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РЕЗЮМЕ

Диспепсия заболевание, возникающее под действием различных факторов. Как известно, диспепсия новорожденных телят наносит хозяйствам значительные убытки. Высокий уровень смертности новорожденных, снижение роста и равития у переболевших, их ранняя вы браковка, затраты на ветеринарные мероприятия снижают рентабельность молочного скотоводства.

К сожалению, применяемые в ветеринарной практике традиционные методы лечения диспепсии молодняка не всегда дают желаемый лечебный эффект. Ко многим антибактериальным препаратам проявляется устойчивость патогенных штаммов микроорганизмов или же обладают побочными действиями на организм молодняка. В этой связи в настоящее время во всем мире все большее внимание уделяются применению препаратов растительного происхождения. Поэтому основной целью настоящей работы явилось использованию фитопрепаратов для лечения и профилактики диспепсии у телят.

Полученные результаты исследований свидетельствуют о высокой лечебно-профилактической эффективности изготовленных фитопрепаратов. Профилактическая эффективность и сохранность телят от применения комплексного растительного экстракта составила 100%, тогда как в аналогичной контрольной группе - лишь 65%. Также получена высокая лечебная эффективность от применения комплексного растительного экстракта, где эффективность составила 100% против 70% показателя контрольной группы.

Фитопрепараты наряду выраженным лечебно-профилактическим эффектом, также оказывают стимулирующее действие на организм растущего молодняка, о чем свидетельствуют значительное повышение среднесуточного и абсолютного прироста живой массы. Применение комплексного экстракта повышает прирост живой массы относительно контрольной группы на 21,4%, а по абсолютный– на 37,2%.

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THE MORPHOLOGICAL PARAMETERS OF BLOOD IN EIMERIOSIS-STRONGYLATOUS INVASION OF SHEEP IN PAVLODAR REGION

ANNOTATION

In this article, the authors present the results of his research on the spread of eimeriotic helminthic infestations in small cattle in Pavlodar region.

In sheep farms of various forms of ownership, the authors conducted experiments on a large number of sheep, clinical, biochemical and other methods were used in his research works, which contributed to obtaining scientifically reliable facts.

The study of the morphological blood parameters of lambs during eimeriosis-strongylatosis invasion revealed the following: By the 30th day after infection with the suspension, lambs No. 1 and No. 3 in the experimental group succumbed to the acute form of eimeriosis-strongylatosis invasion. In a sample taken from faeces, the number of eimeria oocysts and strongylate eggs is over 250 per microscopic field. This is due to a low hemoglobin content in the blood and an increase in the number of leukocytes in the blood. In the remaining lambs of the experimental group, the average erythrocyte count is $13.8x10^{12}$±2.33, the average leukocyte count is $12.3x10^{9}$± 0.49, the average hemoglobin index is 79.3±0.52, i.e. the body gradually adapts to invasion, which sometimes ends with self-recovery. In a sample taken from their feces, the number of oocysts of eimeria and eggs of strongylates ranges from 80 to 100. In the control group spontaneously infected, the average erythrocyte count was from $14.8x10^{12}$±0.62, the average leukocyte count was from $13.32x10^{9}$±0.34, the average hemoglobin index was 85.4±3.07. In fecal samples taken from lambs, the number of oocysts of eimeria and eggs of strongylates ranges from 85 to 100 in one field of view.

Key words: *Eimeriosis-bunostomosis, eimeriosis-trichostrongylosis, eimeria-strongylidosis, strongylate eggs, leukocyte, basophils, monocytes, lymphocytes, eosinophils, neutrophilus.*

Introduction. Eimeriosis-bunostomosis and eimeriosis-trichostrongylosis are widely distributed imvasions caused by the association of helminths with protozoa among sheep populations in Pavlodar region.

Parasitic diseases negatively affecting the host's body entail high economic losses in farms of various forms of ownership, reflected in the loss of body weight, shearing of wool, changes in quantitative and qualitative indicators of meat and milk [1, 2, 3]. Currently, the main sheep population of the country is distributed in peasant farms and farmsteads of private ownership, which entails the interest of individuals in profiting from the sheep industry, therefore, special attention, in addition to infectious diseases, has been paid to helminthic diseases [4, 5, 6]. The reorganization of agriculture has negatively affected the number of sheep in Kazakhstan, they have become fewer, while the number of infected animals has increased dramatically, and serious problems have arisen in the field of veterinary care. To increase the number of sheep in Kazakhstan, veterinary specialists have taken measures to improve the health of the sheep population for infectious and invasive diseases [7, 8, 9].

