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# STUDY OF THE EFFECT OF CHITOSAN HYDROXYAPATITE ON MORPHOLOGICAL INDICATORS OF RABBIT BLOOD

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**Abstract**
For the experiment, 16 heads of 1.5-2-month-old rabbits of local breed were taken from the ‘‘Flander Rabbits 1972’ LLC Farm, located in Mirzachul District, Jizzakh Region” M.Ch.J. The first group of rabbits was the control group and was fed with farm ration. 2-3 and 4 experimental groups were given 10 mg/kg of chitosan 20-80 to the second, 15 mg/kg to the third group, and 18 mg/kg of chitosan 70-30 to the fourth experimental group for 30 days. given during The effectiveness of the used drug was evaluated based on the morphological parameters of the blood.

**Keywords**: Rabbit, chitosan, hydroxyapatite, erythrocyte, leukocyte, platelet, hemoglobin.

## Introduction

**Annotatsiya.** Tajriba uchun Jizzax viloyati Mirzacho’l tumaniga qarashli "Flander quyonchalari 1972 MCHJ fermer xo‘jaligida mahalliy zotga mansub 1.5-2 oylik quyonlardan 16 bosh olinib, har birida 4 boshdan iborat 4 ta guruh tuzildi va ular simli kataklarda saqlandi. Birinchi guruh quyonlar nazorat guruhi bo‘lib xo‘jalik ratsioni asosida oziqlantirildi. 2-3 va 4-tajriba guruhlari bo‘lib ikkinchi guruhga xitozan 20-80 preparatidan 10 mg/kg , uchinchi guruhiga 15 mg/kg va to‘rtinchi tajriba guruhiga esa xitozan 70-30 preparatidan 18 mg/kg oziqaga qo‘shib 30 kun davomida berildi. Qo‘llanilgan preparatning samaradorligi qonning morfologik ko‘rsatkichlariga qarab baholandi.

## Аннотатция

Для эксперимента от ООО «Фермерское хозяйство ООО “Фландерские кролики 1972”, относящееся к Мирзачульскому району Джизакской области» М.Ч.Ж. было взято 16 голов 1,5-2-месячных кроликов местной породы. Первая группа кроликов была контрольной и получала фермерский рацион. 2-3 и 4 опытные группы получали хитозан 20-80 по 10 мг/кг второй, третьей группы - 15 мг/кг, четвертой опытной группы - 18 мг/кг хитозана 70-30 в течение 30 дней. данное во время Эффективность использованного препарата оценивали на основании морфологических показателей крови.99

**Kalit so‘zlar:** quyon, xitozan, gidroksiapatit, eritrotsit, leykotsit, trombotsit, gemoglobin

**Ключевые слова:** кролик, хитозан, гидроксиапатит, эритроциты, лейкоциты, тромбоциты, гемоглобин

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## Introduction

Agriculture occupies a large place in the economy of our republic as a leading branch of production. This sector provides the population with various consumer goods and food products. The rabbit breeding sector also plays a large role in supplying the population with agricultural products. Because the rabbit breeding sector plays an important role in satisfying the daily needs of the population with dietary meat rich in nutritious protein and fur products used in industry. In addition, its meat differs from that of other animals in its low cholesterol content. 90 percent of the protein in its composition is fully absorbed by the human body. In addition, rabbit meat contains substances such as lecithin, which are beneficial to human health. It is also rich in mineral salts, calcium and phosphorus. In general, it has a good taste. Due to such positive qualities, rabbit meat is recommended for people with liver, stomach, cardiovascular system diseases, diabetes, and allergies. In addition, natural and valuable fur is obtained from it [1; 2; 3].

Rabbit skin is also a high-quality raw material for the production of leather goods and footwear. One kilogram of rabbit wool can produce 2000 meters of high-quality thread. In short, this long-eared animal has many useful aspects. Therefore, the development of this industry is urgent [4; 5]. Taking into account the fact that the preparation of chitosan Bombyx mori hydroxyapatite contains Ca and P elements and has immunomodulatory properties, the aim is to determine the spheres of influence of its various fractions on the physiological state of the rabbit organism and some hematological parameters of the blood and solve the above-mentioned problems [6; 7; 8].

