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TREATMENT PROCEDURES FOR ANEMIA IN EXPERIMENTAL ANIMALS WITH LOCAL VEGETABLE PROTEIN PRODUCTS

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ABSTRACT

To model the anemia, 4 groups used 5 female rats without white offspring, the first group received an equivalent amount of distilled water for the control group, the second group was given a mash for experimental animals, the third was given a pea and the fourth was given a bean. On 10, 20 and 30 days of the experiment, blood was taken from 0,5 ml for analysis of the level of hemoglobin, hematocrit level and erythrocytes in animals. The experiment showed that hemoglobin in the blood after blood loss in animals was 72,16% of the results of 2 days of anemia compared to the background level of the control group, 65,28% in the mosh-given group, 68,66% in those who received beans, and 70,92% in those who consumed peas. On the 10th day of the experiment for the "control" group, the hemoglobin content was 10% lower than in the experimental group, and by 115959 g/L, by the 20th day of the experiment, this indicator mark even decreased-98,82 g/L, that is, the differences in the experimental group were on average 12% for mosh and peas, 10% for beans. On the 20 - th day of the experiment and 30-th day of the experiment, the amount of erythrocytes in the animals in the experimental group was compared with the initial signs.

Key words: experimental animals, anemia, beans, mosh, chickpea, hemoglobin, erythrocyte, hemochrite indicator.

INTRODUCTION

The urgency and necessity of the problem. Today, a number of authors are concerned about the restoration of health of various segments of the population, including the prevention of eating disorders, nutritional status disorders, i.e, iron deficiency anemia and iodine deficiency, osteoprosis, diseases of the gastrointestinal tract, diabetes mellitus. reflected [1,2,3,4,5,6,12,13,14]. Iron deficiency disease, changes in blood composition contribute to the development of

functional changes not only in patients with iron deficiency anemia, but also in other organs and systems [6,7,8,11]. In order to prevent anemia among different segments of the population, "Karotino" oil, flour products are enriched with vitamins and iron microelements, confectionery products [10,12,13,14,15,16], but the treatment of anemia with protein from local products is the most is one of the effective methods.

In this regard, a number of measures are being taken in our country. During the reform period, special attention is paid to the development of the medical sector in our country, the adaptation of the medical system to the requirements of world standards, including the diagnosis, treatment and prevention of complications of eating disorders caused by eating disorders. One of the tasks set in Strategy actions in five priority areas of the Republic of Uzbekistan in 2017-2021 years is «...implementation of comprehensive measures aimed at improving and strengthening the health of the population, reducing morbidity, preventing diseases related to nutrition, and increasing life expectancy...» [4].

Therefore, one of the current scientific directions is to provide the population with quality food and adherence to the criteria of healthy eating, prevention of food-related cases, the ability of the population to work, resistance to environmental factors, nutrition and micronutrient content in childhood to increase life expectancy. The daily prevalence of pathologies such as anemia among the population requires scientists to constantly seek a means to prevent this condition. In this case, a special place is given to alternative products from animals that feed on agricultural crops.In this regard, products such as mosh, beans and peas grown in local agriculture were offered.

The purpose of the study. Iron deficiency anemia is an evaluation of the efficacy of treatment using local protein-preserving products in an experimental animal model.

Research materials and methods.

White non-fertil female rats were used to modelling anemia. The animals were divided into 4 groups of 5 in each group. In the first group, the control group was assigned to the experimental animals in the second group; animals in the third group were given the mung beans and animals in the fourth group were given peas. Hygienic certificates are obtained in accordance with the established sanitary norms and regulations on the quality and safety of food consumed by animals. Before starting the experiment, the experimental animals were taken from 3 ml of blood under ether anesthesia for 2 days from animals in both groups until a clear appearance of anemia appeared. Hemoglobin, hematocrits concentration and erythrocyte count were analyzed. From day 5, the experimental group of animals

was sent into the stomach in the form of boiled, crushed aqueous porridge of mung beans (mosh) and peas in addition to the general vivarian diet. An equivalent amount of distilled water was administered to the control group animals. On days 10, 20, and 30 of the experiment, 0.5 ml of blood was taken from the animals for analysis of hemoglobin, hematocrit level, and erythrocyte count. The concentration of hemoglobin in the blood was determined using a standard method software (Cypress Diagnostics, Belgium) on a semi-automatic biochemical analyzer CYANSmart, hematocrit was determined in a centrifuge (Cypress Diagnostics, Belgium), and the amount of erythrocytes was determined in Goryaev's chamber. Statistical analysis of the obtained results was carried out using traditional variational statistical methods using Excel, a personal computer software package based on the Pentium-IV processor.

