

Review

official reviewer Bordunova Olga Georgievna, doctor of agricultural sciences, professor for a dissertation Qiao Yingying (Цзао Інньін) «Development of technological methods of growing and use the plant extracts to improve the meat quality of broiler chicken», («Удосконалення технологічних прийомів вирощування та використання рослинних екстрактів для покращення м'ясних якостей курчат-бройлерів»), applied for the degree of Doctor of Philosophy, from the field of knowledge 20 - "Agrarian sciences and food" in the specialty 204 - "Technology of production and processing of animal husbandry products"

1. Relevance of the dissertation topic.

One of the promising directions in the field of poultry farming is the development of new technologies for the production of safe feed using plant extracts for broilers. For this purpose, it is advisable to use phytogetic fodder plant extracts for feeding broiler chickens. Such extracts have a versatile effect on the digestive system. They improve the production of digestive enzymes, which improves digestion and assimilation of nutrients. These extracts have antibacterial properties, as biologically active compounds are able to penetrate the cell membranes of bacteria and destroy them. Compared to feed antibiotics, phytobiotics do not cause bacterial resistance even with long-term use, and do not have a long period of elimination from the body after stopping use. Biosupplements based on plant extracts have a positive effect on the survival of young chickens. Therefore, the issue of studying the influence of plant extracts as a substitute for antibiotics in feed for feeding broiler chickens is relevant.

Dissertation of Qiao Yingying is devoted to the study of the effects of Astragalus and Glycyrrhiza extracts on performance, meat quality, blood serum parameters and intestinal barrier of broilers.

2. Connection with scientific programs, topics, plans.

The dissertation work was carried out according to the thematic plans of scientific research works of the Department of Biochemistry and Biotechnology of the Sumy National Agrarian University in the period from 2019-2022; NDR 0118U006179 "Improvement of breeding and technological programs in the breeding of agricultural animals in conditions of intensive production".

3. Scientific novelty of the obtained results.

Acquaintance with the contents of the dissertation work of postgraduate student Qiao Yingying and her main scientific works made it possible to determine

the most important theoretical and methodological provisions, conclusions and recommendations that prove scientific novelty. The results are formulated by the recipient independently and reflect her scientific contribution to the solution of the scientific task.

The main provisions of scientific novelty are as follows:

For the first time:

- the comprehensively investigated effect of Astragalus extract, Glycyrrhiza extract and their combined use on poultry productivity, meat quality, antioxidant function, immune function and intestinal barrier function of broilers;
- for the first time, the mechanism of influence of Astragalus extract and Glycyrrhiza extract on broilers through the regulation of intestinal microflora was investigated by analyzing the intestinal microbial diversity;
- the research results provide a theoretical basis for replacing antibiotics with Astragalus extract and Glycyrrhiza extract, and their use in broiler production, as well as an effective way to produce safe feed for broilers.

The main scientific propositions, results, and conclusions of the Qiao Yingying dissertation have significant novelty, a sufficient degree of validity, the authenticity of which has been proven by the author.

4. Theoretical significance of the dissertation.

The research results presented by the author have theoretical and practical significance. The formulation of Astragalus extract and Glycyrrhiza extract was developed on the basis of fundamental and applied research, as well as the technology for the production of safe feed using plant extracts for broilers. This technology is implemented in poultry enterprises of the People's Republic of China. The results of the dissertation work can be used in the educational process when studying the disciplines "Food Technology", "Nutritionology", "Food Quality and Safety", "Processes and Apparatus of Food Production". At the same time, the research results can be used in conducting fundamental and applied research in the direction of the technology of production and processing of animal husbandry products.

