ЛЕСОТЕХНИЧЕСКИ УНИВЕРСИТЕТ
ФАКУЛТЕТ „ВЕТЕРИНАРНА МЕДИЦИНА"
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ACADEMIC STATEMENT

Assoc. Prof. PhD. Kalin Yordanov Hristov

Department „Surgery, Radiology, Obstetrics and Gynecology"

Faculty of Veterinary Medicine, University of Forestry

Scientific specialty: "Obstetrics and gynecology of animals and diseases of newborn animals", professional field: 6.4. Veterinary Medicine

Regarding: PhD thesis for obtaining of PhD degree in scientific specialty „Animal pathology", professional field: 6.4. Veterinary Medicine

Author of the PhD thesis: Roger Hanna Al Hanna

Title of the PhD thesis: „Impact of dietary supplementation with different herb species on body performance meat quality and health status in broiler chickens"

Scientific supervisor: Assoc.Prof. Krasimira Ivanova Genova, PhD – UF

Prof. Boulos Al Jamal, PhD – Lebanese University

Grounds for presenting the academic statement: member of the scientific jury for the defense of the PhD thesis according to Order № 170/1.04.2024 of the Rector of University of Forestry.

1. Information about the PhD student

The PhD student Roger Hanna Al Hanna is a citizen of Lebanon, enrolled in the doctoral program „Animal pathology", at the Department of "Anatomy, Physiology and Animal Husbandry Sciences" of the Faculty of Veterinary Medicine, University of Forestry, with order No. ZPS-77/26.02.2019 in part-time doctoral studies. After completing the tasks laid down in the individual study plan and all statutory requirements, he has acquired with the right of defense by order ZSD-478/24.10.2022 of the Rector of UofF. At a meeting of the Extended Department Council (Protocol 29/19.04.2023) the defense procedure before a scientific jury was initiated.

2. General characteristics of the presented dissertation (PhD thesis)

Relevance of the topic: World poultry production is growing faster than production of any other meat. Growth has been particularly strong in broiler production in developing countries in recent years. The significant growth in poultry (especially broiler) production and consumption in developing countries has important implications for global trade in all meat products, as well as feed and other related inputs. Despite its many advantages and positive market outlook, the sector faces increasing challenges. One of these is growing consumer concern about food safety, animal welfare, product quality, and environmental issues associated with industrialized poultry production systems. One of the ways to overcome these challenges is to optimize the feed used in poultry farming. The great influence of feed additives on broiler performance and feed efficiency is known.

The risks and concerns of the use of antibiotics in animal feed and the ban on the use of these chemicals as growth promoters, research is aimed at finding a new natural alternative that can be used as feed additives. As a result of many years of using low levels of antibiotics in animal feed as growth promoters, it has resulted in an antibiotic-resistant population of bacteria, as a result of which the use of antibiotics in broiler production has been limited and the use of plant-based chemical substitutes origin becomes more and more necessary.

A detailed and in-depth study of the possibilities of using plant extracts as substitutes for antibiotics in poultry feed would be essential for veterinary practice and poultry farming. Therefore, the topic of the dissertation work is relevant and it will be of great benefit to veterinary science and practice.

Structure and volume: The PhD thesis is written on 154 pages and is balanced in terms of volume of individual parts: Introduction - 3 pages., Literature review – 37 pages; Purpose and tasks - 1 page.; Materials and methods - 13 pages.; Results and discussion - 49 pages.; Recommendations and Conclusions – 2 pages. и Contribution - 1 page. To visualize the methods used and the results obtained in the dissertation work 10 tables and 30 figures. The dissertation uses literature from 408 sources, all in Latin, and about 12% (45/408) of the literature sources are from the last 10 years.

***Review of the literature*:** The literature review includes comprehensive information on the state of the poultry sector in the Middle East and the world, as well as the management, feeding and rearing systems of the birds

The use of antibiotics in poultry, as well as their effect on human health, are discussed in detail. Possible alternatives to antibiotics, such as various phytogenic feed additives, are extensively reviewed. The effect and mechanisms of action of various herbal feed additives containing aromatic plants and essential oils are examined. An analysis was made of the literature data regarding the mode of action of aromatic plants and essential oils, their antioxidant action and the stimulating effect on the immune system of birds. Information is presented on a large number of plants, some of which are the subject of the present study. The indicators characterizing the quality of poultry meat are indicated.

