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## The Effectiveness of Deworming Using Rikazol And Its Effect on Slaughter Performance and Morphological Composition of Carcasses Sheep Meat.

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### ABSTRACT

This article describes the results of evaluation of the effectiveness new anthelmint drug - Rikazol with nematodes gastrointestinal tract of sheeps. Sheeps dehelminization with using Rikazol have the best slaughter and meat quality and authentically superior to animals infested with nematodes gastrointestinal tract.

**Keywords:** anthelmintics, efficiency, morphological composition of carcasses.

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## INTRODUCTION

Currently, due to the changing conjuncture of prices for the products of sheep, special attention is paid to the production of mutton. One of the major constraining factors of sheep breeding are helminth infections of the gastrointestinal tract. In the North Caucasus strongylatosis digestive tract of sheep and goats are widespread infestations, due to extensive of sheep breeding, year-round grazing livestock on distant pastures and lowland. Through the efforts of many researchers in recent years created new antiparasitic drugs among which deserve the attention of dosage forms with a broad spectrum of action on the basis of albendazole.

Chemical and therapeutic effect of these drugs was discussed in a number of experimental and clinical work. As a result, studies have shown that albendazole characterized absolute absorption, during absorption preparation is transformed into albendazole sulfoxide, which is present in plasma and tissues in high concentrations. The high efficiency of albendazole by nematodes of sheep [15,16] and the need for regular treatment during the grazing season, [13] led to the widespread use of albendazole, appointed with food [12], feed additives and drinking water [14].

Special attention specialists deserves Rikazol - new drug containing the active substance rikobendazol a concentration of 100 mg / ml. [1, 11, 17].

Rikazol differs from oral dosage forms based on albendazole higher efficiency (due to the high bioavailability of active ingredient) and ease of application (injection, a small dosage). It is active against adults and immature nematodes and cestodes and trematodes destroys exhibits ovicidal action that reduces the degree of contamination of pastures with helminth eggs [7].

On the other hand, veterinary and sanitary assessment of products obtained by the use of new pharmacological preparations and combinations thereof in the treatment of animals and poultry, is an urgent task of veterinary-sanitary examination [9].

## MATERIALS AND METHODS

The studies were conducted on the basis of sheep farm in Shpakovsky district of the Stavropol Territory. Using the method of double worms candled were selected 20 sheep, spontaneously infested with nematodes of the gastrointestinal tract, which was divided into two equal groups.

Animals were individually injected subcutaneously preparation «Rikazol» dose of 1 ml per 25 kg of body weight. Sheep from the control group of drug is not injected.

Evaluation of the effectiveness of the drug Rikazol conducted by comparing the results worms candled feces before the introduction of a deworming and 20 days after deworming and by "critical test" according to the "Guidelines", approved by the World Association for the Advancement of Veterinary Parasitology. In addition, the period of test drug were monitoring the clinical condition of the animals [1].

Worms candled were conducted by McMaster method. To verify the effectiveness of the drug was carried out helminthological selective opening of the gastrointestinal tract of sheep. The collected helminths were identified.

The obtained data were statistically processed using conventional methods of variation statistics Student's [10] and applications for PC.

Prior to slaughter live weight (kg) of sheep was determined in accordance with GOST 25955-83 [2], by weighing them on the scales with an accuracy of 0.1 kg after 24-hour exposure hungry until slaughter.

The weight of the fresh carcass (kg) was determined by weighing on balances up to 0.1 kg.

Morphological composition of carcasses studied by them after boning slaughter and determination of the specific weight of tissue in absolute (kg) and relative (%) units.

Flesh ratio is calculated as the ratio of the mass of flesh to bone mass.

Varietal Composition carcasses established on the basis of the cutting of carcasses to cut different varieties and nutritional value, in accordance with [3]. Absolute (kg) and specific (%) weight of each cut in the carcass were determined by weighing on the scales with an accuracy of up to 0.01 kg and mathematical calculation.

Investigation of organoleptic evaluation of the quality of raw meat and smoked-cooked lamb products was carried out in accordance with the requirements of GOST 9959-91. [4]

The chemical composition of meat (fat, protein, moisture, collagen) was determined by infrared analyzer Food Scan (FOSS Electric, Denmark).

Statistical processing and graphing were performed using Microsoft Excel software. The reliability of the statistical differences between mean values was determined by Student's method.

### RESULTS AND DISCUSSION

According to the study drug showed a high anthelmintic efficacy in gastrointestinal nematodes of sheep. Subcutaneous administration preparation dose of 1 ml per 25 kg provided 100% extensity and incentive effectiveness. To confirm the effectiveness of selective slaughter conducted three sheep who received this dose and three animals in the control group (Table 1).