5. Practical significance of the results of the dissertation.

Evaluating the main results of the dissertation work submitted for defense, it is necessary to emphasize their theoretical validity and the orientation of the acquirer Qiao Yingying to a clear formulation of his own position. Confirmation of the scientific argumentation and reasonableness of the provisions, conclusions and recommendations of the dissertation work is a logical sequence in setting and performing tasks according to the purpose of the research. The work contains the necessary theoretical, methodological, methodical and analytical studies, properly covered in the relevant sections. The scientific validity and reliability of the results presented in the dissertation work are ensured by the creative use of scientific approaches, systematic study and generalization of the results of scientific

developments by scientists in the field of poultry farming. The theoretical and methodological basis of the dissertation was scientific and practical research on the influence of Astragalus and Glycyrrhiza extracts on the productivity of chickens, meat quality, blood serum indicators and the intestinal barrier of broilers, namely, the author of the dissertation investigated the influence of these extracts on physiological and biochemical functions poultry, its productivity, qualitative characteristics of broiler meat, resistance of broilers to diseases.

An analysis of the plagiarism check report for the presence of textual borrowings (Unicheck program) was carried out. The reviewers came to the conclusion that Qiao Yingying (Цзао Іньїнь) «Development of technological methods of growing and use the plant extracts to improve the meat quality of broiler chicken», («Удосконалення технологічних прийомів вирощування та використання рослинних екстрактів для покращення м'ясних якостей курчат-бройлерів») is the result of independent research of the acquirer and does not contain elements of plagiarism and borrowing in accordance with the resolution of the CMU dated 12.01.2022 No. 44, paragraph 9. The used ideas, results and texts of other authors have a link to the corresponding source.

6. Number of scientific publications.

The main results of the dissertation have been published a total of 10 articles based on the research results of the dissertation, including 6 articles in scientific professional publications of Ukraine, 4 articles published in journals indexed in Scopus and Web of Science Core Collection, and 9 conference proceedings.

7. Remarks and wishes regarding the content.

However, with a positive assessment of the dissertation work, it can be noted that some statements are debatable or require clarification:

1. In my opinion, the volume of research is quite large for a research-level dissertation. For a more versatile and multidimensional study of the issues, it might be more expedient at the expense of reducing the number of studies to deepen them, in particular, with physiological studies and studies of the amino acid composition of meat.
2. In the dissertation work that studied the Astragalus and Glycyrrhiza plant extracts, perhaps it would be expedient to note which extract has the greatest economic efficiency in growing broiler chickens, and what is their price per kg?
3. Tell us in more detail what methods were used to determine the content of crude protein, crude fat, crude ash, calcium and phosphorus in meat? How many samples were tested in the skin group?

4. Analyzing your research, which method do you think is better for preserving the nutritional value of chicken meat, which is the steaming technology or the boiling technology?
5. The content of the dissertation does not fully reflect the actual numbering of pages that are in the work itself.
6. In the work, non-compliance with the requirements for the design of the text of the work in the names of sections, subsections, points and subsections.

The stated debatable provisions and certain shortcomings do not significantly affect the overall positive assessment of the dissertation work.

8. General conclusion

Dissertation work of Qiao Yingyin on the topic "Development of technological methods of growing and use the plant extracts to improve the meat quality of broiler chicken" («Удосконалення технологічних прийомів вирощування та використання рослинних екстрактів для покращення м'ясних якостей курчат-бройлерів»), which was submitted for defense to the specialized academic council for obtaining the degree of Doctor of Philosophy in the field of knowledge 20 - "Agrarian sciences and food" in the specialty 204 - "Technology of production and processing of animal husbandry products" according to their relevance, scientific and theoretical level, main results of validity the main provisions and results published in professional publications, the novelty of the production and the practical significance meet the requirements of the order of the Ministry of Education and Science of Ukraine No.40 from 12, January 2017 year "On approval of requirements for the preparation of a dissertation" and Resolution of the Cabinet of Ministers of Ukraine from 12 January, 2022 No. 44 "On approving the Procedure for awarding the degree of Doctor of Philosophy and canceling the decision of the one-time specialized academic council of the institution of higher education, of a scientific institution on awarding the degree of Doctor of Philosophy" with changes introduced in accordance with Resolution of the KM №341 from 21.03.2022.

Рецензент:

Завідувачка кафедри

Генетики, селекції та біотехнології тварин

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 Ольга БОРДУНОВА

Підписи завіряються за встановленим зразком

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