## Materials and Methods

For laboratory experiments, 16 rabbits of the local breed aged 1.5-2 months were taken from the "Flanders Rabbits 1972" LLC farm in the Mirzachul district of the Jizzakh region, and 4 groups of 4 rabbits each were formed and kept in wire cages. The first group of rabbits was fed on a farm diet. The second group was given 10 mg/kg of the preparation chitosan 20-80, the third group 15 mg/kg, and the fourth group 18 mg/kg of the preparation chitosan 70-30 for 30 days. Morphological parameters of the blood were examined on the 10th, 20th and 30th days of the experiment. The amount of hemoglobin in the blood was determined using the hemoglobin cyanide method of I.P. Kondrakhin (1985) using a KFK apparatus with acetone cyanhydrin. The number of erythrocytes and leukocytes in 1mm3 of blood was determined by staining with Romanov Giemsa and methyl violet using the method of I.A. Bolotnikov, Y.V. Solovyov (1980). The numbers obtained during the experiment were statistically processed using the method of P.F. Rokiysky (1973), and the difference between them was determined using the Student table. $P \leq 0.05$.

## Results and their Analysis

The experiments and observations showed that when rabbits in the second experimental group received 10 mg/kg of chitosan 20-80 in food for 30 days, the number of erythrocytes increased by 3.4-6.0-7.2% on days 10-20-30 of the experiment, and the hemoglobin content increased by 4.1-7.0-7.9%. When rabbits in the third experimental group received 15 mg/kg of chitosan 50-50 in food for 30 days, the number of erythrocytes in their blood increased by 7.0-10.2 and 7.3% on days 10-20 and 30 of the experiment, and the number of erythrocytes in 1 mm3 of blood of rabbits in the fourth group increased by 9.6-12.0-11.8%, which is higher than the blood parameters of

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rabbits in the comparative control group. The results are presented in the table below.

**Effect of chitosan hydroxyapatite on the morphological parameters of rabbit blood. (M±m; n= 4)**

| № | Guruhlar nomi | Tekshiruv kunlari | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 10 | | | 20 | | | 30 | | |
| | | Erythrocyte ($10^{12}$/l) | Hemoglobin (g/l) | Leukocyte ($10^{9}$/l) | Erythrocyte ($10^{12}$/l) | Hemoglobin (g/l) | Leukocyte ($10^{9}$/l) | Erythrocyte ($10^{12}$/l) | Hemoglobin (g/l) | Leukocyte ($10^{9}$/l) |
| 1 | Comparative control | 3.21±0.12 | 94.0±0.6 | 8.8±0.98 | 3.01±0.14 | 93.0±0.9 | 8.5±2.11 | 3.47±0.06 | 94.0±0.6 | 8.7±1.56 |
| 2 | Experiment Chitosan 20-80 | 3.32±0.10 | 98.0±4.1 | 9.1±1.19 | 3.20±0.11 | 100.±0.5 | 8.7±1.55 | 3.51±0.13 | 102.0±0.8 | 8.8±1.2 |
| 3 | Experiment Chitosan 50-50 | 3.45±0.07 | 101±3.3 | 8.9±2.15 | 3.35±0.10 | 102.0±1.4 | 9.0±0.87 | 3.78±0.16 | 104. ±2.1 | 8.96±1.73 |
| 4 | Experiment Chitosan 70-30 | 3.55±0.06 | 102.0±2.1 | 8.5±1.37 | 3.42±0.08 | 103.0±4.6 | 8.8±1.40 | 3.93±0.05 | 105. ±1.1 | 8.7±1.89 |

## Conclusions

When analyzing the data obtained from laboratory experiments of scientific research works, it was found that the immunomodulators used increased the number of erythrocytes and hemoglobin in the morphological indicators of the blood of chickens and did not have a negative effect on the number of leukocyte types in the leukocyte formula.

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