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Changes In Natural And Hygroscopic Moisture Content Of Broiler Chickens In Postnatal Ontogenesis

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Annotation. In the postnatal ontogenesis of broiler chickens, the dynamics of changes in the amount of natural and hygroscopic moisture content in the femur were studied. It was noted that the relative amount of natural moisture in the bone marrow of broiler chickens decreases from the first day of postnatal development to day 35, while the relative amount of hygroscopic moisture increases during this period. In all the experimental groups studied, a decrease in the relative amount of natural moisture in the bone marrow of broiler chickens and an increase in the relative amount of hygroscopic moisture were found to be somewhat accelerated until the 14th day of postnatal ontogeny. Changes in the relative humidity and hygroscopic moisture content of the hip bone were observed, especially in experimental group 4 broiler chickens to which 0.08 ml of probiotics were added to the water.

Keywords: poultry, chicken, broiler, postnatal ontogeny, hip bone, natural moisture, hygroscopic moisture, growth rate, relative quantity, experiment, probiotic.

Introduction. It is important to develop the poultry industry in our country and increase the volume and expand the production of finished products for export, as well as to provide the population with quality and affordable poultry products of domestic production.

Today, environmentally safe probiotics are widely used to increase efficiency in poultry. The effect of probiotics at different stages of postnatal ontogeny of birds is of scientific and practical importance in determining the effect on the morphogenesis of voluntary motor organs, as in all organs.

According to the researchers, high biological efficacy was observed in the use of natuzim, rovimix and manganese citrate in broiler chickens belonging to the Smena 7 cross. The use of complex biologically active substances allowed to increase the live weight of broiler chicks at 35 days in the experimental group by 10-16% compared to the control group. The authors also found that the need for calcium and manganese in the first 14 days of broiler chickens was slightly higher, which is reflected in the active accumulation of these elements in the tissue of the big shin bone. [1].

In the research of AV Kosov it was found that the saturation of organic matter in the bones of broiler chickens and peripheral skeleton with minerals increases in the early stages of postnatal ontogeny and reaches its maximum at the end of the feeding period (1-7 days). The author notes that the mineral saturation of organic matter is higher in broiler chickens of all ages than in the femur in the greater femur, and that the initial stage of mineralization of bone tissue occurs at 14 days of age and the final stage at 35 days of age. Minimal retention of phosphorus in the bone tissue of broiler chickens was

observed on the first day of postanatal ontogeny and increased in the later stages of growth and development, and the Ca: R ratio in the examined bones was also increased [2].

In the postnatal ontogenesis of ROSS-308 cross of broiler chickens, scientific studies have been conducted on the specific features of the morphological structure of skeletal bones, which allow to target the growth and development of bone tissue. It is recognized that a qualitative change in another stage of growth - development. The formation of bone tissue is somewhat accelerated, reaching high levels and ensuring a maximum increase in muscle mass [7].

Bone tissue forms a skeleton that protects the internal organs from injury and is part of the locomotor apparatus. Bone tissue is composed of cells and intercellular substances, 67% of which are made up of mineral components that provide high hardness and 33% of which are made up of organic substances that provide elasticity. [3]. Bone tissue cells include osteoblasts, osteocytes, and osteoclasts. They originate from the aortic cells of the blood and develop in the scheme of osteogenic cells - forming - osteoblasts - osteocytes [6, 9].

Osteoblasts synthesize and produce intercellular substances, participate in its calcification, control the entry and exit of calcium and phosphorus into bone tissue. Collagen, which is synthesized by osteoblasts, makes up 90 percent of all proteins that are formed. The mineralization of intercellular substances is twofold: the accumulation of hydroxyapatite crystals from an over-saturated intercellular fluid in front of collagen fibrils; As a result of mineralization, 90-95% of calcium salts are included in the collagen fibers [4].

According to the authors, the disruption of the mineralization process in the bones is caused by a decrease in the amount of calcium, phosphorus and vitamin C in the blood and leads to a violation of collagen fiber synthesis. The activity of osteoblasts is regulated by hormones and other biologically active substances, as well as factors produced by osteoclasts and osteoblasts themselves. [5, 8, 10, 11].

