

## THE PREVALENCE OF INVASIVE DISEASES AMONG CATS IN URALSK

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### **Abstract**

The frequent spread of intestinal worms among carnivorous animals is found in a number of diseases that are dangerous to the human body. Intestinal worming infection rates are high among stray cats and dogs as well as domesticated animals.

In the research work, studies were conducted to differentiate intestinal worming in cats brought in from micro-districts of Uralsk, West Kazakhstan region. The results of the studies determined the extent of intestinal worming among cats, their species composition, seasonal dynamics of infections and the level of the age of the disease.

The city of Uralsk revealed a widespread of cat helminth infections. (IE-36.1%). By intestinal helminth infestation, the primary *toxocariasis* (*Toxocara mystax*) is 19,7%, and by spread *toxocariasis* (*Toxascaris leonina*) is 12,4%.

The degree of the extensiveness of infestation, depending on the time of the year, was determined; it was found that in summer and autumn, the infestation reaches a high degree of extensiveness.

It was found that intestinal worm infestation in cats is associated with age. *Toxocariasis* is more common in 6-month-old cats. And with age, the incidence of this worming disease decreases significantly. In cats over five years old, this worming disease is sporadic.

**Key words:** the prevalence of invasive disease; cats; animal helminths; carnivores; helminthiasis; infestation; toxocariasis.

### **Basic position and Introduction**

It is known that endoparasites of domestic animals are widespread throughout the world. In our country, they are also ubiquitous. The only reason for the spread of infestation is considered to be the constant uncontrolled growth of dogs and cats.

These circumstances indicate that it is necessary to pay attention to causing significant damage to animals and preventing people from contracting infectious diseases.

Today, cats exist in every family and are more closely related to humans than dogs. Endoparasites found in cats, including intestinal helminth infections, are dangerous and widespread, and some of their species are not well studied [1].

Diseases caused by helminth infections become very serious and dangerous; they occur in marginal animals and adult animals.

Every 2nd, cat daily excretes several hundred to several thousand helminth eggs into the environment, many of which enter the premises together with clothes and shoes. Therefore, helminth infections are widespread even in animals that have not left the house [2-6].

Studying the species composition of feline helminths, the spread of helminths, the extensiveness of infestations, and age and seasonal dynamics is necessary for checking the epizootiology of helminthiasis of domestic animals (carnivores) and the epidemiology of parasitic diseases.

This will be the reason for correctly and effectively applying preventive and therapeutic measures against infestation. Therefore, studying the features of the spread of diseases spread by helminth infections common among cats and the organization of efforts to combat them is an urgent current problem [7-12].

Regarding roundworm infections, *Toxocara canis* is the most common ascariasis in dogs. It is highly pathogenic, and the consequences of the infection often have the character of complications. During larval migration, various tissues (liver, lung, heart, kidney) may show granulomatous lesions. The pulmonary phase can be fatal in puppies if the dog is heavily infected before birth, and death occurs within a week after birth. This is the most serious impact of *Toxosaga* infection. After the worms have progressed to the adult stage in the small intestine, the most important clinical symptoms are abdominal bloating characterized by mild diarrhoea. Adult worms often escape and become infected by faeces or vomit. Other roundworms do not migrate *Toxascaris leonina* in dogs and, less frequently, in cats, so the pathological significance is not particularly pronounced [13-16].

Two species, *Taenia taeniaeformis* and *Dipylidium caninum* are common in cats.

In many cases, clinical signs go undetected. The infection will be

associated with diarrhoea and stunted development, but gastrointestinal parasitism of roundworms can often be significant. Humans can accidentally become infected with *Ancylostoma caninum* zoonosis, *Ancylostoma braziliense* and *Uncinaria stenocephala*, which can cause self-limiting dermatological lesions in the form of migrating skin larvae. In

### **Materials and methods**

Following the purpose of the research work, it was found to study the characteristics of the spread of the main intestinal helminthiasis of cats in the West Kazakhstan region, the city of Urals, and to organize their prevention and treatment. Cats infected with random helminths, caught from various small areas in the city of Ural, West Kazakhstan region, were taken as the object of the study. The blood and excrement of cats in which helminths were detected were included as research materials.

The research work was carried out in the period of 2020-2022 at the "Zhardem-Vet" educational-scientific production centre of West Kazakhstan Agricultural and Technical University, named after Zhangir Khan. During the research, 310 faeces and 80 blood samples from cats of different breeds, sexes and ages were studied. Two

### **Results**

The results of the distribution of the main intestinal worms of cats in the West Kazakhstan region, Ural city, gave the following data (Fig.1).

addition, *Ancylostoma ceylanicum*, which usually causes ankylostomas in cats, also affects humans [17].

An analysis of studies by scientists has shown that roundworms in dogs and cats rank first in the frequency of occurrence compared to other intestinal helminth infections [18-20].

hundred fifty-six cats of other species, sexes and ages, randomly infected with intestinal helminths, caught at different times from different districts of the city of Urals, were studied.

For the study, freshly separated stool samples were taken from domestic animals; during the collection of stool samples, anamnesis data were collected, as well as gender, age, type and time of the study were determined.

