

арқылы алынды. Озон антисептикалық препарат ретінде стандартты "DICHО"озонаторының көмегімен алынды. Шунгит антисептикалық препарат ретінде, шунгит ерітіндісі түрінде алынды. Анолит пен озон кешені түріндегі" ОЗАН " антисептикалық препараты анолит ерітіндісін 5 минут озондау арқылы алынды. Клиникалық сынақтар GCP халықаралық ережелеріне сәйкес жүргізілді. Табиғи, химиялық емес антисептиктердің токсикологиялық және аллергиялық қасиеттерін зерттеу нәтижелері шунгит пен озонның зертханалық жануарлардың денесі үшін мүлдем зиянсыз екенін көрсетті. Анолит пен ОЗАН зертханалық жануарлардың денесіне де зиянсыз. Химиялық шыққан антисептикалық препараттар мен тұзды ерітінді (салыстыру стандарты ретінде) токсикологиялық және аллергиялық қасиеттерге ие және зертханалық жануарлардың өліміне әкеледі. Мұны аутопсия материалдары мен клиникалық бақылаулардың нәтижелері дәлелдейді.

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Student: Boysinova N.B., PhD student

Samarkand state university of veterinary medicine, livestock and biotechnology, Samarkand,

Student: Abdurakhmanova N.S., PhD student

Samarkand state university of veterinary medicine, livestock and biotechnology, Samarkand,

Student: Ibragimov F.M., assistant

Samarkand state university of veterinary medicine, livestock and biotechnology, Samarkand,

Student: Kholmuminov F.U., undergraduate

Samarkand state university of veterinary medicine, livestock and biotechnology, Samarkand,

Scientific adviser: Ibragimov F.B., Candidate of Veterinary Sciences, Associate Professor Samarkand state university of veterinary medicine, livestock and biotechnology, Samarkand.

BIOLOGICALLY ACTIVE FEED ADDITIVES IN POULTRY AND VETERINARY AND SANITARY EVALUATION OF BROILER MEAT

ANNOTATION

The activation of poultry production is currently one of the most urgent problems in the country, since it is directly related to improving human nutrition.

Poultry meat differs from the meat of other animals in its chemical composition and easy digestibility in the human organism. Poultry meat is a good source of complete protein and has less connective tissue than beef, that makes protein easier to digest.

One of the main principles of the intensification of poultry production is the rational use of feed. Currently, the main obstacle to the further development of poultry farming is the limited feed resources. In this regard, an important area of research in the field of poultry feeding is the search for non-traditional and cheaper feed products that are close in their biological value to traditional feed products and allow reducing the share of grain in the ration. Some of the non-traditional poultry feeds have been well studied, but they have not been properly evaluated, nor have they been put into production. Under certain conditions, they can compensate for the lack of traditional feed.

At present, improving the quality of products, expanding the geography of sales and further technological modernization of the poultry industry is one of the priority directions.

One of the indispensable types of food, as well as a source of protein for humans, is meat.

There are many types of meat and each of them is valuable in its own way. Poultry meat is considered nutritious and very high-calorie, contains iron, potassium, phosphorus, etc.

The introduction of probiotics into the ration improves the organoleptic characteristics of broiler chicken carcasses.

Key words: *Biologically active feed additives, broiler, ration, organoleptic indicators, meat of broiler chickens, fatness.*

Introduction. Feeding has a significant impact on the growth, development, health and productivity of poultry. Therefore, the main task of conducting intensive poultry farming is the optimal use of nutrients with minimal feed costs per unit of production and obtaining high-quality products[1,2,3].

This days, poultry farmers have accumulated a significant amount of experimental data on the effective use of various biologically active and non-traditional additives for poultry [4,2].

Biologically active additives are obtained from plant, animal, mineral raw materials, as well as by chemical or biotechnological methods. Conventionally, they can be divided into three groups: eubiotics, nutraceuticals, parapharmaceuticals [5,6,7].

