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Research Article

**MONITORING OF INTESTINAL NEMATODOSES OF DOGS
IN THE KABARDINO-BALKARIAN REPUBLIC AND THE
TEST RESULTS OF THE NEW DRUG AVERTFEN POWDER**¹Anatoly Murashevich Bittirov, ²Ruslan M. Zakhokhov, ¹Sofiyat A. Begieva, ¹Alan M. Khuranov, ²Aslan S. Vologirov, ³Khasan Kh. Shakhbiev, ³Seda Sh. Mantaeva, ¹Asiyat A. Bittirova, ¹Batyr M. Shipshev, ¹Ismail A. Bittirov, ³Islam Kh. Shakhbiev¹ Department of Veterinary Medicine Kabardino-Balkarian State Agrarian University named after V.M. Kokov, Nalchik, Russia² Department of hospital surgery Kabardino-Balkarian State University named after Kh.M. Berbekov, Nalchik, Russia³ Department of Veterinary Medicine Chechen State University, Grozny, Russia

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Abstract:

*In the constituent entities of the Russian Federation, the most common nematodoses are toxocarosis, ancylostomosis, uncinariosis, toxoascarosis, which occur in dogs with an EI of 50-100%. The goal is to monitor intestinal nematodes in dogs in Kabardino-Balkaria and to test the effectiveness of the new drug Avertfen powder in mixed invasion of intestinal nematodes in dogs. Studies have shown that intestinal nematodoses of dogs in the form of mono- and mixed invasions are widespread in the Kabardino-Balkarian Republic with a total EI of 78.6%. Associative invasion caused by a tetrad of intestinal nematodes (*Toxocara canis*, *Ancylostoma caninum*, *Toxascaris leoninae*, *Uncinaria stenocephala*) was observed mainly with EI = 38,0% with an intensity of 169.7; 132.5; 94.8; 147,3 ekz./ head. In the group of dogs infected with the mixed invasion *Toxocara canis*, *Ancylostoma caninum*, *Toxascaris leoninae*, *Uncinaria stenocephala*, the new drug Avertfen powder in a dose of 15 mg / kg body weight had EE and IE - 100%. At the same time, on the 7th day, deworming of eggs and larvae of intestinal nematodes was not detected in feces. This dose of Avertfen powder should be recognized as an effective therapeutic dose.*

Key words: dogs; invasion; nematodoses, drug; Avertfen powder; extensefficiency.**Corresponding author:****Anatoly Murashevich Bittirov,***Department of Veterinary Medicine, Faculty of Veterinary Medicine, Kabardino-Balkarian State Agrarian University named after V.M. Kokov, Nalchik, Russia. Email: bam_58a@mail.ru*

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INTRODUCTION:

In the subjects of the Russian Federation, toxocarosis, ancylostomosis, uncinariosis, toxoascarosis, etc. are the most common Nematodoses and occur in dogs with an EI of 70-100%, which requires the development of new drugs for the treatment and prevention of invasions [1, 2, 3, 4, ..., 15]¹.

In young dog populations, nematodoses (toxocarosis, ancylostomosis, uncinariosis and toxoascarosis) have an epizootic manifestation with the formation of mixed invasions [1, 2, 3, 4, ..., 15], [16]²

The goal is to study the Nosological profile of Nematodoses in dogs in the Kabardino-Balkarian Republic and to test the effectiveness of the new drug Avertfen powder in mixed invasion of intestinal nematodoses in dogs (toxocarosis, ancylostomosis, uncinariosis and toxoascarosis).

MATERIALS AND METHODS:

The spread of mono- and associative invasions of intestinal nematodoses of dogs in the Kabardino-Balkarian Republic was determined in 2015-2018. For this, a complete helminthological autopsy of 50 corpses of dogs aged 5-12 months was carried out according to the method of K.I. Scriabin. An experiment to test the anthelmintic activity of the drug Avertfen powder with mixed invasion of intestinal nematodes (*Toxocara canis*, *Ancylostoma caninum*, *Toxascaris leoninae*, *Uncinaria stenocephala*) was conducted on 15 dogs. 2 experimental (n = 10) and 1 control (n = 5) groups of dogs were formed. Dogs of the 1st group (n = 5) infected with mixed invasion of intestinal nematodes received a new drug Avertfen powder at a dose of 10 mg / kg of body weight with minced meat, dogs of the 2nd group (n = 5) at a dose of 15 mg / kg body weight, once. The dogs of the 3rd group (n = 5) served as

an invasive control, they did not receive a new drug. According to the plan of the experiment, after 3, 5, 7, 10 and 15 days after a single injection of the drug Avertfen of the excrement of all dogs were subjected to copro and larvoscopy [6]. The test results on dogs of the new drug Avertfen of the powder with associative invasion of nematodes (*T. canis*, *A. caninum*, *T. leoninae*, *U. stenocephala*) were subjected to statistical processing using the program "Biometrics".