In the fight against eimeriosis-bunostomous and eimeriosis-trichostrongylosis invasion of sheep, it is necessary to scientifically substantiate the development of measures, a detailed study of the features of regional epizootology, the relationship of the members of associations with each other and with the host organism, and other specific features of associative invasion [10-12]. The main task of veterinary parasitology is to find effective antiemeria and anthelmintic agents for the treatment and prevention of these associations in sheep [13-15]. In this regard, the study of epizootology of eimeriosis-bunostomous and eimeriosis-trichostrongylosis invasions in sheep in Pavlodar regions, with the development of effective control and prevention measures, is an urgent problem of modern veterinary medicine [16-20].

Materials and methods. To study the morphological, biochemical, and immunological parameters of blood, lambs of the experimental group aged 5-6 months were injected with a suspension with a syringe with a rubber probe attached to it. The suspension contained 7 species of eimeria: *Eimeria arloingi, Eimeria parva, Eimeria crandallis, Eimeria ahsata, Eimeria intracata, Eimeria faurei, Eimeria ninakohlyakimovae* and *larvae of strongylates.*

Morphological, biochemical and immunobiological blood tests in lambs aged 5-6 months were carried out to determine the degree of influence of eimeriosis-strongylatous invasion on the animal's body, before the start of the study and after the experimental infection.

The determination of the number of erythrocytes, leukocytes, hemoglobin in the blood, and the excretion of the leukoformula were carried out according to generally accepted methods. The total protein was determined by the biuretic method (a green light filter against a biuretic reagent was used). The quantitative determination of sugar was carried out by the enzymatic method (a 500 light filter against water was used).

The catalytic concentration of AST and ALT enzymes in blood serum was determined using the BIO-TEST 'AMINOTRANSFERASE ALT' (the method is based on measuring the optical density of hydrazones of 2-oxoglutaric and pyruvic acids in an alkaline medium).

The number of B-lymphocytes was determined in the reaction of complementary tissue formation (EAC-ROCK). T-lymphocytes were determined by spontaneous rosette formation (E-ROCK) with sheep erythrocytes.

The therapeutic effectiveness of the drugs has been tested on lambs spontaneously infected with eimeriosis-strongylatous invasion of 5-6 months of age. The effectiveness of the drugs was determined by the degree of reduction of eimeriosis-strongholatous invasion in lambs, with the determination of the extent and intensity of the effectiveness of drugs against eimeria and helminths.

As a result of the study, the effectiveness of drugs was clarified as clinical signs and coprological changes were observed.

Results and Discussion. The study of some morphological, biochemical and immunological parameters of sheep blood in infectious and invasive diseases is currently considered an urgent veterinary problem.

Blood, together with lymph and tissue fluid, makes up the internal environment of the body, providing optimal conditions for its vital activity, and form a morphologically and functionally complex system. At the same time, this system is closely connected with the entire body and is under the complex regulatory influence of humoral-endocrine and nervous mechanisms.

Our aim of the study was to find out how the eimeriosis-strogylatous invasion affects the morphological parameters of the blood of lambs. The study was conducted on 10 lambs 5-6 months old, divided into 2 groups, experimental and control, with 5 animals in each group. The experiments were conducted on lambs taken from a farm free of infectious diseases. The lambs of the experimental group were given a suspension by mouth consisting of 50,000 oocysts of eimeria and 3,000 invasive bunostome larvae, 3,000 trichostrongil larvae. Lambs in the control group were not given the suspension of oocysts of eimeria and invasive larvae of bunostoma, trichostrongil. Prior to the start of the experiment, lambs were dewormed with panacur granulate at a dose of 20 mg/kg and sulfamomethoxine at a dose of 20 mg/kg during two five-day courses with an interval of 3 days. According to the results of morphological studies, the following findings were obtained for lambs from the experimentally infected group and the control group, and are presented in Table 5.1.

