С.Сейфуллин атындағы Қазақ агротехникалық университетінің

ҒЫЛЫМ ЖАРШЫСЫ

(пәнаралық)

ВЕСТНИК НАУКИ

Казахского агротехнического университета им. С. Сейфуллина

(междисциплинарный)

№ 4(115)

II часть

Астана 2022

ISSN 2710-3757
ISSN 2079-939X
Басылым индексі – 75830

doi.org/ 10.51452/kazatu.2022.4.1232
UDC 576.893:576.895.19

CADASTRAL ASSESSMENT OF SHEEP PARASITES OF THE NORTHERN TIEN SHAN

Berkinbay Omarkhan
Doctor of veterinary sciences, professor
Institute of Zoology
Almaty, Kazakhstan
E-mail: berkinbay49@mail.ru

Suleimenov Maratbek Zhaksibekovich
Candidate of veterinary sciences, professor
Institute of Zoology
Almaty, Kazakhstan
E-mail: maratber.suleimenov@zool.kz

Omarov Bayzhan Baimukhanbetovich
Candidate of veterinary sciences
Institute of Zoology
Almaty, Kazakhstan
E-mail: baijan1957gmail.com

Berdikulov Maxat Amanbekovich
Candidate of veterinary sciences
National reference centor for veterinary medicine
Astana, Kazakhstan
E-mail: berdikulov.ma@mail.ru

Baimukhanbetov Yerkegali Baizhanuly
Junior researcher
Institute of Zoology
Almaty, Kazakhstan
E-mail: erkesh.b@gmail.com

Abstract

In the Northern Tien Shan, the qualitative composition of sheep parasites depends on the grazing areas of the animals. Thus, 47 parasites were registered in sheep grazing only in the highlands (9 species of protozoa, 6 - trematodes, 3 - cestodes, 28 - nematodes and 1 species of botfly), 22 in sheep grazing in the foothills (6 – protozoa, 3 – trematodes, 2 – cestodes, 10 – nematodes and 1 species of botfly), and in sheep grazing in the desert zone – 16 (4 – protozoa, 1 – trematodes, 2 – cestodes, 9 – nematodes). And the occurrence of mixed infestations depends on the qualitative composition of the parasites. Thus, sheep grazing in the highlands, where 47 parasites are registered, have 19-21 variants of associations, and sheep grazing in the desert zone, where 16 parasites are registered, have 12 variants of associations.

The reduction of the qualitative composition of parasites in sheep in modern conditions contributed to the reduction of the number of animals in grazed areas and the modern processing of low-acidified livestock in farms.

Key words: eimeria; sarcocystes; trematodes; cestodes; nematodes; botfly.

Introduction

The natural conditions of the Almaty region include 5 climatic zones - from deserts to eternal snows. The climate is sharply continental, the average temperature in January in the flat part is 15 C, in the foothills - 6-8 C; in July - +16 C and +24 +25 C, respectively. Annual precipitation on the plains is up to 300 mm, in the foothills and mountains - from 500-700 to 1000 mm per year.

The region is located between the ridges of the Northern Tien Shan in the south, Lake Balkhash in the northwest and the Ili River in the northeast; it borders the People's Republic of China in the east.

The need to study the parasitofauna in the Northern Tien Shan is dictated by the demands of developing animal husbandry. The success of the fight against parasitosis largely depends on the state of knowledge of these issues.

The purpose of the research. The purpose of this study is to study the fauna of protozoa and helminths of sheep grazing in the alpine, foothill and desert zones of the Almaty region. To achieve this goal, the following tasks are set: to establish the species composition of the fauna of protozoa and helminths of sheep grazing in this area.

Material and methods

In the highlands, studies were carried out in 1986-1987 and 2021 in the farms of the Kegensky district of the Almaty region. In 1986-1987, 288 sheep of various ages were examined in different seasons of the year: including 60 heads were examined for intestinal parasites (Berkinbay method [1]); 180 heads – for intestinal parasites and sarcocysts (Berkinbay biopsy method [1]); 48 heads – for intestinal parasites (Berkinbay method [1]) and on nasopharyngeal gadflies (by opening the heads of fallen animals). In 2021, the work was carried out in the farm "Darkhan". In total, 60 sheep were examined by the Fulleborn flotation method and 3 sheep heads were examined by the method of sequential washing, incomplete helminthological autopsy of the gastrointestinal tract.