RESULTS:

Distribution of mono-and mixed invasions of intestinal Nematodoses of dogs in the Kabardino-Balkarian Republic

Research found that intestinal Nematodoses dog (Toxocarosis, Ancylostomosis, Toxoascarosis, Uncinariosis) in the form of mono- and mixed invasions are widespread in the Kabardino-Balkarian Republic with a total EI of 88,0% (Table 1). Monoinvasion of toxocarosis, in dogs was registered with EI = 16,0% and II = 169,7±13,2 ekz., ancylostomosis, respectively, with EI – 12,0% and II - 132,5±10,4 ekz., toxoascarosis EI – 8,0% and II - 94,8±7,9 ekz., uncinariosis EI – 14,0% and II - 147,3±12,8 ekz. per 1 head. At autopsy in dogs of the small intestine, the highest quantitative values of EI were for mixed invasions of the intestinal nematodes, but with low values of intensity, which confirms the hypothesis of interspecific competition between childbirth *Toxocara*, *Ancylostoma*, *Toxascaris*, *Uncinaria*. Associative invasion caused by the intestinal nematodes (*Toxocara canis*, *Ancylostoma caninum*, *Toxascaris leoninae*, *Uncinaria stenocephala*) was observed mainly with EI = 38,0 % with an intensity of 136,4±11,0; 102,7±9,5; 73,6±6,8; 112,8±10,3 ekz./head (Table 1).

Table 1 - Distribution of mono-and mixed invasions of intestinal nematodes of dogs in the Kabardino-Balkarian Republic, n = 50

№	Nematodes dogs	Researcher dogs	Invazied dogs	EI, %	II, ekz./ind.
1	Toxocarosis	-	8	16,0	169.7±13,2
2	Ancylostomosis	-	6	12,0	132.5±10,4
3	Toxoascaris	-	4	8,0	94.8±7,9
4	Uncinariosis	-	7	14,0	147,3±12,8
5	Toxocarosis+ Ancylostomosis+ Toxoascaris+ Uncinariosis	-	19	38,0	$\frac{136,4\pm 11,0}{102,7\pm 9,5}$ $\frac{73,6\pm 6,8}{112,8\pm 10,3}$
6	Total investigated dogs	50	44	88,0	-

Efficacy of the new drug Avertfen powder with associative invasions toxocarosis, ancylostomosis, uncinariosis, toxoascaris in dogs

The new complex drug Avertfen powder per 1 g of powder includes: Avertin powder 50% - 350 mg, fenbendazole - 250 mg, cobalt chloride - 50 mg, dry bentonite - 350 mg. In the 1st experimental group of dogs (n = 5) infected with mixed invasion of intestinal nematodes (*Toxocara canis*, *Ancylostoma caninum*, *Toxascaris leoninae*, *Uncinaria stenocephala*) mixed with minced meat, the new drug Avertfen powder at a dose of 10 mg / kg body weight showed EE – 80, 0% and IE - 93,0% (Table 2). In the 2nd group of dogs (n = 5) infected with the mixed invasion of *T. canis*, *A. caninum*, *T. leoninae*, *U. stenocephala*, the new drug Avertfen powder at a dose of 15 mg / kg body weight had EE and IE - 100%. At the same time, on the 5th day the deworming of eggs and larvae intestinal nematodes in feces did not detect (Table 2). This dosage of Avertfen powder should be recognized as an effective therapeutic dose (Table 2). Group 3 dogs (invasive control, n = 5) remained infected with intestinal nematodes when detecting 94,8±8,2 -96,5±8,5 ekz. eggs and larvae in 5 g feces.

Table 2 - Efficacy of the new drug Avertfen powder with associative invasions of intestinal nematodes (*T. canis*, *A. caninum*, *T. leoninae*, *U. stenocephala*) in dogs

Group	The number of infected dogs	The number of free from intestinal nematodes of dogs after treatment	EE, %	Number of eggs and larvae of intestinal nematodes y dogs per 5 g feces, ekz.		IE, %
				Before therapy	After therapy	
1	5	4	80,0	97,3±8,6	6,8±0,7	93,0
2	5	5	100	95,6±8,4	-	100
3	5	0	0	94,8±8,2	96,5±8,5	0

Thus, the new complex drug Avertfen powder a dose of 15 mg / kg of body weight, mixed with minced meat, is highly effective in experiments and is recommended for the treatment and prevention of associative invasions of intestinal nematodes *Toxocara canis*, *Ancylostoma caninum*, *Toxascaris leoninae*, *Uncinaria stenocephala* in dogs.

DISCUSSION:

For the first time, the results of studying the distribution of intestinal nematodes of dogs (toxocarosis, ancylostomosis, uncinariosis, toxoascaris) in the form of mono- and mixed invasion, as well as the effectiveness of the new drug Avertfen in powder against intestinal nematodes of dogs. New data were also obtained on the epizootiology of toxocarosis, ancylostomosis, uncinariosis, toxoascaris in dogs, and the therapeutic efficacy of Avertfen powder at a dose of 15 mg / kg of body weight with mixed invasion. At the same time, information on

the species composition of nematodes and the need to develop new methods for the treatment and prevention of mixed invasions of toxocarosis, ancylostomosis, uncinariosis, toxoascaris in dogs is consistent with the opinion of many well-known authors [1, 2, 3, 4, ..., 15], [16].

CONCLUSION:

Research found that Toxocarosis, Ancylostomosis, Toxoascaris, Uncinariosis in the form of mono- and mixed invasions are widespread in the Kabardino-Balkarian Republic with a total EI of 88.0%. Associative invasion

caused by the intestinal nematodes (*Toxocara canis*, *Ancylostoma caninum*, *Toxascaris leoninae*, *Uncinaria stenocephala*) was observed mainly with EI = 38.0% with an intensity of 136,4±11,0; 102,7±9,5; 73,6±6,8; 112,8±10,3 ekz./head. New complex drug Avertfen powder at a dose of 15 mg / kg of body weight, mixed with minced meat, is highly effective in experiments and is recommended for the treatment and prevention of associative invasions of nematodes in the organisms dogs.

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