Eubiotics are biologically active food supplements, which include living microorganisms and (or) their metabolites, which have a normalizing effect on the composition and biological activity of the microflora of the digestive tract.

Nutraceuticals are essential nutrients used to correct the chemical composition of the ration of farm animals (sources of vitamins, polyunsaturated fatty acids, macro- and microelements, rationary fiber, and other nutrients).

Parapharmaceutical preparations are the most common group of rationary supplements, created on the basis of preparations of plant and animal origin or their synthetic analogues. They have a certain effect aimed at disease prevention, adjuvant therapy and support within the physiological boundaries of the functional activity of organs and systems. These include: organic acids, bioflavonoids, biogenic amines, oligosaccharides, etc. [8,9,6].

According to Gotovats S, Sokolova V., Volskaya E. (2003), biologically active additives are classified according to drug groups and include 14 groups of substances: antibiotics; coccidiostats and medications; emulsifiers; stabilizers, gelling agents and thickeners; dyes; conservatives; vitamins; trace elements; growth stimulants; binders; acidity regulators; enzymes; probiotics [28].

Sharshunov V.A. (2002) provides information on the division of biologically active substances into groups according to the functions they perform (Table 1). Some of these groups should definitely be included in the poultry ration to optimize it for essential nutrients.

The concept of biologically active additive is widely used today not only as a source of replenishment of essential nutrients in the human ration, but also as an integral part of the ration of farm animals, often characterized as a feed additive.

Table 1. Groups of biologically active substances (according to Z. Frydrich)

Substances		
Nutrients	Influencing feed quality or animal performance	Influencing animal health
Vitamins Trace elements Amino acids	Growth stimulants Enzymes Substance Flavor Enhancing Foods Dyes cementitious matters Probiotics Acid Regulators Other substances	Anticoccidiostats Chemotherapeutic substances

Mineral additives containing macro- and microelements are of great importance in poultry farming in comparison with many sources of biologically active substances: zeolites, vermiculites, calcium additives and others [9,10].

Speaking about the need for minerals in the rations of poultry, it is impossible not to mention the group of vitamins, with which the concept of “biologically active substances” is most often associated [11].

Most rationary supplements used in poultry farming contain a certain amount of macro- and microelements, which allows them to be used as mineral supplements.

The scientific data presented above indicate the need to use feed additives in the ration of birds as additional sources of biologically active substances. However, given the profitability of poultry meat production against the background of the use of various additives, a detailed study of the quality of the obtained products is necessary, which is not paid due attention current days.

The main task of the meat industry is to find ways and means to improve the quality of meat and meat products. Accordingly, the requirements for the quality of biologically active additives and the resulting products are increasing every year.

The quality of raw materials and meat products is determined by a combination of properties that determine its ability to meet certain needs in accordance with its purpose, and is characterized by a complex set of chemical, biochemical, physicochemical, histological and other characteristics [12,13].

In the literature, the quality of meat and meat products, based on their diversity and composition, specific properties, is associated with such criteria as organoleptic indicators, nutritional value, hygienic and toxicological conditions, and technological indicators [14].

Other sources provide information about the quality of meat products, determined by the biological value of the product, characterized by the presence in its composition of components used by the body for biological synthesis and compensation for energy costs; the stability of properties that determine the degree of possible changes in the nutritional value and safety of the product during storage, transportation and sale [6].

According to literature sources, the study of the problem of rational use of feed is reduced to the search for new non-traditional feed additives of various functional groups [4,2,3]. Particular attention in the implementation of the existing task is paid to the issues of poultry productivity and the economic effect of their use.

Based on the foregoing, it follows that the strengthening of the poultry fodder base occurs due to the effective use of non-traditional poultry food sources. The use of these additives helps to reduce feed consumption per 1 kg of live weight, increase the safety of livestock and average daily gains, increase the nutritional value and meat qualities of poultry based on anatomical cutting indicators. Many studies that would fully characterize the quality of meat when using various feed additives, including spropel and preparations based on it, are not reflected in the literature studied. In rare cases biological value indicators, organoleptic characteristics of meat and harmlessness of produced products are described [15].