In the foothills, the collection of material was carried out in 1986-1987 and 2022 in the Enbekshikazakh district of Almaty region. In 1986-1987, the work was carried out in the state farm "Turgensky". In total, 220 sheep of various ages in different seasons were examined by the Berkinbay flotation method [1] and femoral muscle biopsy, 4 by the method of complete helminthological autopsy. In 2022, the work was carried out in the farm "Zhangazy" and "Abilov". In total, 60 sheep were examined by the Fulleborn flotation method and 2 heads of sheep aged over two years were examined by the method of sequential washing, incomplete helminthological autopsy of the gastrointestinal tract.

In the desert, work was carried out in 1986-1987 in the experimental production farm for the production of seeds of wild herbs in the former Kurtinsky district, now Zhambyl district, Almaty region. In total, 280 sheep of various ages in different seasons of the year were examined by the flotation method of Berkinbay [1] and muscle biopsy, and 1 sheep aged 1.5 years was examined by a complete helminthological autopsy. In 2022, the work was carried out in the peasant farm "Aidarly". In total, 30 sheep were examined by the Fulleborn flotation method and 2 heads of sheep aged over two years were examined by the method of sequential washing, incomplete helminthological autopsy of the gastrointestinal tract.

The matrices obtained with a complete helminthological autopsy were poured into cotton bags, labelled and preserved in a common jar with Barbagallo liquid.

Lifetime parasitological studies of sheep were carried out according to the method of O. Berkinbay [1].

Results

Eimeria, sarcocysts, nematodes, cestodes, flukes and nasopharyngeal botflies were registered in sheep grazing all year round, only in the highlands, in 1986-1987 (table 1). These parasites occur both in the form of monoinvasia and in the form of combined invasions in various combinations [2-10].

Thus, as a result of a study on gastrointestinal parasites, the most common among sheep are mixed eimeria-nematode invasions (33.1 %) and monoinvasia: eimeria (30 %) and nematodes (8 %). The following associations were established: eimeria+nematode+cestode (6.8 %), eimeria+nematode+cestode+trematode (5.7 %), eimeria+ nematode+trematode (3.4 %), eimeria+trematode (1.9 %). Monoinvasia of trematodes (1.5 %) and mixed invasions are less common: eimeria+cestode, nematode+cestode and

nematode+trematode (1.1 % each). The infestation of animals with parasites depends on the age and season. In young animals up to a year old, the most common are eimeria (41.4 %) and eimeria + nematode (34.3 %) infestations. In winter, at the age of 10 days, they are found to have eimeria and nematodes. In spring, cestodes are added to them, and in autumn, flukes. High infection of young animals with eimeria is observed in winter (30 %), spring (80 %) and autumn (40 %); eimeria + nematode invasion – in summer (80 %) and autumn (25 %). In addition, they have eimeria +nematode+cestode (in summer, autumn), eimeria + cestode (in autumn), eimeria + trematode (in autumn) and nematode (in autumn) infestations.

In young animals older than one year and adult animals, the most common are eimeria+nematode (32.7-32.5 %) and eimeria (16.8-28.8 %) invasions. High infection of animals with eimeria+nematode invasion is observed in winter (55-40 %), spring (50-55 %) and summer (up to 35 %), low – in autumn (10-20 %). Eimerious invasion is registered in them in spring (20-55 %), summer (20-10 %) and autumn (15-50 %). Other associations are not found in all seasons and are characterized by a low extent of invasion.

As a result of the study on gastrointestinal and tissue parasites, the following were found: eimeria (10.6 %), nematodes (1.1), eimeria+nematodes (2.7), eimeria+cestodes (1.7), eimeria+nematodes+cestodes (3.9), eimeria+nematodes+ trematodes (2.2), eimeria+nematodes+cestodes+trematodes (2.2), sarcocysts (11.1),eimeria+sarcocysts (14.4),eimeria+nematodes+sarcocysts (5), eimeria+ trematodes+sarcocysts (5),eimeria+cestodes+trematodes (1.1), nematodes+ trematodes-sarcocysts (2.2), eimeria+cestodes+trematodes+sarcocysts (2.2), eimeria+ nematodes+trematodes+sarcocysts (6.1), eimeria+ nematodes+cestodes+sarcocysts (4.4), eimeria+nematodes+cestodes+trematodes +sarcocysts (6.7), eimeria+ cestodes+sarcocysts (3.9), nematodes+trematodes+sarcocysts (0.6), nematodes+ sarcocysts (0.6), trematodes+sarcocysts (2.2 %).