Before infection with suspension, lambs in the experimental group had an average erythrocyte count of $14.96x10^{12}$±0.08, an average leukocyte count of $15.22x10^{9}$±0.99, an average emoglobin index of 87±3.39. In the control group, lambs before grazing had an average erythrocyte count of $15.04x10^{12}$±0.15, an average leukocyte count of 15.9 x 10^{9}±1.01, an average hemoglobin index of 81.8±2.39. That is, the morphological parameters of the blood correspond to the norm. Eimeria oocysts and strongylate eggs were not found in samples from the faeces of the control group of lambs.

After driving the lambs together with the flock to graze, the lambs of the control group on pasture in natural conditions become infected with oocysts of eimeria and eggs of strongylates. In the experimental group, on day 7 after suspension, the average erythrocyte count was from 14.68 $x10^{12}$±0.51, the average leukocyte count was 12.74 x 10^{9}±0.66, and the average hemoglobin index was 64.8±6.26. In the control group spontaneously infected after 7 days of infection, morphological blood parameters give an average erythrocyte index of $14.28x10^{12}$±0.60, an average leukocyte index of $10.62x10^{9}$±0.99, and an average hemoglobin index of 71.6±3.97. In the experimental group, there is a visible decrease in the average values of leukocytes and hemoglobin, apparently this is due to the onset of the process of eimeriosis-strongylatous invasion in the body of lambs. In the control group, there were no changes in the average values of erythrocytes, leukocytes, and hemoglobin. In the fecal samples of lambs, oocysts of Eimeria and strongylid eggs ranged from 50 to 100 per microscopic field.

On the 14th day after infection with suspension, lambs of the experimental group had an average erythrocyte count of 12.48 $x10^{12}$±0.23, an average leukocyte count of $12.36x10^{9}$ ±0.76, an average hemoglobin index of 53.8±2.33. In the control group, on day 14 after spontaneous infection, the average

erythrocyte count was from $13.39x10^{12}$±0.33, the average leukocyte count was $11.24x10^{9}$±0.42, the average hemoglobin index was from 81.6±1.08. That is, according to the results of morphological studies, it is clear that in the body of lambs of the control group and the experimental group there is a characteristic oxygen starvation associated with intoxication of the body with waste products eimeria, bunostom, trichostrongil, which is evident from the large number of erythrocytes, hemoglobin and a decrease in the number of leukocytes. In fecal samples, the number of eimeria oocysts and strongylate eggs is estimated from 100 to 150 per microscopic field.

By the 30th day after infection with the suspension in the experimental group, lambs No. 1 and No. 3 die from the acute form of eimeria strongylatous infection. In a sample taken from faeces, the number of eimeria oocysts and strongylate eggs is over 250 per microscopic field. This is due to a low hemoglobin content in the blood and an increase in the number of leukocytes in the blood. In the remaining lambs of the experimental group, the average erythrocyte index is $13.8x10^{12}$±2.33, the average leukocyte index is $12.3x10^{9}$±0.49, the average hemoglobin index is 79.3±0.52, i.e. the organ gradually adapts to invasion, which sometimes ends in self-recovery. In the sample taken from their feces, the number of oocysts of eimeria and eggs of strongylates ranges from 80 to 100. In the control group spontaneously infected, the average erythrocyte count was from $14.8x10^{12}$±0.62, the average leukocyte count was from 13.32 $x10^{9}$±0.34, the average hemoglobin index was 85.4±3.07. In fecal samples taken from lambs, the number of eimeria oocysts and strongylate eggs ranges from 85 to 100 in one field of view (Table 1).

Summarizing the results of the morphological changes in the blood of lambs during experimental and spontaneous infection with eimeria-strongylidosis invasions, it was noted that this association causes visible changes in the blood's morphological pattern.

The biochemical blood parameters in eimeriosis strongylatous invasion of sheep. Also, one of the blood indicators in the study of the clinic of acute strongylatous invasion is the biochemical parameters of blood.

