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EFFECT OF CHITOZAN BOMBIX MORBI IMMUNOMODULATOR ON THE PHYSIOLOGICAL STATE OF CHICKENS

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Abstract:

The effect of the chitosan-hydroxyapatite immunomodulatorbombixmorbi on growth and development, morphological blood parameters in percentage of survival, number of leukocytes, and various biochemical and immunological parameters in blood serum in chickens is investigated in this research.

Keywords: Chitosan, immunomodulator, blood, biochemistry, immunostimulant, red blood cells, leucocyte, platelets, hemoglobin, KFK2, group.

INTRODUCTION.

One of the most profitable sectors is poultry farming. Poultry meat output in agriculture is expanding faster than any other animal species, according to the global livestock sector's expansion.

Because of the increased demand for dietary poultry meat and eggs, public interest in meat and eggs is increasing due to the rapid growth of the poultry business and the short-term recovery of high quality, low-cost meat and eggs relative to feed consumption. As a result, poultry accounts for more than 10% of the country's overall meat production.

Bioactive compounds with biostimulatory and immunomodulatory activities have been widely employed to improve the physiological state of hens in poultry in recent years in order to attain high production. These medications have a good effect on chicken meal absorption, not only speeding up metabolism in the body, but also increasing chicken production by restoring physiological, immunological, and biochemical parameters to normal. **[7]**

The circulatory system is affected by the operation of many organs in a chicken's body, even if they are inactive for a period of time. In a generally normal physiological condition of the organism, the morphological, biochemical, and immunological blood parameters of chickens are more or less consistent. **[9].**

In hens, immunomodulatory medicines speed up physiological processes. They are employed in animal husbandry, poultry farming, and botany and come in a variety of biological, chemical, and physical forms.

Biostimulants also include antibiotics, vitamins, hormones, some serum, tissue, bacterial, and medicines, according to some people's classification.

Chickens have biological traits that set them apart from other animals. This is owing to their rapid growth, high production, embryonic development outside the mother's body, skin, digestion, immune system, and other characteristics.

Biogenic stimulants have an essential role in the growth and development of poultry, particularly in ill chickens, by improving metabolism and thereby boosting the rate of ovulation. Experiments have been used by many scientists to investigate this topic.

Various poultry farms face economic losses owing to hypovitaminosis, diminished immunodeficiency, canning, and weight loss while breeding varieties of chickens are brought into the country and kept under artificial light due to inadequate feed quality. In foreign countries and in our country, the use of biologically active substances from various

chemical groups is very effective in preventing the aforementioned problems, such as the addition of the immunomodulator gossypirin to broiler chickens at the age of 28-32 days at a dose of 500 mg per kg of feed increased their survival rate and percentage of live weight gain. To solve the above problems scientists of the Institute of Polymers and Physics of the Republic of Uzbekistan have developed chitosan-hydroxyapatite preparations containing elements of Ca and P and immunomodulatory properties, synthesizing them from local raw materials to study the effect areas on morphological blood parameters, leukocytic formula, biochemical and immunological blood parameters.

In this regard, 80 chickens of the "Loman LSL CLASSIC" breed were taken for laboratory experiments from the "NARGIZA PARRANDA" poultry farm in Samarkand Region and brought to a private farm, placed on a bed and divided into 4 groups. 20 head each. Including 1 comparative control group, 2 experimental groups 10 mg/kg Chitosan Bombyx mori hydroxyapatite 20-80, 20 chickens in 3 experimental groups 15-50 Chitosan Bombyx mori hydroxyapatite 50-50/kg and 40 chickens in experiment 4 were given 18 mg/kg of Chitosan Bombyx Mori Hydroxyapatite 70-30 feed for 30 days.

The efficacy of the immunomodulators used was determined by the improved method of M.V. Krilov to study the scale of the effect on the survival rate and live weight gain of chickens.

On the 10th, 20th and 30th day of each ten-day experiment, we determined the morphological parameters of blood and the leukocyte formula by drawing blood from the axillary vein of chickens to determine the morphological parameters of blood.

The amount of hemoglobin in the blood was determined by the hemoglobin cyanide method (with acitonecyanohydrin) on a KFK2 device. **[8]**

The number of erythrocytes, leukocytes and thrombocytes in 1 mm^3 of blood was counted in a Goryaev counter network by staining with Romanowsky Gimza and methylbialent dyes [6].