As a result of the study of fallen animals for gastrointestinal parasites and nasopharyngeal botflies, the following were identified: trematodes (8.3%), botflies (6.2), eimeria+trematodes (2.1), nematodes+botflies (4.5), trematodes+botflies (8.3), eimeria+nematodes+botflies (2.1), nematodes+trematodes (2.1), nematodes+ trematodes+ botflies (22.9), nematodes+cestodes+trematodes (4.4), eimeria+ nematodes+trematodes (4.5), eimeria+nematodes+trematodes+ botflies (18.7), nematodes-cestodes+trematodes+botflies (6.2), eimeria+nematodes+ cestodes+ trematodes (4.5), eimeria+nematodes+cestodes+trematodes+botflies (2.1 %).

Table 1 – Sheep parasites registered in different years

№	Parasites	Natural areas					
		highlands		foothills		desert	
			2021-2022	1986-1987	2021-2022	1986-1987	2021-2022
1	2	3	4	5	6	7	8
1	*Eimeria ahsata Honess, 1942*	+					
2	*E. crandallis Honess, 1942*	+	+				
3	*E. faurei (Moussu, Marotel, 1902) Martin, 1909*	+		+			
4	*E. granulosa Christensen, 1938*	+	+				
5	*E. intricata Spiegl, 1925*	+		+	+		
6	*E. ovina Levine, Ivens, 1970*	+	+	+	+	+	+
7	*E. ovinoidalis Levine, 1961*	+	+	+	+	+	+
8	*E. parva Kotlan, Mocsy, Vaida, 1929*	+		+		+	

9	*Sarcocystis ovicanis Heydorn e.a., 1975*	+		+		+	
10	*Fasciola hepatica Linnaeus, 1758*	+		+	+		
11	*Eurytrema pancreaticum (Janson, 1889)*	+			+		
12	*Dicrocoelium lanceatum Stiles, Hassall, 1896*	+	+	+		+	
13	*Hasstilesia ovis (Orloff, Erschoff, Badanin, 1934) Gvosdev, Soboleva, 1973*	+	+	+			
14	*Paramphistomum ichikawai (Fukui, 1922)*	+	+				
15	*Liorchis scotiae (Wilmott, 1950) Veichko, 1960*	+					
16	*Moniezia expansa (Rudolphi, 1810) Blanchard, 1891*	+	+	+	+	+	+
17	*M.benedeni (Moniez, 1879) Blanchard, 1891*	+	+	+		+	
18	*Thysaniezia giardi (Moniez, 1879)*	+	+				
19	*Parabronema skrjabini Rassowska, 1924*	+					
20	*Skrjabinema ovis (Skrjabin, 1915) Werestschagin, 1926*	+					
21	*Chabertia ovina (Pabricine, 1788)*	+	+				
22	*Bunostomum trigonocephalum (Rudolphi, 1802)*	+					
23	*Trichostrongylus axei (Cobbold, 1879) Railliet, Henry, 1909*	+		+	+	+	+
24	*T. capricola Ransom, 1911*	+					
25	*T. colubriformis (Giles, 1822) Ransom, 1911*	+					
26	*T. probolurus (Railliet, 1896) Looss, 1905*	+					
27	*Ostertagiella circumcincta (Stadelmann, 1894) Andreeva, 1957*	+		+	+	+	
28	*O. kegeni Anreeva, 1957*	+					
29	*O. occidentalis (Ransom, 1907) Andreeva, 1957*	+					
30	*O. orloffi (Sankin, 1930) Andreeva, 1957*	+					
31	*O. trifida (Guills,Marotel, Panisset, 1911) Anreeva, 1957*	+				+	
32	*O. trifurcata (Ransom, 1907) Andreeva, 1957*	+		+		+	
33	*Marshallagia marshalli (Ransom, 1907) Orloff, 1933*	+		+	+	+	+
34	*M.mongolica Schumakovitsch, 1938*	+					
35	*Telodorsagia davtiani Andreeva, Satubaldin, 1954*	+					
36	*Haemonchus contortus (Rudolphi, 1803) Cobbold, 1898*	+	+	+	+		
37	*Nematodirus archari Sokolova, 1948*	+					
38	*Nematodirus filicollis (Rudolphi, 1802) Ransom, 1907*	+					