The study was conducted on 10 lambs 5-6 months of age, divided into 2 groups, experimental and control, with 5 animals in each group. The experiments were conducted on lambs taken from the farm of a prosperous one for infectious diseases. The lambs of the experimental group were given a suspension by mouth consisting of 50,000 oocysts of eimeria and 3,000 invasive bunostome larvae, 3,000 trichostrongil larvae. The lambs in the control group were not given a suspension of oocysts of eimeria and invasive larvae of bunostome, trichostrongil. Prior to the start of the experiment, lambs were dewormed with panacur granulate at a dose of 20 mg/kg and sulfamomethoxine at a dose of 20 mg/kg during two five-day courses of 3,000 invasive bunostom larvae, 3,000 trichostrongil larvae. The lambs in the control group were not given a suspension of oocysts of eimeria and invasive larvae of bunostome, trichostrongil. Prior to the start of the experiment, lambs were dewormed with panacur granulate at a dose of 20 mg/kg and sulfamomethoxine at a dose of 20 mg/kg over two five-day courses with an interval of 3 days. According to the results of biochemical studies in lambs experimentally infected and in lambs of the control groups, the following results were obtained and are given in the form of Table 2.

Summarizing the results of the morphological changes in the blood of lambs during experimental and spontaneous infection with eimeria-strongylidosis invasions, it was noted that this association causes visible changes in the blood'smorphological pattern.

In the leukocyte formula before infection in the experimental group of young, there were no rod-shaped from 4 to 5, segmented from 17 to 24, eosinophils from 1 to 4, basophils were not noted, monocytes from 2 to 3, lymphocytes from 67 to 74, before infection in the control group of young, there were no rod-shaped from 3 up to 5, segmented nuclei from 19 to 20, eosinophils from 2 to 6, basophils were not noted, monocytes from 2 to 5, lymphocytes from 64 to 73.

In the leukocyte formula, after infection on day 30 in the experimental group, two lambs died from eimeriosis strongylatous invasion, in the remaining lambs of the experimental group, no young lambs were noted, rod-nuclear from 4 to 6, segmentonuclear from 9 to 10, eosinophils from 5 to 6, basophils were not noted, monocytes from 2 up to 4, lymphocytes from 75 to 79, in the control group, no juveniles were noted in the control group, rod-nuclear from 3 to 7, segmented from 17 to 23, eosinophils from 2 to 6, basophils were not noted, monocytes were not noted, lymphocytes from 68 to 72.

Table 1 – Morphological parameters of the blood of lambs infected experimentally and spontaneously with eimeriosis-strongylatous invasion

№	Group	Before the experiment			After 7 days		
		Erythrocytesx10^{12}	LeukocytesX10^{9}	Hemoglobin	Erythrocytes x10^{12}	Leukocytes x10^{9}	Hemoglobin
1.	Expert	15,0	18,9	90	13,7	14,4	50
2.	Expert	15,0	14,6	85	15,3	14,3	60
3.	Expert	14,9	13,0	75	13,2	11,7	77
4.	Expert	14,7	15,4	90	15,4	11,7	82
5.	Expert	15,2	14,2	95	15,8	11,6	55
M±m		14,96±0,08	15,22±0,99	87±3,39	14,68±0,51	12,74±0,66	64,8±6,26
1.	Control	14,6	14,2	80	15,7	8,2	60
2.	Control	15,1	14,5	89	13,5	10,1	65
3.	Control	15,3	18,8	75	13,2	10,2	75
4.	Control	15,4	17,9	80	13,2	10,3	80
5.	Control	14,8	14,1	85	15,8	14,3	79
M±m		15,04±0,15	15,9±1,01	81,8±2,39	14,28±0,60	10,62±0,99	71,6±3,97
№	Group	After 14 days			After 30 days		
		Erythrocytes x10^{12}	Leukocytesx10^{9}	Hemoglobin	Erythrocytes x10^{12}	Leukocytes x10^{9}	Hemoglobin
1.	Expert	12,2	15,3	50	The animal has fallen		
2.	Expert	12,1	15,1	50	14,3	13,5	80
3.	Expert	13,1	11,9	50	The animal has fallen		
4.	Expert	13,0	11,8	60	14,1	11,3	78
5.	Expert	12,0	12,8	59	14,2	12,3	80
M±m		12,48±0,23	13,36±0,76	53,8±2,33	13,8±2,33	12,37±0,49	79,3±0,52
1.	Control	11,9	12,6	83	13,9	13,6	89
2.	Control	15,5	10,4	80	12,8	13,4	95
3.	Control	15,4	10,3	85	15,6	13,9	78
4.	Control	16,0	11,5	81	15,9	12,0	80
5.	Control	15,0	11,4	79	15,8	13,7	85
M±m		13,39±0,73	11,24±0,42	81,6±1,08	14,8±0,62	13,32±0,34	85,4±3,07

After reviewing the results, it was noted that on the 30th day after infection, 2 lambs fell in the experimental group, and there was noticeable eosinophilosis and blood lymphocytosis in the leukocyte formula of the experimental and control groups (Table 2).