Materials and methods. The research was carried out on the bones of 1-day-old ROSS 308 cross broiler chickens brought from Samarkand region "Dargom parranda fayz" LLC. Divided into 4 groups with 40 chicks in each. All group of chicks were fed a ration of the same composition. The first group of chicks were given only food and water; the second group of chicks was given food, water and farm vaccines, prophylactic drugs; probiotics prepared from Bacillus subtilis isolated by SamVMI specialists for 7 days were added to the third and fourth group of chickens daily water, ie food, water and 0.04 ml of probiotics were added to the chickens of the third experimental group for a period of 1 to 7 days; 0.08 ml of probiotics were added to the chicks of the fourth experimental group during the same period. Morphometric measurements were obtained on days 1, 7, 14, 21, 28, and 35 of the experiment.

Used by NP Chirvinsky in determining the linear dimensions and weights of organs and scientists of the Samarkand Institute of Veterinary Medicine (DH Narziev, MH Allamurodov, AS Daminov, RM Tashtemirov, NB Dilmurodov) general morphological methods improved and introduced by were used.

All numerical data obtained as a result of scientific research were mathematically processed by the method of EK Merkureva.

Mathematical-statistical analysis was performed on a computer's Microsoft excel spreadsheet using Student and Fisher criteria.

Results and their analysis. Scientific studies have shown that changes in the natural and hygroscopic moisture content of bone composition in the postnatal ontogeny of broiler chickens show specific dynamics.

The natural moisture content of the femur was 45.8 ± 0.86% on day 1 of postnatal ontogeny of broiler chickens in the first experimental group, and at 7 days this figure was almost unchanged (44.3 ± 0.42%,

K = 0.97; p <0.01), a slight decrease in 14 days (38.0 ± 0.59%, K = 0.86; r <0.02) and a significant decrease in subsequent studies, ie at 21 days - 37.2 ± 0.63% (K = 0.98), at 28 days - 36.0 ± 0.71%, and at 35 days - 34.0 ± 0.94% (K = 0.94; r <0.03) was found to be equal to. The relative hygroscopic moisture content of the bone was slightly lower (1.0 ± 0.035%; r <0.04) in 1 day of broiler chickens in this experimental group, and was observed to increase inversely with the natural moisture content during the following days of postnatal development. That is, this figure was 1.52 ± 0.042% on day 7, 2.3 ± 0.04% on day 14 (K = 1.51; r <0.02), and 2.74 ± 0.084% on day 21. was found to be 3.2 ± 0.05% on day 28 and 3.65 ± 0.07% (r <0.02) on day 35.

In the second experimental group, the natural moisture content of the bone marrow of broiler chickens was 45.8 ± 0.84% on the first day of postnatal ontogeny, with a rapid decrease on day 14 (38.5 ± 0.83%, K = 0.88; r < 0.03) and a gradual decrease in subsequent stages, i.e. 37.7 ± 0.7% (K = 0.98) on day 21, 36.0 ± 0.85% on day 28, and 34 on day 35. , 2 ± 0.42% (K = 0.95; r <0.02). The hygroscopic moisture content of the femur of broiler chickens in this group was 1.07 ± 0.04% on day 1 and 1.56 ± 0.05% on day 7 of postnatal ontogeny (K = 1.46; r <0.04). up to 2.3 ± 0.05% on day 14, up to 2.8 ± 0.05% (K = 1.22; r <0.02) on day 21, 3.33 ± 0 on day 28, Up to 08% (K = 1.19), an increase of 3.8 ± 0.06% was observed on day 35. During the studied stages of postnatal development of broiler chickens, it was observed that the growth rate of the relative moisture content of the femur decreased to 0.75 times, the relative value of hygroscopic moisture increased to 3.55 times.

In the third experimental group, the relative amount of ash in the bone marrow of broiler chickens was 45.9 ± 0.67% on the first day of postnatal development, up to 45.0 ± 0.61% on day 7, and 39 on day 14. Decreased to 0 ± 1.17% (K = 0.87; r <0.04) and did not change significantly in the following days, ie 38.1 ± 0.97% on day 21 and 37.0 ± on day 28. 0.5%, and on day 35 it was noted to be 35.0 ± 0.8% (K = 0.94; r <0.03). The relative amount of hygroscopic moisture in the femur increased from 1.12 ± 0.04% to 2.41 ± 0.06% from day 1 to day 14 of postnatal ontogeny of broiler chickens, or an increase in growth rate of 1.51 times compared to 7 days. insignificant change in days, i.e. 2.9 ± 0.0061% on day 21, 3.43 ± 0.04% on day 28 (K = 1.2; r <0.02), and 3 on day 35, 9 ± 0.06% was observed.