39	*N. oiratianus Rajewskaja, 1929*	+	+	+		+	
40	*N. spathiger (Railliet, 1896) Railliet, Henry, 1909*	+	+	+	+	+	+
41	*Nematodirella longissimespiculata (Romanovitsch, 1915) Skrajbin, Schikhobalova, 1952*	+					
42	*Dictyocaulus filaria (Rudolphi, 1809) Railliet, Henry, 1907*	+	+	+	+		
43	*Protostrongylus davtiani (Savina, 1940) Davtian, 1949*	+			+		
44	*Strongyloides papillosus (Wedl., 1856)*	+	+	+		+	
45	*Trichocephalus ovis Abildgaard, 1795*	+	+		+		
46	*T. skrjabini (Backakow, 1924)*	+	+	+	+	+	+
47	*Oestrus ovis Linnaeus, 1758*	+		+			
Total		47	18	22	15	16	7

In 2021, the results of a coprological study of 20 sheep of the Kegensky district of the Almaty region using the Fulleborn method showed that protozoa and helminths occur both in the form of monoinvasia and in the form of mixed invasions.

Infection of sheep of the Kegensky district of the Almaty region with eimeria, excluding parasitocenosis, was 20 %, anoplocephalids – 45 %, marshallagia – 20 %, nematodiruses – 20 %, strongyloides – 50 %.

Monoinvasia by strongyloides was 20 %, by anoplocephalids 10 %.

Mixed invasions of eimeria+anoploc ephalides+strongyloides occur in 5 % of sheep, anoplocephalides+strongyloides – 5 %, nematodirus+strongyloides – 10 %, cestoda+marshallagium – 10 %, eimeria+str ongyloides+marshallagium – 5 %, anoplocep halides+marshallagium+nematodirus – 5 %, eimeria+anoplocephalides+ nematodirus – 5 %, ei merium+anoplocephalides+marshallagium+stron gyloides – 5 % of sheep.

Eimeria, sarcocysts, nematodes, cestodes, flukes and nasopharyngeal botflies were recorded in sheep grazing in the plains and highlands (Table 1). These parasites occur both in the form of monoinvasia and in the form of combined invasions in various combinations [11].

Monoinvasia. Eimeria. The infection rate of sheep with monoinvasia is 5.91 %. The invasiveness of lambs in spring was 30 %, in summer 20 and in autumn 5 %. In young animals under 2 years of age, monoinvasia was detected in spring and summer (5 %), and in other seasons of the year it was not noted. Monoinvasia was not detected in adult animals.

Sarcocysts. The infection rate of animals with monoinvasia reaches 23. 18 %. In young animals up to a year, sarcocysts were detected for the first time only in summer and autumn, the percentage of infected animals with monoinvasia reached 35 %. In young animals up to 2 years old, infection with parasites in winter was 40 %, in spring – 50, in summer – 25 and in autumn – 20 %. In adult animals, high invasiveness is noted in spring (30 %), then decreases, in summer it is 20 %, and in autumn it is 10 %.

Nematodes. The infection rate of animals with monoinvasia is 4.09 %. Monoinvasia was not detected in young animals up to a year old, and in young animals up to 2 years old it was detected only in autumn (5 %). The infection rate of adult animals is 15 % in spring, 5 % in summer and 20 % in autumn.

Cestodes. Larval stages of cestodes are detected only upon autopsy. Infection with monoinvasia of monesia was 1.36 %. Monoinvasia was not detected in young animals up to a year old, in young animals up to 2 years old it was detected in summer and autumn (5 %), and in adults – only in autumn (5 %).

Trematodes. These parasites in the form of monoinvasia were not found in the examined animals.

Botflies. Larvae of nasopharyngeal botflies were found only during autopsies of fallen and forcibly slaughtered animals. The development of stage I larvae is delayed on summer pastures in the alpine pastures of the Assy-Don Jailau. The development of larvae to the next stage takes place on lowland pastures.