The results obtained during morphological examination of blood, experimental and spontaneous infection of lambs with eimeria-strongylatous invasion prove that this association of eimeria and helminths affects the animal's body.

Before lambs were infected with suspension, lambs in the experimental group had a mean total protein index of 67.94±2.14 g%, sugar values of 6.6±0.13 mmol/L, AST values of 0.56±0.02 mmol/L, ALT values of 0.56±0.01 mmol/L. In lambs before grazing in the control group, the average total protein index was 70.88±2.48 g%, the sugar index was 6±0.13 mmol/L, the AST index was 0.56±0.007 mmol/L, the ALT index was 0.57±0.014 mmol/L. That is, the biochemical parameters of the blood correspond to the norm. In samples from the faeces of lambs, oocysts of eimeria and eggs of strongylates were not found. After driving the lambs together with the flock to graze, the lambs on the pasture in natural conditions become infected with eimeria oocysts and strongylate eggs.

On the 7th day after infection with the suspension of lambs in the experimental group, the average total protein index was 65.18±1.13 g%, the sugar index was 6.44±0.49 mmol/L, the AST index was 0.68±0.02 mmol/L, the ALT index was 1.074±0.05 mmol/L. In the control group, on the 7th day of spontaneous infection, the following biochemical blood parameters were obtained. The average total protein index is 81.14±2.10 g%, the sugar index is 5.94±0.08 mmol/L, the AST index is 0.50±0.01 mmol/L, the ALT index is 0.56±0.01 mmol/L. In samples from the faeces of lambs, eimeria oocysts and eggs weigh from 50 to 100 per microscopic field.

14 days after the lambs were infected with the suspension, the following biochemical blood parameters were obtained in the experimental group and the spontaneously infected control group.

Table 2 – Indicators of the leukocyte formula of the blood of lambs infected experimentally and spontaneously with an eimeriosis-strongylatous invasion

№	№ of the animal	Group	Time of research	Leukocyte formula						
				J	R	S	E	B	M	L
1	2	3	4	5	6	7	8	9	10	11
1.	1	Experiment	Before the experiment		4	24	2		3	67
2.	2	Experiment			5	22	1			72
3.	3	Experiment			3	18	4		2	73
4.	4	Experiment			2	19	3		3	73
5.	5.	Experiment			5	17	2		2	74
1.	1.	Control			5	20	6		4	65
2.	2.	Control			4	22	2		4	68
3.	3.	Control			3	20	5			72
4.	4.	Control			6	19	2		2	73
5.	5.	Control			4	24	3		5	64
1.	1	Experiment	After 7 days		10	14	17		3	56
2.	2	Experiment			8	16	15			61
3.	3	Experiment			13	17	16			54
4.	4	Experiment			12	15	18			55
5.	5.	Experiment			15	13	14		4	54
1.	1.	Control			6	16	13		5	60
2.	2.	Control			4	14	12		3	67
3.	3.	Control			3	12	18		2	65
4.	4.	Control			7	15	9		4	74
5.	5	Control			5	19	16			60
1.	1	Experiment	In 14 days		6	22	16			56
2.	2	Experiment			10	10	17		2	61
3.	3	Experiment			11	16	20			53
4.	4	Experiment			12	18	23			47
5.	5	Experiment			13	20	15		4	48
1.	1	Control			2	13	6		3	76
2.	2	Control			4	14	7		5	70
3.	3	Control			3	10	5		6	76
4.	4	Control			3	12	5		2	78