Blood smears were stained by the Pappenheim method [6], immunological indices were determined by the leukocyte formula.

Biochemical parameters of blood samples were determined in the medical laboratory of ARSYMED at Samarkand City Hospital on a CS-T180 device.

The figures obtained during the experiment were processed statistically according to [10]. The degree of reliability between the numbers was determined according to Student's Table $R \leq 0.05$.

RESULTS OBTAINED.

The first chicks obtained for the laboratory experiments were a control group fed a farmer's diet. From 10 days for chickens in experimental group "2-3-4", experimental group 2 - 35 mg / kg of chitosan Bombyx mori hydroxyapatite 20-80, in the 3rd experimental group 40 chickens chitosan Bombyx mori hydroxyapatite "25 mg / kg 50-50 and 40 chickens in experimental group 4 were fed 18 mg / kg chitosan Bombyx mori hydroxyapatite 70-30 for 30 days.

The effectiveness of the drugs was determined by the percentage of chick survival and gain of chicks.

1. During the experiment, chickens of the experimental groups receiving chitosan fractions consumed food with appetite. In all experimental groups, the retention rate was 100% and the weight gain was 145.2-146.5-151.3%. The control group fed 94.3% of the chicks fed the farmer's diet and the weight gain was 140.5%. The results of the experiment are shown in the table.

Table 1

Effect of Bombyx mori hydroxyapatite chitosan on chick survival and weight gain.

№	Groupname	Drug dosage (мg/kg with food)	Number of chicks in the group (head)	Conservatism (%)	Live weight (%)
1	Control	-	40	94,3	140,5
2	Experience Chitosan20-80	10	40	100	145,2
3	Experience Chitosan50-50	15	40	100	146,5
4	Experience Chitosan70-30	18	40	100	151,3

The results of the first experiments showed that different fractions of chitosan hydroxyapatite bombyx mori not only maintain 100% survival of chickens, but also increase their live weight.

Blood morphology and serum protein levels determine the general functional and immunological state of the body.

2. In the second part of the experiment, experiments and observations showed that on the 10th, 20th and 30th days of each decade, blood samples were taken from the submandibular vein of chickens to determine morphological parameters and leukocyte counts, bombyx mori hydroxyapatite chitosan was used in testing blood samples of chickens in the experimental groups from the beginning to the end of the experimentChickens in the experimental group 4 Chitosan Bombyx Mori Hydroxyapatite 70-30 with 18

mg / kg of feed for 30 days with red blood cells from 8.2 to 16.2% and hemoglobin from 8.3 to 13.3% in the comparative control group. Chickens of experimental groups 2 and 3 were given Chitosan Bombyx Mori Hydroxyapatite 20-80 and Chitosan Bombyx Mori Hydroxyapatite 50-50 at a dose of 35 and 25 mg/kg feed, respectively there was no significant difference in blood tests.

3. In the third part of the experiment, the following results were obtained when blood samples from the submandibular vein of chickens in the laboratory were taken to determine serum mineral levels on days 10 and 30 of each decade.

When we slaughtered chickens on days 10-30 of the experiment and checked serum mineral amounts, chickens in group 4 received a chitosan fraction of 70-30 from beginning to end of the experiment, and their serum Ca content was 15 -17 %, P 9-10%, Na 6.5-7%, K 20-24%, Mg 29-37 %, Group 3 "Chitosan 50-50" Ca fraction 7-11%, P 6-8%, Na 3.5-4%, K 20-23 %, Mg 10-14.5 % and it was found that the Ca7-8 %, P 1.5-2%, Na 2-3 %, K 15-18 %, Mg 28-30.5 % larvae of Chitosan 20-80 group 2 were increased compared to the blood analysis of chickens in the comparative control group..

4. In the fourth part of the experiment, lymphocytes are produced mainly in the primary or central lymphoid organs (thymus and bone marrow at a high rate of 109/day. Lymphoid cells make up almost 20% of leukocytes.

B-lymphocytes are called B-lymphocytes because they are formed from cells of this type in the tissue sac of chickens and in the bone marrow of mammals. B-lymphocytes play an important role in the development of immunity. Their most important product, immunoglobulins, which represent humoral immunity, cannot be grown by any other molecular organism cells.

T-lymphocytes are mainly formed in the thymus and are completely formed there. The free movement of T-lymphocytes allows them to encounter most antigens.