Combined invasions. Eimeria+sarcocystic

invasion. This invasion infected 13.63 % of the examined animals. In young animals up to a year, the extent of invasion is 10 %. In young animals up to 2 years – 15, adults – 11.25 %. In young animals up to a year old and adults, the intensity of both invasions is almost the same, and in young animals up to 2 years old, eimeria prevails in winter and spring, sarcocysts prevail in summer and autumn.

Eimeria+nematode invasion. The infection rate of animals is 3.18 %. The extent of invasion in young animals up to one year was 7.5 %, and in adults – 1.25 %. In young animals up to 2 years old, such an invasion has not been detected. Eimeria prevailed in all seasons of the year over nematodes 2 and 7.5 times.

Eimeria+moniesia invasion. Combined invasion was detected in 0.90 % of the examined animals. Such an invasion was registered only in young animals of both groups, in the summer period (5 %).

Eimeria+trematode invasion was detected only in young animals up to a year in the summer (5 %). Eimeria prevailed over flukes 17 times.

Sarcocyst+nematode invasion was registered in 5.91 % of animals. Such an invasion in young animals up to a year was detected only in autumn (5 %), in young animals up to 2 years old in winter (5 %), summer (10 %) and autumn (10 %), and in adults in summer (30 %) and autumn (15 %). The ratio of parasites in young animals up to a year and adults is the same, and in young animals up to 2 years old, sarcocysts predominate in winter and summer, and nematodes in autumn.

Sarcocystic+moniesia invasion was found in 0.90 % of animals, only in young animals up to 2 years old and adults and in summer (5 %).

Sarcocyst+trematode invasion was detected in 1.81 % of animals. Such an invasion in young animals up to a year is detected only in winter (5 %), in young animals up to 2 years – in spring (5 %) and summer (5 %). Trematodes predominate in young animals up to a year old, and in young animals up to 2 years old and adults – sarcocysts by 3-15 times.

Nematode+cestode invasion was registered only in adult animals (0.90 %) and in spring (5 %) and autumn (5 %).

Eimeria+sarcocystis+nematode invasion is first established in young animals up to a year in autumn (10 %), then in young animals up to 2 years old, infection in winter and spring reaches 25 %, in summer the invasion decreases to 5 %, and in autumn it rises again (15 %). In adults, the infection rate of combined invasion in spring and summer is 5 %, and in autumn – 15 %. In young animals up to one year, eimeria and nematodes predominate over sarcocysts, in young animals up to 2 years, on the contrary, sarcocysts predominate over eimeria and nematodes. In adults, the ratio of parasites is almost the same in spring and summer, and in autumn eimeria and nematodes predominate over sarcocysts.

Eimeria+sarcocyst+moniesia invasion was established in young animals up to a year in winter (5 %), in young animals up to 2 years (15 %) and older (10 %) – in summer.

Eimeria+sarcocyst+trematode invasion was registered only in young animals up to a year in winter (20 %) and in summer (10 %).

Eimeria+nematode+moniesia invasion was detected only in adults and in autumn (5 %), after returning from summer alpine pastures.

Eimeria+nematode+trematode invasion was found only in young animals up to a year and in summer (10 %), while aimeria prevailed over helminths by 17.5 times.

Sarcocystic+nematode+moniesia invasion was registered in adult animals in spring (5 %), in young animals up to a year and in winter (5 %), in young animals up to 2 years and in autumn (10 %).

Eimeria+sarcocyst+nematode+moniesia invasion was detected in 2.27 % of the examined animals. In young animals up to a year, such an invasion was detected only in autumn (10 %). In adult animals, combined invasion occurs in spring, summer and autumn, with the same degree of infection (5 %).

Eimeria+sarcocyst+nematode+trematode invasion was registered in 3.63 % of the examined animals. In young animals, such an invasion occurs in summer (10%) and autumn (5-10 %), and in adults – only in spring (5 %).

Eimeria+sarcocyst+moniezio+trematode invasion was detected only in young animals up to a year and in winter (20 %) at the sheep fattening complex.

Eimeria+sarcocystis+nematode+moniesia+trematode invasion were registered only in young animals up to a year and only in autumn (10 %).

Eimeria, sarcocysts, trematodes, cestodes, nematodes and nasopharyngeal botfly have been recorded in sheep grazing only in the desert zone (table 1). These parasites occur in the body of animals both in the form of mono- and combined invasions in various combinations [12].