**Table 1: Effectiveness using of Rikazol drug in gastrointestinal nematodes sheep according to the autopsy (n = 3)**

No	Rhode helminths	Control	Rikazol	IE, %
1	Ostertagia	74,4±24,1	0,2(1)	99,73
2	Trichostrongylus	282,1±65,7	1,8(9)	99,36
3	Nematodirus	196,6±47,3	0,6(3)	99,69
4	Haemonhus	108,5±35,8	0,4(2)	99,63

Intense dehelminthization drug efficacy at a dose of 1 ml per 25 kg against strongyles gastrointestinal ranges 99,36-99,73%.

30 days after treatment in each group were selected at three animals their typical groups for control slaughter.

Adult sheep according to their nutritional status is divided into categories [5].

Depending on fatness of the experimental group, all animals were placed in the first category (100%) in the control group of 10 sheep were nine animals classified in the first category (90%) and 1 - to the second category (10%).

Results of the study of slaughter performance and morphological composition of carcasses are presented in Table 2.

**Table 2: Slaughter performance and morphological composition of carcasses**

Index	Group	
	Control	Rikazol
Slaughter performance		
Slaughter live weight, kg	45,4±0,45	47,5±0,48
Mass of fresh carcass, kg	20,4±0,29	21,8±0,33
Slaughter yield carcasses, %	45,0	46,4
Morphological composition carcass		
Flesh weight, kg	15,7±0,21	16,6±0,32
Yield flesh, %	77,27	81,21
Mass bones, kg	4,6±0,10	4,3±0,26
Yield bones, %	22,73	18,79
Meat ratio	3,39	3,44

In an organism animals appear complex relationship between parasite and host, which leads to disruption of enzymatic processes, reduce the digestibility and assimilation of nutrients, accompanied by a decrease in protein content, fat, carbohydrates [8].

It is found that the average weight at slaughter for dehelminthization sheep as compared to control peers above was 2.1 kg, or 4.7%, and the mass of steam carcasses - 1.4 kg, or 6.9%. If deboning carcasses chilled meat pulp mass in the control animals compared with experienced was less than 0.9 kg, or 5.8%. All this led to a high rate of meat, which characterizes the relative development of bone and muscle tissue, which was 3.44 for dehelminthization animals versus 3.39 in non-treated.

To assess the quality of the meat of sheep were studied the chemical composition of meat (Table 3).

**Table 3: Chemical analysis of sheep meat**

Index	Group	
	Rikazol	Control
The chemical composition of meat		
Total moisture, %	61,07	62,99
Crude ash, %	0,92	0,88
Crude protein, %	22,94	21,83
Crude fat, %	15,07	14,30
Calorie meat, kcal	2270,4	2173,5

The data in Table 4 indicate that the meat of the control animals contained slightly more water and at treated rikobendazol - more fat and protein. Calorie experimental sheep meat was 4.5% higher compared with the cross-bred peers.

Organoleptic indicators of the cuts presented in table 4 were evaluated in accordance with GOST R 54367-2011 [6.]

**Table 4: Organoleptic meat cuts**

Indicator	Characteristic	
	control	experience
The surface color	Red	Red
Muscles on the cut	Slightly moist, do not leave a wet spot on the filter paper; color from red to red-cherry	Slightly moist, do not leave a wet spot on the filter paper; color from red to red-cherry
Consistency	In the context of the meat dense, elastic; fingers form a pressure-sensitive pit quickly aligned	In the context of the meat dense, elastic; fingers form a pressure-sensitive pit quickly aligned
Smell	Specific, characteristic fresh meat	Specific, characteristic fresh meat
Fat condition	It has a white color; dense texture	It has a white color; dense texture
Tendons condition	Tendons are elastic, dense, the surface of the joints smooth, shiny	Tendons are elastic, dense, the surface of the joints smooth, shiny

When cooking meat broth in both groups was clear, fragrant. Taste fat and broth in both groups, consistent product performance benign. No foreign odors.

**CONCLUSION**

According to the study drug showed a high anthelmintic efficacy in gastrointestinal nematodes of sheep. Subcutaneous administration of the drug at a dose of 1 ml per 25 kg provided 100% ekstens- and intense efficiency.

All animals of the experimental group were classified in the first category (100%) in the control group of 10 sheep were nine animals classified in the first category (90%) and 1 - in the second category (10%). Sheep that were treated with Rikazol have the best slaughter and meat quality and reliability superior to animals infested with nematodes of the gastrointestinal tract.