5.	5	Control			3	7	7		2	81
1	2	3	4	5	6	7	8	9	10	11
1	1	Experiment	After 30 days	The animal died 17 days after infection						
2.	2	Experiment			4	9	6		2	79
3.	3	Experiment		The animal died 14 days after infection						
4.	4	Experiment			5	10	5		3	77
5.	5.	Experiment			6	6	6		4	75
1.	1.	Control			6	18	4			72
2.	2.	Control			3	23	2			72
3.	3.	Control			5	22	5			68
4.	4.	Control			7	17	6			70
5.	5.	Control			6	19	4			71

In the experimental group, the average total protein index was 90.12±1.39 g%, the average sugar index was 8.06±0.23 mmol/L, the average AST index was 0.81±0.03 mmol/L, the average ALT index was 1.21±0.09 mmol/L. In the control spontaneously infected group, the average total protein index was 83.22±3.09 g%, the average sugar index was 5.58±0.21 mmol/L, the average AST index was 0.51±0.09 mmol/L, the average ALT index was 0.58±0.07 mmol/L. In samples from the faeces of lambs, the number of oocysts of eimeria and eggs of strongylates ranges from 100 to 150 per microscopic field.

By the 30th day after infection with the suspension in the experimental group, lambs No. 1 and No. 3 die from the acute form of eimeriosis-strongylatous invasion. In a sample taken from feces, the number of eimeria oocysts and eggs is over 250 per microscopic field. This is due to the low content of total protein, sugar, AST and ALT. The overall result according to biochemical indicators in the experimental group was an average total protein index of 78±-1.13 g%, an average sugar index of 7.4±0.11 mmol/L, an average AST index of 0.54±0.002 mmol/L, an average ALT index of 0.61±0.04 mmol/L. In the control group spontaneously infected, the average total protein index was 82.56±-2.35 g%, the average sugar index was 6.44±0.14 mmol/L, the average AST index was 0.51±0.05 mmol/L, the average ALT index was 0.61±0.08 mmol/L. In the sample taken from their feces, the number of oocysts of eimeria and eggs is strong from 80 to 100. Clinically, the lambs of the experimental and control groups showed a decrease in appetite, general depression, and anemia of the visible mucous membranes. Some have a high temperature of up to 40.5°C-41°C. Lambs have difficulty standing, spend a lot of time lying down, and exhibit a rapid, weak pulse, ranging from 120 to 160 beats per minute. Breathing is frequent, shallow 38-48 respiratory movements per minute. Lambs exhibit signs of thirst and increased frequency of defecation (Table 3).

Studies of the activity of serum aspartate aminotransferase (AST) and alanine aminotransferase (ALT) play an important role in the diagnosis of various diseases, in particular with disorders of the gastrointestinal tract. These transaminases are cellular enzymes. With disorders of the gastrointestinal tract, the amount of these enzymes in the blood and, consequently, in the blood serum increases dramatically. According to the content of transaminases in the blood serum, it is possible to judge the degree of damage to the digestive organs. Changes in the functional state of the digestive organs and changes in metabolites in the liver and blood are associated with a high content of serum enzymes in the blood of patients with eimeria strongylatous invasion of lambs.

Conclusion. The eimerious strongylatous invasion of sheep in the Pavlodar region is widespread. The widespread eimeriosis-strongylatous invasion of sheep in farms of various forms of ownership is associated with an insufficiently well-developed system of raising lambs, violation of sanitary and hygienic conditions for keeping and caring for animals, and improper antiparasitic measures.

Our research has shown that eimeriosis-strongylatosis invasion occurs in acute, subacute, and chronic forms. The acute course of eimeria-strongylatous invasion was noted in 3-6 month-old lambs, with II, respectively, from 100 to 150 oocysts of eimeria and eggs of strongylates. The subacute course was noted in 3-6 month-old lambs, with II from 20-80 oocysts of eimeria and strongylate eggs, respectively. The chronic course was observed in lambs from 7 months to 1 year, with II, respectively, from 50 to 100 oocysts of eimeria and strongylate eggs.