Monoinvasia. Eimeria. The infection rate of animals with monoinvasia is 7.9 %. In the main age and sex groups, monoinvasia is not found in all seasons of the year. In young animals up to a year, the infection with eimeria in winter is 15

%, in spring – 20, in summer – 10, and in autumn monoinvasia was not detected. In young animals up to 2 years old, eimeria was detected only in winter (5 %) and autumn (5 %), and in adults – in winter (10 %) and summer (5 %). Young animals under one year old are more infected with eimeria (15 %) than young animals under 2 years old (3.3 %) and adults (7. 14 %).

Sarcocysts. The infection rate of animals with monoinvasia is 30.71 %. Young animals up to 2 years old are more invaded by monoinvasia with sarcocysts (45 %) than young animals up to one year old (20 %) and adults (30.71 %). The lowest infection rate of adult animals is observed in autumn (15 %), in winter it reaches up to 30, in spring – 45, and in summer – 60 %. In young animals of both groups, monoinvasia by sarcocysts was detected in winter (25-45 %), summer (30-40) and autumn (10-50 %).

Trematodes. Monoinvasia was detected only in adults and in autumn (0.7 %).

Cestodes. The larval stages of the cestode are detected only during autopsies of a forcibly slaughtered animal. Infection of animals with pure monoinvasias was not detected.

Nematodes. The infection rate of animals with monoinvasia is 3.2 %. Nematodes were detected only in young animals up to a year old (3.75 %) and in adults (4.28 %).

Sheep botflies were detected only when opening a forcibly slaughtered animal.

Combined invasions. Eimeria+sarcocystic invasion. The infection rate of animals is 10.8 %. Animals older than a year are more infected (15-13.6 % than young animals under a year (5 %). In adults, mixed invasion was detected in all seasons of the year: in winter and spring, the number of infected animals is 15%, in summer and autumn – 10 %. In young animals of both groups, combined invasion is detected only in winter (15-10 %) and in summer (10-35 %).

Eimeria+nematode invasion. The infestation of animals is 3.2 %. The extent of infestation of young animals up to a year is 6.3 %, young animals up to 2 years - 1.7 %, adults - 2.1 %. In young animals up to a year, combined invasion is detected in winter (5 %) and spring (30 %), in young animals up to 2 years – in summer (5 %), and in adults – in spring (5 %), summer (5 %) and autumn (5 %).

Sarcocyst+nematode invasion. The infection rate of animals is 10.8 %, the older the animals, the more infected with this combined invasion. Thus, the extent of invasion of young animals up to one year is 7.5%, young animals up to 2 years – 8.3, adults – 12.1 %, in young animals up to one year, combined invasion was detected in winter (10 %) and autumn (40 %), in young animals up to 2 years – in summer (5 %) and autumn (20 %), in adults – in winter (15 %), spring (20 %) and autumn (15 %).

Sarcocyst+moniesia invasion. The infection rate of animals is 1.4 %. No combined invasion was detected in young animals up to a year old. In young animals up to 2 years old, it is found in winter (5 %) and autumn (5 %), and in adults – in winter (5 %).

Nematode+moniesia invasion was registered only in adults and in autumn (5 %).

Eimeria+sarcocyst+nematode invasion. The infection rate of animals is 6.4 %. The extent of invasion in sheep older than a year is greater (8.3-8.6) than in young animals under a year (1.3 %). In the latter, combined invasion occurs only in autumn (10 %), in young animals up to 2 years old – in winter (15 %) and summer (10 %), and in adults – in winter (15 %), spring (15 %) and autumn (20 %).

Eimeria+sarcocyst+moniesia invasion. The infection rate of animals is 1.1 %. In young animals of both groups, combined invasion was detected only in winter (5 %), and in adults – in autumn (5 %).

Eimeria+nematode+moniesia invasion was detected only in young animals up to a year and in autumn (10 %).

Sarcocyst+nematode+moniesia invasion is also found in young animals up to a year in winter (5 %) and autumn (20 %).

Sarcocyst+nematode+trematode invasion was registered only in adults and in autumn (10 %).

Eimeria+sarcocyst+nematode+moniesia invasion was found only in young animals up to a year in winter (10 %) and autumn (10 %).