Analysis of the obtained results. The results of the analysis of blood hemolytic parameters in the experimental conditions determined for the purpose of scientific substantiation of the results obtained in the implementation of the goal show that the amount of hemoglobin concentration in the analysis of blood composition of experimental animals as a result of consumption of the studied products is determined in Table 1.

Table 1

Results of hemoglobin content of the product under study, g / l

Observation periods	Control	The main group		
		Mung bean	Beans	Peas
Fon	104,6±6,3	115,9±5,1	113,8±5,9	110,1±4,7
2 days (anemia)	75,5±5,2^	75, 7±3,4^	78,1±4,2^	78,1±3,3^
10 days	110,6±7,4**	121,6±5,7***	113,5±5,8***	115,0± 4,9***
20 days	98,8±5,3**	113,2±6,2***	109,7±5,5***	111,3±5,5***
30 days	113,9±6,5***	108,0±4,6***	116,0±6,1***	115,8±6,2***

Note: The difference between * -2 days is reliable (** - P <0.01; *** - P <0.001)
^ - the difference from the background is reliable (^ -P <0.001)

As can be seen from Table 1, the analysis of the amount of hemoglobin at 10, 20, and 30 days after the organization of the diet, consisting primarily of anemia, consists of the following. The analysis of hemoglobin in the blood of experimental animals after blood loss revealed that the results of anemia in 2 days compared to the background level of the control group was 72.16%, while the results of the experimental group were 65.28% in the group that consumed mung bean, 68.66% of those who ate beans and 70.92% of those who ate peas. The data obtained indicate evidence of severe posthemorrhagic anemia in animals. It should be noted

that in the diet of legumes evaluated during the study, it was noted that the morphological parameters in the blood of white rats are reliably restored relative to the initial symptoms.

The results in the control group were found to increase 1.46 times in 10 days compared to 2 days, 1.30 times in 20 days, and 1.50 times in 30 days. The analysis showed that the amount of hemoglobin in 20 days decreased by 0.16 times compared to 10 days and then increased again by 30 days. It can be seen that it is recommended to consume these results for 1 month or more. When consuming mosh, the following cases were found: an increase of 1.60 times, 1.49 times in 20 days, and 1.42 times in 30 days.

The performance of experimental animals consumed by mung bean products was as follows, increased by 1.45 times, 1.40 and 1.48 times, respectively. In experimental animals, the level of the above was as follows: in 10 days of the study, the number of peas increased by 1.47 times compared to 2 days, 1.42 times in 20 days and 1.48 times in 30 days. It should be noted that the experimental animals consumed by local mung bean, beans and peas, along with the assessment of the level of anemia, their main indicators show that after 30 days they show clear results. The role of not only animal proteins in the prevention of iron deficiency anemia, but also plant proteins in relation to the vegetarian diet, and the role of proteins, amino acids and vitamins and minerals in their structure is great. It should be noted that it is not the level of protein consumption, but the degree of their absorption in the body.

The results of hematocrit readings in the blood of experimental animals called iron deficiency anemia are presented in Table 2

Table 2

The amount of hematocrit in the blood under the experimental conditions,%

Observation periods	Control	The main group		
		Mung beans	Beans	Peas
Background	33,6±1,6	34,2±1,5	33,4±1,4	33,2±1,5
2 days (anemia)	27,3±1,2^^	27,2±1,1^^	28,7±1,2^	28,9±1,3^
10 days	34,9±1,7**	36, 8±1,8***	33,9±1,5*	32,3±1,5
20 days	31,4±1,5*	33,0±1,4**	32,4±1,3*	33,0±1,4*
30 days	34,1±1,3***	32,2±1,3*	33,1±1,2*	34,1±1,5*

Note: The difference between * -2 days is reliable (* -P <0.05; ** - P <0.01; *** - P <0.001); ^ - the difference in background values is reliable (^ -P <0.05; ^^ - P <0.01)

As shown in Table 2, the analysis of hematocrit in the blood of experimental animals revealed that the results of anemia in 2 days relative to the background level of the control group was 81.3%, their results in 10 days compared to 2 days were 127.79%, in 20 days 124 , 72%, and 124.72% in 30 days. In the group that consumed mung beans, it was 135.41% at 10 days, 121.57% at 20 days, and 118.55% at 30 days compared to 2 days. When taking mosh in 30 days, the figures decreased by 0.97 times compared to 20 days. It is advisable to analyze the research results in this regard. 117.96% of the analogous content in the experimental group consumed beans; 112, 95, and 115.11%, respectively, while those consuming peas accounted for 117.85%, 114.25%, and 117.85%, respectively.

Positive results were also obtained in hematocrit.

