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Determination of the Immunostimulating Activity of a Biologically Active Compound under Experimental Conditions

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***Abstract**: Under research conditions, the effect of a low-toxic biologically active aggregate obtained on the basis of plants on the immune system, as well as on all organs and systems, was studied. The presented work is described in detail in this plan, and as a result of the conducted studies, it is clear that the substance under study has an immunostimulating effect.*

***Keywords:** Immunological Reactivity, NSCBS, BAC, Central Immune System, Erythrocytes, Leukocytes.*

1. INTRODUCTION

Today, as throughout the world, extensive scientific research is being conducted in our country to extract substances with low toxicity and high activity based on natural and synthetic substances and to study their biological activity [1,2,3]. In particular, the study of acute and chronic toxicity of substances under experimental conditions [4,5], effects on organs and tissues [6,7] and other biological activities [8-10]. Also, on the basis of screening studies, the psycho- and neuropharmacological properties of the isolated substances are evaluated [15], the effect on the cardiovascular system, gastrointestinal tract and respiratory organs [11-14], as well as diseases associated with metabolic disorders. In addition to the above, scientific research is being conducted to search for substances with high activity, both on the basis of the effect of harvesting on the basis of plants with various anemias [1,2], and on the basis of plants that accumulate indole alkaloids [5-7].

One of the urgent issues of our time is the search for new natural immunomodulators with high activity, low toxicity, free from side effects, and introduction into medical practice. This is known from the literature (Aripova T.U. and B. 2010; Batirbekov A.A.va b. 2010;

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Abduzhalilova and b., 2011). Many medicinal plants used in folk medicine have the property of stimulating the immune system. Taking into account the above, the effect of bfq on the body's immune system, consisting of a collection of plants, was studied [16].

The Purpose of the Study
Study of the effect of BFY on the immune system, prepared on the basis of herbal remedies, in research conditions.

2. MATERIALS AND METHODS OF RESEARCH

Experiments are carried out on laboratory mice weighing 20 g. "Immunological SEI" AS of UzR employee d.m.s., with Prof. A.A. Batyrbekov Was conducted in collaboration. Before the experiment, the animals were immunized with sheep erythrocyte at a dose of $2 \cdot 10^7$. Then, every day for 3 days, mice in the experiment from the same rank were administered orally at doses of 5 ml/kg and 10 ml/kg of the drug BAC. Under the same conditions, the animals of the control group were given distilled water, respectively. On the 4th day of the experiment, the number of antibody–forming cells (AFC) in the black spleen was determined by the method of Jerne and Nordin directly by local hemolysis. In this case, the amount of AFC was determined throughout the Black spleen and in $1 \cdot 10^6$ cells of the black spleen. At the same time, the total number of nuclear storage cells (NSC) in the black spleen was also calculated. Under the same conditions, the organs of the immune system determined the total number of thymus cells, bone marrow, lymph glands in the abdominal cavity, the number of erythrocytes and leukocytes in the peripheral blood of animals in the experiment [17, 18].

3. RESULTS AND THEIR DISCUSSION

The effect of the drug BAC on the immunological reactivity of the body was studied using registered immunological methods, and the results obtained in it are presented in Table 1.

Table 1. Immunological response of BAC to sheep erythrocytes.

Substances and groups	**Doses in ml/kg**	**The amount of NSCBS ×10⁶**	**IRC**	**NSCBS**			
				On the whole black spleen	IRC	By the ×106 cell of the black spleen	IRC
Control group	Dis.water	97,2±6,9	-	1064,3±96,8	-	11,3±1,4	-
BAC	5,0 ml/kg	144,3±8,2*	+1,48	4342,9±359,5*	+4,08	30,9±3,7*	+2,73
	10,0 ml/kg	131,2±9,3*	+1,35	4035,7±368,8*	+3,79	31,7±3,9*	+2,81

Notice: NSCBS – nuclear storage cells in the black spleen. IRC – index in relation to control

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* - P≤0.05 comparison with the control group