***Materials and methods*:** The study was conducted for 31 days (initial rearing period) in a poultry farm in the Bekaa Valley in Lebanon.

A total of 432 chickens, divided into 8 experimental groups, were included in the studies. All chickens received the same starting basic ration for 19 days (run-in period) without the addition of antibiotics, antioxidants and herbs. At 20 days of age, each group (CGIaNegative, CGIIaPositive, EGIII, EGIV, EGV, EGVI, EGVII and EGVIII) was divided into three subgroups (R1, R2 and R3), each subgroup consisting of 54 chicks. Each of the experimental subgroups was given feed supplemented with the studied plant supplements. The experimental design and experimental setups are properly selected. In order to fulfill the set goal, established and adequate methods for achieving the set tasks were used.

3. Evaluation of the obtained results

The results of the research conducted by the doctoral student, together with the discussion, are presented on 49 pages, including 22 figures and 8 tables. All of them provide comprehensive information on the health status of the experimental animals, variation in mean live body weight at

19 days of age between groups, at 31 days of age, growth of experimental groups at the same age and feed intake. Data are presented on the randomness of the individual groups fed with the studied supplements, as well as the evaluation of the quality of the meat. Of interest are the results of the hematological and biochemical tests of the blood and serum of the experimental animals. The results of the analysis showed that dietary treatments significantly ($p<0.05$) affected most of the hematological parameters studied.

Appropriate visualization methods were used, which allowed tracking of differences between individual experimental groups.

4. Evaluation of the discussion, scientific and scientific-applied contributions

The discussion thoroughly and competently interprets the obtained results with the data of other authors. This is an indicator of analytical, thoroughness and good preparation of the doctoral student. Based on the results and the discussion, 6 conclusions and recommendations were formulated. The contributions of the dissertation are defined concisely and clearly. I accept them as presented. I positively appreciate the prepared recommendations for the practice.

5. Evaluation of the publications associated with the dissertation

The results of the dissertation have been presented at international scientific forums, which confirms the quality of the research done. In connection with the dissertation, 3 articles in English have been prepared and published. Two of the publications are in proceedings of an international conference and one in a journal referenced in world-renowned databases of scientific information (SCOPUS). The doctoral student has provided an opinion on the fulfillment of the minimum national requirements, issued by the University of Forestry.

6. Evaluation of the abstract of the PhD thesis

I am familiar with the abstract and find it fully reflects the content and achievements of the dissertation

7. Critical remarks, recommendations and questions

I have no substantive critical remarks about the subject, methods, and results. My remarks and recommendations are mainly related to the design of the dissertation. I feel that some of the points in the content could be joined. Some of the figures used could be improved visually for easier understanding and analysis. Some of the tables could also be improved. For example, in table No. 3 presenting the health status of the experimental animals, it is not clear what the real percentage of vitality and mortality is in the individual groups and according to which number of experimental animals in the individual groups the results were calculated. Regarding the cited literature, there is an incomplete bibliographic description of the sources, and in addition, all sources should be formatted according to a single accepted and approved standard. I recommend the PhD student to continue his research on the effects of the investigated herbal supplements on the name status and general health status of the animals. Such studies would provide additional important information on their positive effect as a food additive to replace antibiotics in feed.

8. Conclusion

Roger Hanna Al Hanna's dissertation portrays him as a young researcher with independent thinking and solid knowledge.

Despite remarks regarding some minor omissions and the recommendations to the PhD student, the merits of the dissertation work, the publication activity, the personal contribution of the doctoral student and the fulfilled requirements for the necessary quantitative and qualitative criteria, give me the reason to give my positive assessment of the presented dissertation work. I propose to the respected scientific jury to award Roger Hanna Al Hanna the educational and scientific degree "PhD" in the field of your education 6. Agricultural Sciences and Veterinary Medicine, professional direction: 6.4. Veterinary medicine, scientific specialty "Animal pathology"

7.05.2024 г.

Sofia

Signature:

/Assoc Prof. PhD. Kalin Hristov /