Another key indicator is the assessment of erythrocyte counts in the blood under experimental conditions, the results of which are presented in Table 3.

Table 3

Results of erythrocyte count in animal blood under experimental conditions, 10^{12} / l

Observation periods	Control	The main group		
		Mung beans	Beans	Peas
Background	6,8±0,24	7,0±0,31	6,8±0,28	6,7±0,27
2 days (anemia)	6,2±0,21^	6,1±0,23^	6,2±0,24	6,2±0,25
10 days	6,9±0,28*	7,1±0,32*	6,7±0,26	6,8±0,28
20 days	6,8±0,26	6,8±0,28*	6,6±0,25	6,7±0,25
30 days	6,9±0,29*	6,6±0,25*	6,8±0,27	6,8±0,30

Note: The difference in * -2 day values is reliable (* -P <0.05); ^ - the difference in background values is reliable (^ -P <0.05)

Table 3 shows that the analysis of erythrocyte counts in the experimental blood showed that the results of anemia in 2 days compared to the background level of the control group were 91.4%, their results in 10 days compared to 2 days were 111.81%, and in 20 days 109 , 22%, and 111.48% in 30 days compared to 20 days.

In the experimental group, mung beans was consumed 1.15 times in 10 days, 1.11 times in 20 days, and 1.07 times in 30 days compared to 2 days. In the experimental group, which consumed beans, it was 108.57%; 107, 28 and

109.20%, respectively.It should be noted that the changes in the blood when consuming beans relative to mosh are partially low. The results of the changes in the blood of the experimental group consuming peas were as follows: the results in the background group were 92.3%. The results were 109.53% on day 10, 108.88% on day 20, and 109.20% on day 30 after anemia was diagnosed. From the results of the experiment, it should be noted that when anemia was called, it decreased in 20 days compared to 10 days in all products and increased again in 30 days. At the same time, a special intensity was observed in the first 10 days. The performance of the animals of the “control” group was characterized by a slower recovery of activity compared to similar animals with added moss, beans and peas in the diet. This information is confirmed by the presence of reliable differences between the morphological parameters of white rat blood in the "Control" and "experimental" groups. For the control group, on the 10th day of the experiment, the hemoglobin level was 10% lower than in the experimental group and amounted to 110.59 g/l, and on the 20th day of the experiment, this indicator even decreased to 98.82 g/l., i.e., the differences relative to the experimental group were on average 12% lower for mosh and peas and 10% lower for beans. On days 20 and 30 of the experiment, the erythrocyte count in the animals in the experimental group was comparable to the initial indicators. The sign of hematocrit was characterized by a tendency to normalize in all observed animals, but the control group had a statistically reliable decrease of an average of 10% by the 20th day of observations. Evaluating the hematocrit parameters of the experimental group compared with the control group, it can be determined that the experimental group that consumed mung bean had a tendency to recover all blood parameters more rapidly, but the recovery of hemoglobin concentration, hematocrit and erythrocyte count was the same in all.

Thus, the results obtained show that mung beans, beans and peas have a stimulating effect on erythropoiesis, while the effectiveness of the use of moss is several times higher than that of beans and peas.Statistical analysis of the nutritional and biological value of these local products shows that they are rich in enough protein and are active in increasing the energy value of the organism, with its structural unit.

CONCLUSIONS

1. The analysis of hemoglobin in the blood of experimental animals after blood loss revealed that the results of anemia in 2 days compared to the background level of the control group was 72.16%, while the results of the experimental group were as follows, i.e 65.28% in the mung beans consuming group. 68.66% of those who ate beans and 70.92% of those who ate peas.

2. The experiment showed that the hematocrit in the blood of animals showed that the results of the control group in the background of 2 days of anemia were 81.3%, the results of 10 days were 127.79%, 20 days - 124.72%, 30 days - 124.72. %. In the group that consumed mung beans, it was 135.41% at 10 days, 121.57% at 20 days, and 118.55% at 30 days compared to 2 days. 117.96% of the analogous content in the experimental group consumed beans; 112, 95, and 115.11%, respectively, while those consuming peas accounted for 117.85%, 114.25%, and 117.85%, respectively.

3. The amount of erythrocytes in the blood increased 1.15 times in 10 days, 1.11 times in 20 days and 1.07 times in 30 days compared to 2 days in the group consuming mung beans, 108.57% in the experimental group consuming beans in a similar order; 107, 28 and 109.20%, the experimental group consuming peas accounted for 109.53% on day 10, 108.88% on day 20, and 109.20% on day 30.

4. Mung beans is the most active local product rich in plant protein, but given the allergenic properties of mung beans, it is advisable to periodically add mung beans, beans and peas to children's diets.

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