Eimeria+sarcocyst+nematode+trematode invasion was detected in young animals up to a year old (in winter, 5 %) and in adults (in autumn, 5 %).

Discussion

As a result of our research, it was found that eimeria, sarcocysts, gastrointestinal trematodes, cestodes and nematodes in the body of sheep occur both in the form of monoinvasia and in the form of mixed invasions in 23 combinations.

The infection of animals with monoinvasions and mixed invasions is influenced by the qualitative composition of the joints of parasitocenoses in

biocenoses, age and seasons of the year. Thus, we have registered forty-seven species of parasites in sheep bred in the highlands (table 1), sixteen in sheep constantly grazing in the desert zone, and twenty-two in sheep bred in the foothills.

We have registered 19-21 variants of associations in sheep grazing in the mountainous zone, and 12 in sheep grazing in the desert zone. That is, the richer the fauna of parasites, the more diverse the mixed infestations in various combinations. In the mountain biocenosis, favorable conditions (heat and humidity) are created in the spring-summer-autumn period for the growth of plants that feed on livestock, and for the maturation of parasites to invasive stages and infecting animals with them (almost all animal populations are concentrated in this biocenosis during this period). At the same time, parasites belonging to different taxa can simultaneously enter the body of several individuals of a given population. Consequently, parasites interact with each other and the host organism. The relationship between parasites is possibly synergistic, in which mixed infestations are detected. Hence the low recordability or absence of monoinvasies. In other cases, the relationship may be antagonistic. In biocenoses with a poor species composition of parasites, the population of one type of parasite prevails over the rest.

There are no monoinvasias and mixed invasions in animals in individual farms or in certain periods of the year. In our opinion, this is due to a change in the species composition of the joints of parasitocenoses forming more or less stable combinations or associations. The life expectancy of different parasites in the host body is different: individual parasites are removed from the host body after certain stages of development are completed, but others may remain in it. Hence the different recordability of monoinvasia and mixed invasions in individual farms and in different seasons of the year.

Conclusions

The qualitative composition of the parasitofauna in sheep has changed over 36 years: the fauna of parasites has become smaller: in the highlands by 29 parasites (47-18); in the foothills by 7 (22-15); in the desert by 9 (16-7). This was facilitated, in our opinion, firstly, by a sharp reduction in the number of livestock over the years, almost 100 times; previously, farms had at least 50,000 heads of sheep and goats; now, farms have 150-200 heads of small cattle; secondly, earlier farms did not have time to treat animals with antiparasitic agents; now, a small number of livestock are subjected to several treatments per year.

Acknowledgements

This publication is made within the framework of the scientific topic: BR10965224 Development of the cadastre of the fauna of the Northern Tien Shan for the preservation of its genetic diversity, registered by the National Center for State Scientific and Technical Expertise of the Committee of Science of the Ministry of Science and Education of the Republic of Kazakhstan.

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СОЛТҮСТІК ТЯНЬ-ШАНЬ ҚОЙЛАРЫНЫҢ ПАРАЗИТТЕРІН КАДАСТРЛЫҚ БАҒАЛАУ

Беркінбай Омархан
Ветеринария ғылымдарының докторы, профессор
Зоология институты
Алматы қ., Қазақстан
E-mail: berkinbay49@mail.ru

Сүлейменов Маратбек Жақсыбекұлы
Ветеринария ғылымдарының кандидаты, профессор
Зоология институты
Алматы қ., Қазақстан
E-mail: maratber.suleimenov@zool.kz

Омаров Байжан Баймұханбетұлы
Ветеринария ғылымдарының кандидаты
Зоология институты
Алматы қ., Қазақстан
E-mail: baijan1957gmail.com

Бердіқұлов Мақсат Аманбекұлы
Ветеринария ғылымдарының кандидаты
Ветеринария бойынша ұлттық референттік орталық
Астана қ., Қазақстан
E-mail: berdikulov.ma@mail.ru

Баймұханбетов Ержан Байжанұлы
Кіші ғылыми қызметкер
Зоология институты
Алматы қ., Қазақстан
E-mail: erkesh.b@gmail.com