In many developed countries of the world, there is a trend towards intensive development of the poultry industry, which requires certain costs, which are reduced by the use of additional fodder to ensure high productivity and safety of livestock. The primary task is to obtain a product with high nutritional and biological value [24].

The nutritional value of meat according to generally accepted terminology includes: the quantitative ratio of food substances, energy value, organoleptic characteristics of the product and the ability of substances to be digested and absorbed by the organism [25]. It depends on the content of food substances (full and incomplete proteins, moisture, fat, minerals) and the ratio of tissues (muscle, connective and fat) [26].

None of all substances of biological origin is as important and does not have as diverse functions in the life of the organism as proteins. Animal proteins are absorbed by humans more fully than plant proteins, since they have a high nutritional and biological value, which is due to

the almost complete digestibility of their enzymes of the gastrointestinal tract and the optimal content of essential amino acids [27].

Poultry slaughter and processing should be carried out on conveyor lines that ensure high labor productivity and favorable veterinary and sanitary conditions for meat production [16,17].

According to the method of processing, bird carcasses are divided into half-eviscerated and eviscerated. Half-eviscerated carcasses include carcasses with removed intestines, testicles and ovaries, and eviscerated carcasses are carcasses in which internal organs have been removed, except for the kidneys, lungs and omentum, and the head has been removed along the second cervical vertebra and legs along the tarsal joint [18].

By fatness and depending on the quality of processing, the carcasses of all types of slaughtered poultry are divided into categories I and II.

Carcasses of chickens of the I category of fatness should have well-developed muscle tissue and deposits of subcutaneous fat on the dorsal and chest parts.

Category I chickens and turkeys must have well-developed muscles and significant deposits of subcutaneous fat on the back, abdomen and chest.

Ducklings, goslings and turkeys must have well-developed muscles, deposits of subcutaneous fat on the back, abdomen and chest, the absence of subcutaneous fat on the lower leg, thighs and wings is allowed. In all types of birds of category I, except for chickens and turkey poults, the keel of the sternum should not stand out. For category I of fatness of all types of dead poultry, light abrasions, no more than two skin breaks on the carcass, but not on the fillet, single stumps and slight desquamation of the skin epidermis are allowed.

Satisfactory development of muscles, absence or slight deposits of subcutaneous fat and the release of the keel of the breast bone, as well as a small amount of stumps, single skin breaks up to 2 cm, abrasions, slight desquamation of the epidermis are allowed for the poultries of the II category of fatness. According to the quality of processing, the carcasses of all types of poultry should be well bled, with clean skin, without feather residues, bruises, abrasions and skin breaks.

In a half-eviscerated poultry, the internal cavity should be clean, the head and neck wrapped in paper. Eviscerated carcasses and giblets must be thoroughly washed.

Carcasses that meet the requirements of category II in terms of fatness, but do not meet the requirements of this category in terms of processing quality, severely deformed, are not allowed to be sold in trade [19].

Veterinary and sanitary examination is carried out in a certain sequence. Examination of carcasses and organs begins with the skin and ends examination of internal organs. During external examination of carcasses, attention is paid to the degree of bleeding, the quality of carcass processing, skin color, the presence of pathological changes in the skin, joints, tumors, injuries, etc. On the head and neck, the presence of changes characteristic of infectious diseases (smallpox, plague, cholera, diphtheria, laryngotracheitis, paratyphoid, scab), the condition of the comb, earrings, earlobes, beak, mouth and eyes are examined. During the examination of the beak notes the color, dryness, elasticity in the oral cavity, the condition of the mucous membrane of the mouth, tongue, pharynx and pharynx, its color, the presence of nodules and caseous overlays are determined.

During the examination of eyes, transparency, bulge, sagging, size of the eyeball, presence of mucus, etc., are established. With satisfactory bleeding of a healthy poultry, the skin color of the carcasses is white or yellowish, with a pink or reddish tint, light, without blue spots, blood subcutaneous vessels are not visible [19,20].