Considering that T-B-lymphocytes are the basis of the immune system of birds, the effect of Chitosan hydroxyapatite bombyxmori on T-B-lymphocytes was studied.

On day 10-30, experiments were conducted to determine the percentage of T-B-lymphocytes in the blood, blood samples were taken from the chick's axillary vein and tested in the laboratory, and the following results were obtained.

The fractions of bombyx mori hydroxyapatite chitosan preparation in chicken blood were as follows. The blood of chickens receiving fraction XZ / GA 20-80 from the beginning of the experiment to the end of the experiment, T-lymphocytes 14%, B-lymphocytes 5.5%, in fraction XZ / GA 50-50 T-lymphocytes 19%, B-lymphocytes 11%, T-lymphocytes in fraction XZ / GA 70-30 were higher by 24%, B-lymphocytes by 17%. T-B-lymphocytes in the blood of chickens of the comparative control group showed no significant changes until the end of the experiment.

DISCUSSION.

Biostimulants of various chemical groups and bioactive substances with immunomodulatory properties are used to build a healthy herd of chickens and increase their productivity **[1. 2. 4]**

[6]According to him, the use of fosfrenil in chickens gave positive results in the study of the physiological state of chickens, the spectrum of effects on hematological andimmunological blood parameters. Similar results were obtained by applying various immunomodulators **[4]** to the physiological state of chickens.

CONCLUSION.

The results of laboratory experiments using different fractions of the immunomodulator chitosan hydroxyapatite bomb are as follows.

Chitosan bombyx mori hydroxyapatite 20-80 at a dose of 35 mg/kg feed for 10-30 days increased chick survival to 100% and increased live weight gain of 1 chick by 145.2%. Chitosan hydroxyapatite bombyx mori with 50-50 preparations at 25 mg/kg feed for 10-30 days resulted in 100% survival and 146.5% live weight gain.Chitosan bombyx mori hydrooxyapatite 70-30 with 100 mg of food for 10 days at 10 days for 30 days when added to the diet according to the instructions 100% preservation and at the end of the experiment the average live weight gain of 1 chick 151.3 %. When chickens in the comparative control group were fed the farmer's diet, their survival rate was 94.3% and the average gain in live weight per hen at the end of the experiment was 140.5%.When chitosan bombyx mori hydroxyapatite 20-80, 50-50, 70-30 chickens of the experimental group were injected according to the instructions to immunomodulators on the 10th day of the experiment the red blood cells were 3-8% and hemoglobin increased by 7,7-8% relative to blood parameters of the control group chickens.By day 20 of the experiment, the number of erythrocytes in the blood of chickens in the immunomodulatory group increased by 5-11%, and the hemoglobin level increased by 9-11% compared to the blood of the control group of chickens. By day 30 of the experiment, the number of erythrocytes in the blood of chickens in the group receiving immunomodulators increased by 7-14%, and the amount of hemoglobin increased by 9-12% compared with the blood of chickens in the control group. On day 10-30 of the experiment, when we slaughtered the chickens and determined the amount of minerals in the blood serum, the chickens of group 2 were administered Chitosan 20-80 fraction, Ca 7-8%, P It was found that 1.5-2%, Na 2-3%, K 15-18%, Mg 28-30.5% increase with increasing amount at the beginning of the experiment. When the Chitosan 50-50 fraction was administered to group 3 chickens as instructed, it was found that Ca 7-11%, P 6-8%, Na 3.5-4%, K 20-23%, Mg 10-14.5% be greater than the sumWhen chickens of group 4 received Chitosan 70-

30 fraction with feed for 20 days, the Ca content in chickens from the beginning to the end of the experiment was 15-17%, P 9-10%, Na 6.5- 7%, K 20-24%, Mg it was found that 29-37% of larvae increased relative to the amount at the beginning of the experiment.

The following results were obtained by testing the immunological parameters of the blood by injecting different fractions of bombyx mori hydroxyapatite chitosan preparation for 20 days I.e, the blood of chickens receiving fraction X-Z / GA 20-80 from the beginning of the experiment to the end of the experiment, T-lymphocytes 14%, B-lymphocytes 5.5%, in fraction X-Z / GA 50-50 T-lymphocytes 19%, B-lymphocytes 11%, in fraction X-Z / GA 70-30 T-lymphocytes 24%, B-lymphocytes 17% higher. T-B-lymphocytes in the blood of chickens of the comparative control group showed no significant changes until the end of the experiment.

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