nodes in 1,43 accordingly and 1,31 times. Immunol raises the weight of lymphatic nodes in 1,47 times.

Thereby, substance of polysaccharides and tablets "Immunokor" in dose 7,0 and 14,0 mg/kg promote increasing of the weight of thymus, spleens and lymphatic nodes beside animal with pathology liver.

CONCLUSION

1. The substance of polysaccharides and tablets "Immunokor" in 1,23-1,45 times raise the subtitle an antibody to ES to shelters of the mouses with pathology liver.
2. The substance of polysaccharides and tablets "Immunokor" raise the number of cells in central and peripherals organ of immunity under ATG: in thymus in 1,14-1,34 times, in marrows in 1,23-1,29 times and in lymphatic nodes in 1,28-1,45 times.
3. The substance of polysaccharides and tablets "Immunokor" in dose 7,0 and 14,0 mg/kg raise the weight thymus in 1,17-1,32 times, weight spleen in 1,14-1,36 times, weight of the lymphatic nodes in 1,14-1,43 times beside mouses with ATG.

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The Authors declare about absence of some conflict interest.

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