Esophagus and goiter are opened and examined, and if infectious diseases suspects trachea also opens and will be examined. During eviscerating, the intestines with the mesentery, liver, heart and lungs are carefully examined, paying special attention to the pathoanatomical changes characteristic of infectious diseases, especially such as plague, cholera, tuberculosis, ornithosis, paratyphoid fever, leukemia, etc. At the same time, the presence of hemorrhages, signs inflammatory processes, hyperemia, ulceration, nodules, parasites, etc.

During the examination of heart attention is paid to the color and condition of the pericardium, the presence of hemorrhages in the myocardium. In the liver and spleen, the consistency, color, size, and presence of pathological changes are determined. In the stomachs, hemorrhages, ulcerations are excluded, the nature of the contents is determined, etc.

In conclusion, the condition of the chest and abdominal cavities is examined, paying attention to the condition of the serous membranes, the presence of exudate in the cavities and its nature, the deposition of fibrin, hemorrhages, hyperemia, etc.

Veterinary and sanitary assessment of meat is carried out on the basis of the results of post-mortem examination, and, if necessary, when pathoanatomical data are not enough for diagnosis, bacteriological, toxicological and other laboratory tests are carried out.

Removed parts of the carcass can be realized in the form of offal, and technical waste (blood, intestines, testes and ovaries), as well as veterinary confiscated products, is used to obtain feed for poultry and animals [22,21].

Regardless of the processing method, carcasses of all types of poultry are sorted by fatness and age according to GOST 18292-2012.

In accordance with the requirements of the standard, the carcasses of all young poultry have a non-ossified (cartilaginous) keel of the sternum, a non-keratinized beak, and delicate elastic skin on the legs. The carcasses of chickens, broilers, turkey poults and caesarlings have smooth, tight-fitting scales on their legs and hell that are not developed, in the form of tubercles.

The minimum weight of cooled half-gutted carcasses of chickens of egg breeds of hens is 480 g, broiler chickens - 640 g, ducklings - 1040 g, goslings - 1580 g, turkey poults - 1620 g, caesarlings - 480 g. It is allowed to release for sale chickens of egg breeds in half-eviscerated form from 400 to 480 g, but only in the amount of 15% of the total number of carcasses in the batch.

The meat of an adult poultry includes carcasses of all types of poultry that have an ossified (hard) keel of the sternum, a keratinized beak, coarse scales on the legs of the carcasses of chickens, turkeys and guinea fowls, and geese and ducks have rough skin, roosters and turkeys have hard spurs.

To solve the problem of obtaining high-quality products, qualified quality control is necessary. The suitability of raw materials for processing for food purposes is established by the veterinary and sanitary examination. This is achieved by carefully inspecting the poultry as they enter the slaughterhouse. However, the final conclusion is made on the basis of the results of examination of tissues, glands, internal organs in the process of poultry processing and, if necessary, on the basis of the results of bacteriological examination.

The task of industrial veterinary and sanitary control is to ensure the implementation of technological instructions, specifications and standards for raw materials and ready products.

The methods of production veterinary and sanitary control include:

- inspection of the poultry before slaughter;
- quality assessment, sorting or rejection of raw materials;
- organoleptic evaluation of poultry meat - determination of appearance, smell and taste.

Sometimes an organoleptic evaluation is sufficient to determine the good quality of the meat.

- control by methods of chemical, physico-chemical and microbiological analysis.

In some cases, the good quality of raw materials is judged by the presence of pathogenic microflora in it or the total number of microorganisms. The final conclusion about the suitability of this product is made on the basis of the results of bacteriological analysis.

All types of control at slaughterhouses of the poultry processing industry are performed by specialists from the departments of production and veterinary control (PVC) [22].

Conclusion. Analyzing the above literature data, it can be noted that the use of probiotics of different spectrum of activity in feeding and rearing meat poultry is advisable from the point of view of safety, bird health, growth intensity and meat productivity. Also, during the use of

probiotics, the possibility of contamination of the carcass with pathogenic microorganisms in the intestine is excluded.

