

## **Annotation**

**For the dissertation work of Akhmetzhanova Aizhan on the topic «Prevention, treatment of strangulation-eimerians infestation of and meat quality», for the degree of Doctor of Philosophy Ph.D. in the specialty 6D120100-Veterinary Medicine**

**The relevance of the topic.** In order to increase income in sheep breeding, ensure stable welfare in farms, and improve the quality of veterinary services, there is a need to provide livestock with modern and high-quality drugs with high therapeutic and preventive effectiveness when growing healthy, resistant to infectious and invasive diseases of sheep. Only one type of earthworms is rarely found in the body of a sheep, they are usually observed together with protozoa closely related to the host organism.

Invasive diseases, negatively affecting the host organism, lead to large-scale economic losses on farms of various agricultural forms, which are determined by a decrease in quantitative and qualitative indicators of live weight, wool, meat and milk. Currently, the main sheep farming in the country is contained in large numbers in peasant farms and in private ownership, which causes the interest of individuals in making a profit from the sheep industry. But at these facilities it is necessary to pay special attention to veterinary measures. Intestinal worms are increasingly common among sheep. Therefore, along with epidemic diseases, special attention has been paid to invasive diseases.

Head of State Kassym – Jomart Tokayev in his Message to the People of Kazakhstan dated September 01, 2022 stated: "The development of agriculture is one of the main problems. The situation in this area directly affects the food security of our state. It is necessary to increase the volume of agricultural products of the country and its added value. This is a strategic task".

East Kazakhstan region (now Abai region) is the largest sheep-breeding region of Kazakhstan. Here, pasture lands allow the development of sheep breeding due to their extensive forage resources. However, the growth of the sheep population and the improvement of the quality of the products obtained from them are significantly economically hindered by invasive diseases common in the region, including group diseases. The intensive development of animal husbandry is also affected by the inefficiency of work to combat invasive diseases among animals. Several pathogenic microorganisms, including helminths, parasitic protozoa, live in the body of livestock at the same time. They damaged about 80% of sheep. Unlike earthworms, which are found in the nervous system, muscles, lungs of sheep, the number of earthworms in the digestive organs is large, and the damage is enormous.

**The purpose of the dissertation is to search for effective methods** of treatment and prevention of diseases with the study of the epizootology of strongylatosis-eimerious invasion in sheep farms located in radiation-hazardous zones of the former Semipalatinsk landfill of the East Kazakhstan region and to determine the quality of mutton infected with mixed parasites.

In accordance with the purpose of the research work, the following tasks were obtained:

- Determination of the radiation background of sheep farms located in radiation-hazardous zones of the former Semipalatinsk landfill of the East Kazakhstan region;
- determination of the species composition and dynamics of the spread of strongylatosis-emerious invasion of sheep in sheep farms;
- veterinary and sanitary examination and determination of the quality of sheep meat with strongylatosis-emeriosis invasion;
- development and testing of several new anthelmintic and antiemeric compositions against associative invasion of sheep;
- development of a scientific proposal for the economy in order to prevent and treat diseases.

#### **Materials and methods used.**

Research work is carried out at the Department of Veterinary Medicine of the Faculty of Veterinary Medicine and Agricultural Management of the NAO "Shakarim G. University". Semey", the regional testing laboratory of the engineering profile "scientific center for radioecological research" and in the farm "Zhartas" of Tarbagatai district, Oishilik rural district, in the farm "Azbergen" of the Abai district of the zone of extreme radiation danger of the East Kazakhstan region, the zone of maximum radiation danger in the farm "Nurzhan" of Beskaragai district, zones of increased radiation hazards were carried out in the peasant farm "Altai" in Semey, the peasant farm "Aidar" in Ayagoz district – from 2017 to 2020.

In total, 1500 calves of sheep were tested by caporological methods, including lambs - lambs up to one year – 600 heads, young animals up to 3 years – 600 heads and adult sheep – 300 heads.

**Research methods:** coproscopic, K. I. Scriabin helminthological, dosimetric, radiometric, organoleptic, bacteriological.

**Scientific novelty of the work.** For the first time, the radiation background of sheep farms located in the radiation-hazardous zones of the former Semipalatinsk landfill of the East Kazakhstan region, the species composition and epizootological state of strongylatosis-emerious invasion of sheep were revealed. The veterinary and sanitary assessment of the quality of mutton in strongylatosis-eimeriosis invasion is scientifically substantiated. New feed formulations have been developed for carrying out deworming for associative invasion of sheep in radiation-hazardous zones of the Semipalatinsk landfill and reducing the content of radioactive substances. The farm has developed scientifically sound recommendations for the use of new medicinal formulations for the treatment of combined invasion of sheep.

#### **The main provisions submitted for protection:**

1. Radiation background of sheep farms located in radiation-hazardous zones of the Semipalatinsk landfill.
2. species composition and dynamics of the spread of strongylatosis-eimeriosis invasion of sheep in the east of Kazakhstan.

3. veterinary and sanitary assessment and quality of mutton affected by Strongylatosis-eimeriosis invasion.

4. new medicinal formulations for deworming against associative invasion of sheep.

5. Development of recommendations for the prevention and treatment of mixed parasitoses of sheep

**Practical significance and introduction of the study.** Studies to determine the species composition and epizootology of strongylatosis-eimeriosis invasion of sheep in radiation-hazardous zones of the Semipalatinsk landfill of the East Kazakhstan region and testing of a new therapeutic mixture allow practicing veterinarians to competently carry out therapeutic and preventive measures.

In veterinary practice, 2 new effective formulations have been proposed for the treatment of strongylatosis-eimeriosis invasion of sheep.