Түйін

Солтүстік Тянь-Шаньда қой паразиттерінің сапалық құрамы мал жаю орындарына байланысты. Сонымен, тек таулы жерлерде жайылатын қойларда 47 тоғышар тіркелген (қарапайымдылардың 9 түрі, 6 - трематод, 3 - цестод, 28 - нематод және бөгелектің 1 түрі), тау бөктерінде жайылатын қойларда - 22 (6-протозоа, 3 - трематод, 2 - цестод, 10 - нематод және бөгелектің 1 түрі).), ал шөлді аймақта жайылып жүрген қойларда – 16 (4 – қарапайымдылар, 1 – трематод, 2 – цестод, 9 – нематод). Аралас инвазияның пайда болуы тоғышарлардың сапалық құрамына байланысты. Сонымен, 47 тоғышар тіркелген таулы жерлерде жайылып жүрген қойларда ассоциацияның 19-21 нұсқасы кездеседі, ал шөл аймағында жайылып жүрген қойларда 16 паразит тіркелген болса, онда ассоциацияның 12 нұсқасы бар.

Қазіргі жағдайда қойлардағы паразиттердің сапалық құрамының төмендеуі жайылымдық жерлерде мал басының азаюы және фермаларда аз санды малды уақтылы өңдеу ықпал етті.

Кілт сөздер: эймерия; саркоциста; трематодтар; цестодтар; нематодтар; бөгелек.

КАДАСТРОВАЯ ОЦЕНКА ПАРАЗИТОВ ОВЕЦ СЕВЕРНОГО ТЯНЬ-ШАНЯ

Беркинбай Омархан
Доктор ветеринарных наук, профессор
Институт зоологии
г. Алматы, Казахстан
E-mail: berkinbay49@mail.ru

Сулейменов Маратбек Жаксыбекович
Кандидат ветеринарных наук, профессор
Институт зоологии
г. Алматы, Казахстан
E-mail: maratber.suleimenov@zool.kz

Омаров Байжан Баймуханбетович
Кандидат ветеринарных наук
Институт зоологии
г. Алматы, Казахстан
E-mail: baijan1957gmail.com

Бердикулов Максат Аманбекович
Кандидат ветеринарных наук
Национальный рефертный центр по ветеринарии
г. Астана, Казахстан
E-mail: berdikulov.ma@mail.ru

Баймуханбетов Еркегали Байжанович
Младший научный сотрудник
Институт зоологии
г. Алматы, Казахстан
E-mail: erkesh.b@gmail.com

Аннотация

В Северном Тянь-Шане качественный состав паразитов овец зависят от мест выпаса животных. Так у овец, выпасающихся только в высокогорье, зарегистрировано 47 паразитов (9 видов простейших, 6 - трематод, 3 - цестод, 28 - нематод и 1 вид овод), у овец, выпасающихся в предгорье – 22 (6 - простейших, 3 – трематод, 2 – цестод, 10 – нематод и 1 вид овод), а у овец выпасающихся в пустынной зоне – 16 (4 – простейших, 1 – трематод, 2 – цестод, 9 – нематод). А встречаемость смешанных инвазии зависит от качественного состава паразитов. Так у овец, выпасающихся в высокогорье, где зарегистрировано 47 паразитов, встречаются 19-21 вариантов ассоциаций, а у овец, выпасающихся в пустынной зоне, где зарегистрировано 16 паразитов – 12 вариантов ассоциаций.

Уменьшению качественного состава паразитов у овец в современных условиях способствовало сокращение поголовье животных на выпасаемых территориях и своевременная обработка малочисленного скота в фермерских хозяйствах.

Ключевые слова: эймерия; саркоциста; трематода; цестода; нематода; овод.

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С.Сейфуллин атындағы Қазақ агротехникалық университеті

№ 4 (115) 2022
Журнал Қазақстан Республикасы
Мәдениет, ақпарат және спорт министрлігінің
Ақпарат және мұрағат комитетінде тіркелген
(№ 5770-Ж куәлік)
(№ 13279-Ж куәлік)

II бөлім

Құрастырған:
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С.Сейфуллин атындағы Қазақ агротехникалық
университетінің баспасында басылды.
Форматы 60 х $84^{1}/_{8}$ Шартты б.т. 15.00
Таралымы 300 дана
00.00.2022 ж. басуға қол қойылды. Тапсырыс № 0000
010011, Астана қ., Жеңіс даңғылы, 62 «а»
Анықтама телефондары: (7172) 31-02-75
e-mail:office@kazatu.kz
vestniknauki@bk.ru