According to the results presented in Table 5, the amount of nuclear – preserving cells in the black spleen of animals receiving BAC in doses of 5 ml/kg increased by March 1.43 compared to the control group, while the amount of NSCBS in the entire Black spleen increased by 4.08 times, and it was from 1064.3+96.8 to 4342.9±359.5. Hence, BAC increased the immunological response reaction of mice to sheep erythrocytes at a higher rate in the physiologically normal state. In the same conditions, the tincture of BAC made the black spleen of mice 1 million. it also increased the amount of NSCBS in its cell, and it increased from 11.3±1.4 to 30.9±3.7. Even when the dose of BAC was increased by 2 times (in a dose of 10 ml/kg), the drug showed an immunological response reaction of mice to sheep erythrocytes and an increase in the amount of NSCBS in the black spleen at the level of mathematical accuracy, and it turned out the same as when taking the drug in a In subsequent Group experiments, we studied the effect of the drug BAC on the state of the organs of the body's immune system Central (in the thymus and bone marrow) and peripheral (in the lymphatic glands in the abdominal cavity). The results obtained are presented in Table 2.

Table 2. The effect of BAC on the amount of Central and peripheral immune organs.

Experience Group	**Doses in mg/kg**	**Thymus cell, ×10⁶**	**IRC**	**Bone marrow cell, ×10⁶**	**IRC**	**Cell of the lymph glands, ×10⁶**	**IRC**
Control group	Dis.water	21,3±1,7	-	6,2±0,4	-	10,9±0,6	-
BAC	5 mg/kg	31,9±2,5*	+1,50	9,9±0,6*	+1,60	18,5±1,1*	+1,70
	10 mg/kg	30,8±2,4*	+1,45	9,5±0,6*	+1,53	17,9±1,0*	+1,64

Note* - P≤0.05 comparison with the control group
As shown in Table 2, since the central organs of the immune system of mice in the control group, the number of thymocytes in the thymus was 21.3±1.7×106, under the same conditions, the number of thymocyte cells in the thymus of animals that received bfq increased at the level of mathematical accuracy (by 1.50 and 1.45 times), and did. Hence, thymus thymocyte cells to BAC produce a response reaction with a high degree of sensitivity. Another of the organs of the central immune system, BAC, highly stimulates the proliferation of cells in the bone marrow and increases the amount of bone marrow cells by 1.60 and 1.53 times, respectively, than in the control group. In subsequent experiments, we studied the effect of BAC on the number of cells of the body's immune system in the peripheral organ, the lymph glands in the abdominal cavity, and saw that the drug has the ability to stimulate the cells of the lymph glands as well. As a result, BAC increased the number of lymph gland cells of the peripheral immune system organ by 1.70 and 1.64 ranks, respectively, than in control animals, and the number of lymph gland cells increased from $10.9\pm0.6\times10^6$ in the control group to $18.5\pm1.1\times10^6$ and $17.9\pm1.0\times10^6$ (Table 3.).

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Table 3. Effect of BAC on the amount of erythrocytes and leukocytes in the peripheral blood of mice.

№	Experience Group	Doses in mg/kg	In the peripheral blood of mice			
			The amount of erythrocytes, $\times 10^9$/ml	IRC	The amount of leukocytes, $\times 10^6$/ml	IRC
1.	Control group	Dis.water 5 mg/kg	5,2±0,2	-	7,8±0,6	-
2.	BAC	5 mg/kg	5,8±0,12	+1,11	8,9±0,6	+1,14
		10 mg/kg	5,9±0,11	\+1,13	9,3±0,7	+1,19

Note* - P≤0.05 comparison with the control group
Consequently, BAC assembly also stimulates cells of peripheral organs of the animal immune system. During the experiment, we focused on how bfk affects blood elements in the peripheral blood of mice, in particular the number of red blood cells and leukocytes. The effect of BAC on the number of erythrocytes and leukocytes in the blood is shown in Table 3. As shown in Table 3, BAC increased the number of erythrocytes and leukocytes in the peripheral blood of mice in the studied doses to 1.1 – 1.2 degrees, respectively.

4. CONCLUSIONS

In conclusion, it can be said that the drug BAC contains 1 million of the black spleen in the studied doses. by increasing the amount of NSCBS in splenocytes, it stimulates the body's immunological reactivity. At the same time, BAC accelerates the proliferation of cells of the central immune system in therapeutic doses, in particular, cells of the thymus and bone marrow. In addition, the BAC collection stimulates the primary immunological response to sheep erythrocytes, as well as the titer of antibodies to erythrocytes in peripheral blood. The aggregate also enhances the proliferation of central and peripheral organs of the immune system, thereby accelerating the immune system of the whole organism.

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