Based on the results of scientific research, the recommendations "the use of a new feed additive for the treatment and prevention of strongylatosis-eimeriosis invasion of sheep" have been developed and recommended for use in practice.

The main provisions of the dissertation work are used in the development of lecture courses "Parasitology and invasive diseases of animals " and "veterinary and sanitary examination " and in the execution of term papers, theses of the NAO "Shakarim Semey University".

#### **Connection of work with research programs.**

The doctoral dissertation "prevention, treatment and quality of meat of strongylatosis-eimeriosis invasion of sheep" was carried out on the basis of an initiative project. (Minutes of the meeting of the Academic Council of the NAO "Shakarim University of Semey " dated March 30, 2023 No. 7).

#### **Research results**

1. the strength of the exposure dose of sheep breeding in the zone of extreme radiation hazard is  $0.32 \pm 0.23$  mSv / h., in the maximum radiation hazard zone  $0.17 \pm 0.3$  mSv / h., in the zone of increased radiation hazard  $0.11 \pm 0.1$  mSv / h. and in the zone of minimum radiation hazard  $0.1 \pm 0.1$  mSv / h. in size.

2. among sheep in the east of Kazakhstan there are 5 species of eimeria: *Eimeria arloingi*, *Eimeria parva*, *Eimeria ahsata*, *Eimeria faurei*, *Eimeria ninakohlyakimovae* and 9 species of strongylates: *Haemonchus contortus*, *Strongyloides papillosus*, *Ostertagia circumcincta*, *Nematodirus spathiger*, *Trichostrongylus axei*, *trichostrongylus colubriformis*, *bunostomum trigonocephalum*, *oesophagostomum venulosum* and *chabertia* form the ovina community.

3. strongylatosis-eimeriosis invasion is widespread in the East Kazakhstan region. The double defeat of helminths and eimeria in the spring period reached IE – 87.6 at the age of 1 year, AI eimeria 1-18, strongylites AI 1-15. In sheep aged 1 to 3 years, the lesion was formed at the level of IE - 87%, AI, respectively, at the level of 1-21 and 1-12, and in adult sheep IE - 75%, AI, respectively, at the level of 1-14 and 1-9.

4. it has been established that with mixed invasion of sheep in the sheep breeding of the East Kazakhstan region, the chemical composition of meat

changes: the humidity level increases by 6.8%, the protein content decreases by 1.45% and fat by 1.28%, the pH level is up to 5.8–6.2, the amount of volatile fatty acids is 4.1–6.0 mg, the amount of microflora is determined at 1-30.

5. The extensive effectiveness of the new drug developed against strongylatosis – eimeriosis invasion of sheep was 92.4%, and when using an extensive mineral– salt briquette, the effectiveness was 95.6%.

**Approbation of the results of the dissertation.** 2 (two) articles were presented and discussed at international scientific and practical conferences:

1. Mixed invasion in the digestive system of sheep // International scientific and practical conference "Actual food production: state and prospects of development" dedicated to the 75th anniversary of corresponding member of KazASHN, Doctor of Technical Sciences, Professor E. T. Tuleuova".

2. Emeriozno-strongyloidosis invasions in sheep in southern Kazakhstan and in Eastern Kazakhstan // Innovations in science and practice: collection of articles based on the materials of the 14th International Scientific and practical Conference (Barnaul, 2019).

**Publications on the topic of the dissertation.** According to the main results of the dissertation, 9 scientific articles were published. Including 3 (three) articles in scientific journals recommended by the Committee for Control in the Field of education and Science of the Ministry of Education and Science of the Republic of Kazakhstan:

1. The fauna of helminths and eimeria in the digestive organs of sheep // Bulletin of the Shakarim State University of Semey. – 2018. – №2(82). - Pp. 317-322.

2. Development of mineral-salt briquette with anthelmintic and radioprotective action // Bulletin of the Shakarim Semey State University. – 2019. – №2(86). - Pp. 392-394.

3. organoleptic indicators of mutton with strongylatosis-emeriosis mixed invasion // Bulletin of the Shakarim State University of Semey. – 2019. – №2(87). - Pp. 348-354.

Articles, patents, state registration of intellectual property objects published in other publications have been published:

1. Development and testing of an antiparasitic veterinary composition // Scientific aspect. - 2019. - Vol. 12, No. 2 (Impact factor -0.037).

Utility model patent No. 3269kr. Veterinary antiparasitic: published on 18.10.2018 (Appendix A).

Utility model patent No. 3263kr. Medicine against eimeria: published on 18.10.2018 (Appendix A).

Utility model patent No. 4169KR. Biologically active feed additive for sheep: published on 16.07.2019 (Appendix A).

Prevention and treatment of mixed infection of sheep: recommendations. - Families: Zhardem, 2023 (Appendix B)

Articles in international peer-reviewed scientific journals with non-zero impact factor (1 (one) article in Scopus and Web of Science databases:

Strongyloides and Eimeria Infection and Its Treatment Way in Sheep // Archives of Razi Institute, Vol. 77, No. 6 (2022) 2359-2363 Razi Vaccine & Serum Research Institute DOI: 10.22092/ARI.2022.360104.2552.

Also, according to the results of the study, patents (Appendix A) and recommendations on agriculture (Appendix B) and an act (Appendix B) were confirmed, a veterinary and sanitary study was conducted and a medicinal mixture was prepared (appendices C, D, D).

The volume and structure of the dissertation. The dissertation work was carried out according to a generally accepted model. The content consists of an introduction, a review of the literature, materials and methods of research, the results of individual studies, analysis of research results, conclusions, practical recommendations and additional materials. It consists of a list of used sources containing 126 titles. The dissertation is written on 110 pages of computer text with formatting in accordance with the necessary standards, 9 tables, 12 figures.