Meat differs from the meat of other animals in its chemical composition and ease of digestion in the human organism.

The introduction of biologically active additives into the ration of broiler chickens has a positive effect on the biological and nutritional value of meat, and the addition of probiotics to the diet improves the organoleptic characteristics of broiler chicken meat.

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РЕЗЮМЕ

Активизация производства продукции птицеводства в настоящее время является одной из самых актуальных проблем в стране, поскольку напрямую связана с улучшением питания человека.

Мясо птицы отличается от мяса других животных своим химическим составом и легкой усвояемостью в организме человека. Мясо птицы является хорошим источником полноценного белка и имеет меньше соединительной ткани, чем говядина, что способствует легкому усвоению белков.

Одним из основных принципов интенсификации производства продукции птицеводства является рациональное использование кормов. В настоящее время основным препятствием для дальнейшего развития птицеводства является ограниченность кормовых ресурсов. В связи с этим важным направлением исследований в области кормления птиц является поиск нетрадиционных и более дешевых кормовых продуктов, близких по своей биологической ценности к традиционным кормовым продуктам и позволяющих снизить долю зерна в рационе. Некоторые из нетрадиционных кормов для домашней птицы хорошо изучены, но они не были должным образом оценены, также не запущены производству. При определенных условиях они могут компенсировать недостаток традиционных кормов.

В настоящее время, повышение качества продукции, расширение географии реализации и дальнейшая технологическая модернизация отрасли птицеводства является одним из приоритетных направлений.

Одним из незаменимых видов продуктов питания, а также источником белков для человека является мясо. Имеется много видов мяса и каждый из них ценен по-своему. Мясо птиц считается питательным и очень калорийным, содержит железо, калий, фосфор и др.

Введение пробиотиков в рацион улучшают органолептические показатели тушек цыплят-бройлеров.

ТҮЙІН

Құс өнімдерін өндіруді жандандыру қазіргі уақытта елдегі ең өзекті мәселелердің бірі болып табылады, өйткені ол адамның тамақтануын жақсартумен тікелей байланысты.

Құс еті басқа жануарлардың етінен химиялық құрамымен және адам ағзасындағы жеңіл сіңімділігімен ерекшеленеді. Құс еті толық ақуыздың жақсы көзі болып табылады және сиыр етіне қарағанда дәнекер тіндері аз, бұл ақуыздардың оңай сінуіне ықпал етеді.

Құс шаруашылығы өнімдерін өндіруді қарқындатудың негізгі қағидаттарының бірі жемді ұтымды пайдалану болып табылады. Қазіргі уақытта құс шаруашылығын одан әрі дамытуға негізгі кедергі жем ресурстарының шектеулі болуы болып табылады. Осыған байланысты, зерттеудің маңызды бағыты құстарды тамақтандыру биологиялық құндылығы бойынша дәстүрлі жемшөп өнімдеріне жақын және диетадағы астық үлесін азайтуға мүмкіндік беретін дәстүрлі емес және арзан жемшөп өнімдерін іздеу болып табылады. Кейбір дәстүрлі емес құс тағамдары жақсы зерттелген, бірақ олар дұрыс бағаланбаған, сонымен қатар өндіріске енгізілмеген. Белгілі бір жағдайларда олар дәстүрлі жемнің жетіспеушілігін өтей алады.

Қазіргі уақытта өнім сапасын арттыру, іске асыру географиясын кеңейту және құс шаруашылығы саласын одан әрі технологиялық жаңғырту басым бағыттардың бірі болып табылады.

Азық-түліктің таптырмас түрлерінің бірі, сондай-ақ адам үшін ақуыз көзі-ет. Еттің көптеген түрлері бар және олардың әрқайсысы өзінше құнды. Құстардың еті қоректік және жоғары калориялы болып саналады, құрамында темір, калий, фосфор және т. б.

Пробиотиктерді диетаға енгізу бройлер тауықтарының ұшаларының органолептикалық көрсеткіштерін жақсартады.