In the fourth experimental group, on the first day of postnatal ontogeny of broiler chickens, the relative moisture content of the femur was 46.0 ± 0.61%, which increased to 45.2 ± 0.94% on day 7, and a rapid decrease to 39 on day 14. Up to 5 ± 1.25% (K = 0.87; r <0.04), from 21 days to 35 days, ie 38.6 ± 0.76% at 21 days, 37.5 ± 0.5 at 28 days % (K = 0.97; r <0.02), and at 35 days it decreased to 35.5 ± 0.79% (K = 0.95; r <0.03). The amount of hygroscopic moisture in the bone content of broiler chickens is slightly lower at 1 day, 1.12 ± 0.04%, and at 7 days to 1.65 ± 0.04%, at 14 days 2.5 ± 0.06% (K = Up to 1.52; r <0.03), 3.0 ± 0.05% at 21 days, 3.51 ± 0.06% at 28 days, and 4.06 ± 0.08% at 35 days (K = 1). , 16). It was found that the growth rate of the relative moisture content of the bone marrow of broiler chickens decreased by 0.77 times from the first day of postnatal ontogeny to 35 days, and the growth rate of hygroscopic moisture increased by 3.63 times.

Conclusion:

- It was noted that the relative amount of natural moisture in the bone marrow of broiler chickens decreases from the first day of postnatal ontogeny to day 35, and the relative amount of hygroscopic moisture increases during this period;

- All experimental groups of broiler chickens observed a decrease in the relative amount of natural moisture in the femur and an increase in the relative amount of hygroscopic moisture until the 14th day of postnatal ontogeny;

- Changes in the relative humidity and hygroscopic moisture content of the hip bone, especially in experimental group 4 broiler chickens with 0.08 ml of probiotics added to the water, were characterized by a 35-day decrease in natural moisture and a slightly higher hygroscopic moisture increase than in the other experimental group.

References:

1. Галашов В.В. Витабелмин в кормлении цыплят-бройлеров. Автореф. дисс…канд.биол.наук. Москва, 2012. -20 с.

2. 3. Георгиевский В.И., Анненков Б.Н., Самохин В.Т. Минеральное питание животных. – М.: «Колос», 1979. – 471 с.

3. 2. Косов А.В. Формирование костной ткани и её минерализация у цыплят-бройлеров при использовании витаминно-минеральной добавки. Автореф...канд.биол.наук. Боровск, 2009. -25 с.

4. 11. Мелехин Г.П., Гридин Н.Я. Физиология сельскохозяйственной птицы. – М.: «Колос», 1977. – 288 с.

5. 7. Набоков З.И. Влияние минеральной добавки на продуктивность индеек // Птицеводство. – 2015. - № 7. – С. 41-42.

6. 4. Подобед Л.И. Руководство по кальций-фосфорному питанию сельскохозяйственных животных и птицы: монография. – Одесса: «Печатный дом», 2005. – 410 с.

7. 6. Сельманович Л.А. Морфология позвонков цыплят-бройлеров кросса РОСС-308 в постнатальном онтогенезе // Ученые записки Витебск ГАВМ, 2020. –С. 51-54.

8. 8. Черненок В.В., Симонов Ю.И., Симонова Л.Н., Черненок Ю.Н. Клинические лабораторные исследования крови. Показатели в норме и при патологии. – Брянск: Издательство Брянской ГСХА, 2011. – 34 с.

9. 5. Coelho M. Involvement of calcium and phosphorus in bone and shell quality of early maturing commercial layers // World Poultry. – 2001. – Vol. 17. - № 6. – P. 16-19.

10. 9. Lukić M., Pavlovski Z. Adequate calcium nutrition and quality of egg shell and bones in layers – innovative approach // Biotechnology in Animal Husbandry. – 2011. – Vol. – 27. – P. 485-497.

11. 10. Silversides F.G., Korver D.R., Budgell K.L. Effect of strain of layer and age at photostimulation on egg production, egg quality and bone strength // Poultry Science. – 2006. – Vol. 85. – P. 1136-1144.