Table 3 – Biochemical parameters of the blood of lambs infected experimentally and spontaneously with eimeriosis-strongylatous invasion

№	№ of the animal	Group	Before the experiment				After 7 days			
			AST	ALT	Total protein	Sugar	AST	ALT	Total protein	Sugar
			mmol/l		g%	mmol/l	mmol/l		g%	mmol/l
1.	1.	Experiment	0.46	0.51	68.3	6.7	0.72	1.05	86.1	6.1
2.	2.	Experiment	0.54	0.57	68.5	6.9	0.71	1.07	87.3	7.2
3.	3.	Experiment	0.56	0.59	75.2	6.8	0.60	0.96	80.8	7.9
4.	4.	Experiment	0.47	0.58	65.5	6.4	0.64	1.02	85.4	5.8
5.	5.	Experiment	0,50	0.56	62.2	6.2	0.73	1.27	86.3	5.2
M±m			0.56±0.02	0.56±0.01	67.94±2.14	6.6±0.13	0.68±0.02	1.074±0.05	65.18±1.13	6.44±0.49
1.	1.	Control	0.56	0.60	79.4	5.7	0.51	0.59	85.5	5.7
2.	2.	Control	0.55	0.56	67.7	6.3	0.52	0.60	73.2	6.2
3.	3.	Control	0.54	0.59	68.3	6.2	0.50	0.58	83.2	5.9
4.	4.	Control	0.58	0.58	65.6	5.9	0.52	0.54	82.6	6.0
5.	5.	Control	0.57	0.52	73.4	5.8	0.44	0.52	81.2	5.9
№	№ of the animal	Group	After 14 days				After 30 days			
			AST	ALT	Total protein	Sugar	AST	ALT	Total protein	Sugar
			mmol/l		g%	mmol/l	mmol/l		g%	mmol/l
1.	1.	Experiment	0.74	1.12	93.3	8.3	-	-	-	-
2.	2.	Experiment	0.77	1.02	88.7	8.6	0.59	0.60	78	7,4
3.	3.	Experiment	0.88	1.43	92.6	7.5	-	-	-	-
4.	4.	Experiment	0.79	1.05	90.4	7.5	0.54	0.61	74,2	6.9
5.	5.	Experiment	0.87	1.37	85.6	8.4	0.50	0.62	79	7.1
M±m			0.81±0.03	1.21±0.09	90.12±1.39	8.06±0.23	0.54±0.02	0.61±0.04	78±1.13	7.4±0.11
1.	1.	Control	0.49	0.58	89.2	5.7	0.51	0.61	85.5	6.1
2.	2.	Control	0.53	0.56	75.2	6.3	0.51	0.59	84.4	6.6
3.	3.	Control	0.51	0.59	88.3	5.6	0.53	0.62	86.3	6.2
4.	4.	Control	0.48	0.57	76.2	5.2	0.52	0.63	73.4	6.4
5.	5.	Control	0.52	0.60	87.2	5.1	0.50	0.64	83.2	6.9
M±m			0.51±0.09	0.58±0.07	83.22±3.09	5.58±0.21	0.51±0.05	0.61±0.08	82.56±2.35	6.44±0.14
M±m			0.56±0.007	0.57±0.014	70.88±2.48	6±0.13	0.498±0.01	0.56±0.01	81.14±2.10	5.94±0.08

Within 30 days after infection with the suspension in the experimental group, lambs No. 1 and No. 3 die from an acute form of eimeriosis-strongylatous invasion. In a sample taken from feces, the number of oocysts of eimeria and strongylate eggs is over 250 per microscopic field. This is due to the low content of total protein, sugar, AST and ALT. The overall result according to biochemical parameters in the experimental group was an average total protein index of 78±1.13 g%, an average sugar index of 7.4±0.11 mmol/L, an average AST index of 0.54±0.002 mmol/L, an average ALT index of 0.61±0.04 mmol/L. In the control group spontaneously infected, the average total protein index was 82.56±2.35 g%, the average sugar index was 6.44±0.14 mmol/L, the average AST index was 0.51±0.05 mmol/L, the average ALT index was 0.61±0.08 mmol/L. In the sample taken from their feces, the number of oocysts of eimeria and eggs is strong from 80 to 100. In the animal's body, during the development of the invasive process, the main cellular elements of the immune system are T- and B-lymphocytes, which are responsible for the activity of the humoral and cellular defense mechanisms of the organism.

