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Veterinary and Sanitary Examination of Slaughterproducts From Broiler Chickens When Using Protein Hydrolysate.

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ABSTRACT

Comparative experimental data on the influence of the preparation “Abiopeptide” on the quality and safety of broiler chicken meat have been obtained. A scientifically based veterinary and sanitary examination of slaughter products from broiler chickens has been developed and proposed on the basis of a complex of organoleptic, physical and chemical, microbiological and histological indicators. The results of the studies have proved the improvement of veterinary and sanitary indicators of broiler chicken meat and have indicated the possibility of using the preparation “Abiopeptide” to increase the growth of live weight due to the increase in muscle tissue. A positive effect of “Abiopeptide” on clinical and biochemical parameters of blood has been noted. There have been no negative effects of the preparation on the physiological status of the chickens. The data obtained from complex scientific research are of practical significance for conducting veterinary and sanitary examination and veterinary and sanitary assessment of the safety and quality of slaughter products from broiler chickens that received the preparation “Abiopeptide”.

Keywords: Abiopeptide, broilerchickens, feed additive, slaughter products, meat examination, blood indicators.

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INTRODUCTION

It is impossible to avoid the influence of anthropogenic factors while using industrial technology of growing broiler chickens [1]. The development of stress causes a number of negative consequences in poultry, such as disorders of vegetative, nervous, cardiovascular, digestive, immune systems, decrease in the overall resistance of the organism [2,3,4]. As a result, egg and meat productivity of poultry greatly reduces which leads to a large loss in production [5]. There is a need to prevent the consequences of the influence of stress factors on poultry by using various medicines, feed additives, etc. in their diet while growing them industrially. Therefore, protein hydrolysate preparations attract certain interest in the poultry industry [6,7]. The mechanism of the action of these preparations is due to an increase in the total protein concentration, globulin fractions and bactericidal activity in the blood serum, hemoglobin concentration and other hematological indicators [8,9,10].

The purpose of our work is to study the complex of organoleptic, physical and chemical, microbiological and histological indicators of broiler chicken meat when using the preparation “Abiopeptide”.

MATERIALS AND METHODS

The research was carried out at the Department of the Technology of Producing Animal Products in Mari State University and in the chicken breeding department in LLC “Rodnik” in Sovetskiy District in the Mari El Republic. The experiment was carried out in the Kobb 500 cross boiler chickens. In accordance with the purpose and objectives of the study, two groups of 40 heads in each were made. The chickens were kept under the same conditions, with the optimal zoohygienic parameters being observed. The first group of the chickens was control and received a basic diet. The chickens in the second group received the basic diet and the preparation “Abiopeptide” with water at a dose of 1 ml/1 kg of poultry. Slaughter of the broiler chickens of the experimental group and part of the chickens of the control group was performed on the 14th day.

Clinical status of the poultry was assessed by clinical and hematological indicators. The general state of the poultry was assessed – behavior, appetite, thirst, appearance. Weighing was performed daily. The control weighing was performed before slaughtering.

When taking blood, all the rules of asepsis and antisepsis were observed. The blood was taken from the axillary vein before feeding. Biochemical blood test was carried out on Stat Fax 4200+ biochemistry analyzer. Ready-made reagent kits from Vital Diagnostik were used. To mature meat, the dressed chickens stored at a temperature of +4°C during a day. Post-slaughter veterinary and sanitary examination of the dressed chickens and internal organs was carried out in accordance with the normative document “Rules for veterinary examination of slaughtered animals and veterinary and sanitary examination of meat and meat products”. Organoleptic study was conducted in accordance with GOST 51944-2002 “Poultry meat. Methods for determining organoleptic values of temperature and mass”. At the same time, such indicators as appearance, color, consistency, odor, muscle and fat state, flavour and transparency of the broth were taken into account. To determine physical and chemical indicators of meat, the methods described in GOST 7702.1-74 “Poultry meat. Methods for chemical and microbiological analysis of freshness” were used.

RESULTS

The clinical status of the chickens was assessed by blood test results. It is known that the poultry react very sharply to stress factors that will necessarily affect hematological indicators. With age, the number of erythrocytes increased in all the chickens. In the chickens that received “Abiopeptide” this indicator was slightly higher – by 1.7%, but it did not go beyond the limits of physiological norms at the end of the research. These changes indicated an increase in erythropoiesis. The level of hemoglobin also increased with age, but it did not go beyond the limits. The level of hemoglobin in the chickens in the experimental group was higher than in the control group by 5% at the end of the research. The level of leukocytes in the chickens of the experimental and control groups remained the same and was within limits.

The number of eosinophils and pseudo-eosinophils did not differ in the chickens in both groups and were within limits. The number of lymphocytes increased with age in chickens in both groups. On 14thday it

increased by 64%, on 35th day –by 66%. The level of monocytes remained unchanged throughout the research. The increase in the amount of total protein on 35thday was 10.3%.

One of the main indicators in the growing chickens was the live weight, on which poultry keeping and feeding influence significantly. Live weight in the chickens that received the preparation "Abiopeptide" increased more– 2389 ± 56.3 g. The preparation "Abiopeptide" stimulates metabolic processes in chickens and prevents from stress effectively. This allowed the poultry, that received the preparation, to gain weight quickly and steadily, in comparison with the control group.

The mass gain was due to the increased yield of edible parts, in particular the muscles of the breast and thighs. The yield of low-value parts was less in the experimental group than in the control group. The yield of edible parts was higher in the experimental group than in the control group. The slaughter yield in the experimental group was 65.4%, and in the control group–62%.

The weight of dressed chicken in the experimental group was higher than in the control group by 2.9%. The weight of inedible parts was higher in the control group than in the experimental one. The weight of the liver and the heart in the studied dressed chickens was identical.

The organoleptic analysis has shown that the surface of the studied dressed chickens was dry, light yellow with a pinkish tinge. Serous membranes were without pathological changes, smooth and moist. Muscles were slightly moist in the cut, light pink, firm. The smell was specific, peculiar to fresh meat of poultry. The broth was transparent, flavour.

The assessment of taste has shown a relatively high score for the samples from dressed chickens that received "Abiopeptide". According to the panel lists, the meat from the chickens in the control group was worse than the meat from the chickens in the experimental group in juiciness, tenderness, taste and flavor. Consequently, the preparation improves the merchandising quality of meat.

When examining the heart, no pathological changes were found. The heart was elastic, reddish-brown, triangular-shaped with a pointed apex. The broiler chickens in both groups have a slight fat deposition at the base of the organ.

When examining the liver, no foci of necrosis, hemorrhages, or other pathoanatomical changes were found. The colour of the liver was brown, with a pinkish hue; there were spots of a yellowish hue on the organin some dressed chickens. The parenchyma was slightly flabby. The changes indicated liver dystrophy and were observed in the broiler chickens both in the experimental and control groups. When examining the kidneys, no pathological changes were found. The organ was firm, without hemorrhages and necrotic foci. The muscular stomach did not have any pathological changes. The shell was clean, without any hemorrhages.

CONCLUSION

Thus, it can be concluded that the preparation "Abiopeptide" helps to enhance haemoglobin synthesis and increase intensification of metabolic processes in the body that allows poultry to adapt quickly to the influence of environmental factors. There were no inflammatory processes or allergic reactions in the chickens. The meat of broiler chickens in the experimental and control groups had no significant differences in organoleptic and physical and chemical indicators.

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