**REFERENCES**

- [1] Arkhipov I.A. Anthelmintics: Pharmacology and application. - M.: Printing RAAS, 2009. - 406 p.
- [2] GOST 25955-83 "Animal breeding livestock. Methods for determination of sheep productivity parameters" M.: Moscow printer. 1983. 13 p.
- [3] GOST R 54367-2011. Meat. Cutting lamb and goat meat in the cuts. Specifications. M.: Standartinform, 2012. 7 p.
- [4] GOST 9959-91. Meat Products. General terms of sensory evaluation. M.: Standartinform, 2010. 10 p.
- [5] GOST R 52843-2007 Sheep and goats for slaughter. Mutton, lamb and goat carcasses. Specifications M.: Standartinform, 2008. 12 p.
- [6] GOST R 54367-2011. Meat. Cutting lamb and goat meat in the cuts. Specifications. M.: Standartinform, 2012. 7 p.
- [7] Novikova S.V. The effectiveness of the drug in Rikazol nematodes and trematodoah sheep / S.V. Novikova [et al.] // Veterinary Medicine. 2015, №3. P. 30-31.

- [8] Mkrtyan M.E., Movsesian S.O. The biological value of meat with mono- and mixed invasions // Russian Journal of parasitological. 2013, №3. P. 59-62.
- [9] Semenchenko S.V., Degtar A.S. Technological and organoleptic characteristics of meat crossbred sheep // Innovations in Science: Proc. Art. on the mater. XXXI Intern. scientific-practical. Conf. № 3 (28). - Novosibirsk: Seebach, 2014.P. 103-109.
- [10] Yakovlev V.B. Biometric processing of experimental data. M.: Lennex Corp, 2014. 174 p.
- [11] Carios E. Lanusse, Roger K. Prichard Clinical pharmacokinetics and metabolism of benimidazoleanthelmintics in ruminants. Drug Metabolism Reviews. 1993; 25. 3:235-279.
- [12] Dorchiies Ph., Ducas de Lahitte J., Alzien J.P. Essais de traitement et de prevention des helminthoses du mouton par un dispositif // Rev. Med. Veter. – 1987. – V. 138, № 2. – p. 101-108.
- [13] Sergei Nikolaevich Shlykov, Ivan Fedorovich Gorlov, Viktor Ivanovich Guzenko, Vladimir Anatol'yevich Meshcheryakov, and Ruslan Saferbegovich Omarov. Res J Pharm Biol Chem Sci 2016;7(4):1715-1719
- [14] Sergei Nikolaevich Shlykov, Ivan Fedorovich Gorlov, Viktor Ivanovich Guzenko, Anna Viktorovna Morgunova, and Ruslan Saferbegovich Omarov. Res J Pharm Biol Chem Sci 2016;7(4):1714-1717
- [15] Kerboeuf D., Chaffner-Chaton M. Efficaciti de gastro-intestinales du mouton // Rec. Med. Veter. – 1982. – V. 158, № 12. – P. 809-819.
- [16] Nilsson O., Johelius G. The effects of albedazole treatment on spring-rise in faecal nematode egg output and reproductive performance in the ewe // Nord. Vet. Med. – 1986. – V. 38, N 2. – P. 74-79.
- [17] Singh D., Sanyal P.K., Swarnkar C.P. et al. Influ-ence of diet type and pretreatment fasting on the disposition kinetics of albendazole in sheep. Vet. ResComm. 1999; 23:229 - 240.
- [18] Vladimir Ivanovich Trukhachev, Vladimir Aleksandrovich Orobets, Valentin Sergeevich Skripkin, and Alexander Viktorovich Agarkov. Res J Pharm Biol Chem Sci 2016;7(2):524-526.
- [19] Vladimir Ivanovich Trukhachev, Alexandr Anatol'yevich Khodusov, Maria Evgen'evna Ponomareva, Viktor Ivanovich Konoplev and Tatyana Ivanovna Antonenko. Res J Pharm Biol Chem Sci 2016;7(2):344-349.
- [20] Vladimir Ivanovich Trukhachev, Vladimir Aleksandrovich Orobets, Valentin Sergeevich Skripkin and Olga Igorevna Sevostyanova. Res J Pharm Biol Chem Sci 2016;7(3):2334-2339.
- [21] Vladimir Ivanovich Trukhachev, Vladimir Aleksandrovich Orobets, Valentin Sergeevich Skripkin, Olga Vladimirovna Dilekova, and Olga Igorevna Sevostyanova. Res J Pharm Biol Chem Sci 2016;7(3):2340-2347.
- [22] Vladimir Ivanovich Trukhachev, Alexandr Anatol'yevich Khodusov, Maria Evgen'evna Ponomareva, Viktor Ivanovich Konoplev, Natalia Andrio Parshina and Elena Yur'evna Telegina. Res J Pharm Biol Chem Sci 2016;7(3):2330-2333.
- [23] Sadovoy, V., Omarov, R., Shlykov, S., Shchedrina, T. Assessment compliance of qualitative food characteristics to standard requirements. Engineering for Rural Development Volume 2016-January, 2016, Pages 360-363.