Morphological examination of blood revealed a decrease in erythrocytes and hemoglobin, an increase in leukocytes. Shifts in leukocyte formation, an increase in the number of rod-shaped neutrophils and persistent eosinophilia were noted. A biochemical study showed an increase in total protein, beta and gamma globulins, a slight increase in the enzyme AST and ALT, which is associated with an increase in the content of keto substances.

Currently, an urgent problem of veterinary immunology is the study of immunity and the mechanisms of its formation in infectious and invasive animal diseases.

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ТҮЙІН

Бұл мақалада авторлар Павлодар облысында ұсақ мал арасында эймериозды құрт инвазияларының таралуы бойынша өз зерттеулерінің нәтижелерін ұсынады.

Меншіктің әртүрлі нысандарындағы қой шаруашылықтарында авторлар көптеген қойларға эксперименттер жүргізді, олардың зерттеу жұмыстарында ғылыми сенімді фактілерді алуға ықпал ететін клиникалық, биохимиялық және басқа әдістерді қолданды.

Эймериозды-стронгилят инвазиясындағы қозылардың қанының морфологиялық көрсеткіштерін зерттеу мынаны көрсетті: суспензияны жұқтырғаннан кейінгі 30-шы күні эксперименттік топтың № 1 және №3 қозылары эймериозды-стронгилят инвазиясының жедел түрінен қайтыс болды. Нәжістен алынған үлгіде эймерий ооцисталары мен стронгилят жұмыртқаларының саны микроскопиялық өріске 250-ден асады. Бұл қандағы гемоглобиннің төмен болуына және қандағы лейкоциттер санының көбеюіне байланысты. Тәжірибелік топтың қалған қозыларында эритроциттердің орташа саны $13,8x10^{12}$±2,33, лейкоциттердің орташа саны-$12,3x10^{9}$±0,49, гемоглобиннің орташа көрсеткіші - 79,3±0,52, яғни организм біртіндеп инвазияға бейімделеді, ол кейде өзін-өзі емдеумен аяқталады. Олардың нәжісінен алынған үлгіде эймерий ооцисталары мен стронгилят жұмыртқаларының саны 80-ден 100-ге дейін. Өздігінен жұқтырған бақылау тобында эритроциттердің орташа саны 14, $8x10^{12}$±0,62, лейкоциттердің орташа саны-13, $32x10^{9}$±0,34, гемоглобиннің орташа көрсеткіші 85,4±3,07 құрады. Қозылардан алынған нәжіс үлгілерінде эймерий ооцисталары мен стронгилят жұмыртқаларының саны бір көру аймағында 85-тен 100-ге дейін болады.

РЕЗЮМЕ

В данной статье авторы представляют результаты своих исследований по распространению эймериозных глистных инвазий среди мелкого рогатого скота в Павлодарской области.

В овцеводческих хозяйствах различных форм собственности авторы проводили эксперименты на большом количестве овец, в своих исследовательских работах использовали клинические, биохимические и другие методы, которые способствовали получению научно достоверных фактов.

Изучение морфологических показателей крови ягнят при эймериозно-стронгилятозной инвазии показало следующее: к 30-му дню после заражения суспензией ягнята № 1 и №3 опытной группы умерли от острой формы эймериозно-стронгилятозной инвазии. В образце, взятом из фекалий, количество ооцист эймерий и яиц стронгилят превышает 250 на микроскопическое поле. Это связано с низким содержанием гемоглобина в крови и увеличением количества лейкоцитов в крови. У остальных ягнят опытной группы среднее количество эритроцитов составляет $13,8x10^{12}$±2,33, среднее количество лейкоцитов - $12,3x10^{9}$±0,49, средний показатель гемоглобина - 79,3±0,52, т.е. организм постепенно адаптируется к инвазии, которая иногда заканчивается самовосстановлением. В образце, взятом из их кала, количество ооцист эймерий и яиц стронгилят колеблется от 80 до 100. В контрольной группе спонтанно инфицированных среднее количество эритроцитов составило $14,8x10^{12}$±0,62, среднее количество лейкоцитов - $13,32x10^{9}$±0,34, средний показатель гемоглобина составил 85,4±3,07. В образцах кала, взятых у ягнят, количество ооцист эймерий и яиц стронгилят колеблется от 85 до 100 в одном поле зрения.

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