The Fülleborn flotation method was used in order to determine the presence of eggs of *Toxocara mystax*, *Toxascaris leonina*, *Uncinaria stenocephala*, and *Dipilidium caninum* in coprological research.

The eggs of the helminths mentioned above were counted using the Tracha method in the VIGIS counting chamber.

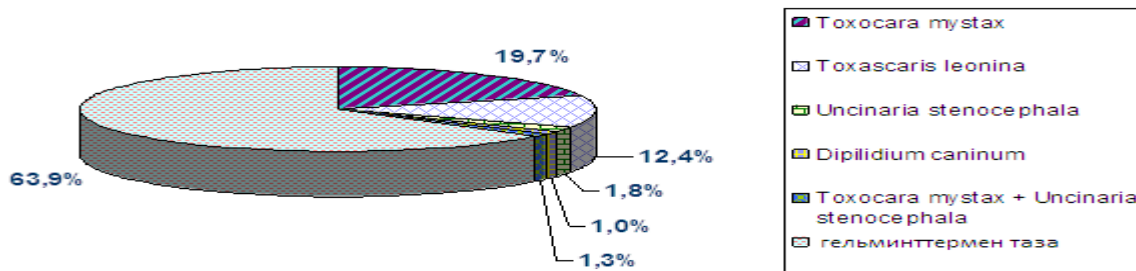


Figure 1 - Distribution of main intestinal worms of cats in the city of Ural, West Kazakhstan region

As a result of the analysis of the conducted studies, the average extensiveness of infestation in helminthiasis of cats was found to be 36.1%, while the high prevalence of intestinal helminths was 19.7% caused by *Toxocara mystax*. Toxasquirosis (the causative agent of *Toxascaris leonina*) took 2nd place in terms of the majority - 12.4%. After that, uncinariasis (the causative agent of *Uncinaria stenocephala*) was 1.8%, and

dipilidiosis (the causative agent of *Dipilidium caninum*) was 1%.

There were also cases of mixed infestation of *Toxocara mystax* and *Uncinaria stenocephala* - 1.3% (Fig 1).

The seasonal dynamics of infection of cats with the main types of helminths were as follows.

As a result of the study throughout the year, the degree of cat infestation was different (Fig2).

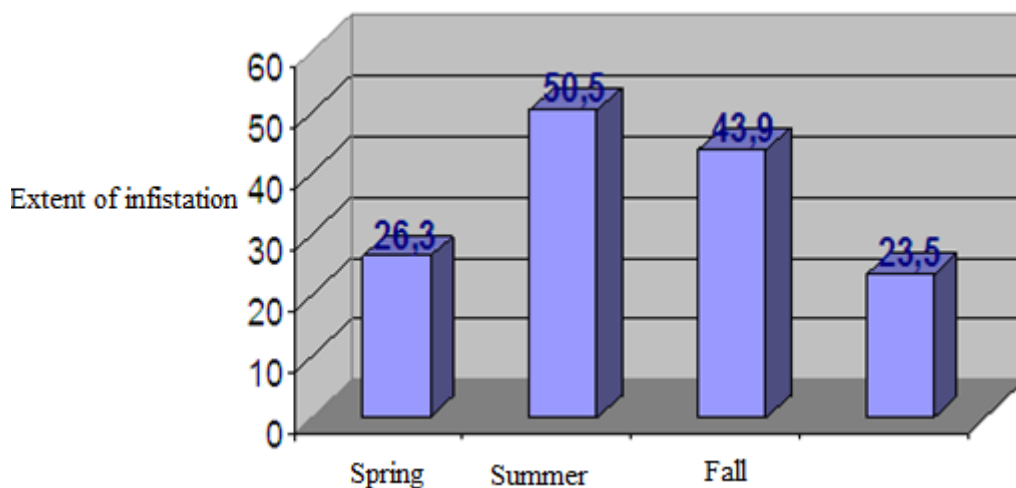


Figure 2 - Seasonal dynamics of infection of cats with the main types of helminths

The dependence of the extent of infestation on the season was determined, and the size of infestation was 50.5% and 43.9% in summer and autumn and reached a high level, while

the extent of infestation decreased to 23.5% in winter.

In the spring months, it is observed that the degree of infection of cats with helminths increases to a small extent.

The upper limit of infection of cats with *toxocariasis* helminths is 23.8% in summer and 20.4% in autumn. And it was found that the extent of invasion is significantly lower. If it is 15.7% in winter, it rises to 18.9% in spring.

The lowest infection rate of *toxocariasis* in cats was observed in the winter months - 8.8%. And if the spread of infestation increased to 10.5% throughout the year, it reached the upper limit - 15.8% in the summer months and 14.3% in the autumn.

Infection with *uncinariasis* in cats was 3.9% in summer, while the extent of infestation decreased by 2% in autumn.

*Uncinariosis* was not registered in winter, and the rate of infection in spring was 1%.

In cats, the rate of infection with dipilidiosis was 1.9% in summer, 1% in autumn, and 0.9% in winter.

Mixed infestation with *toxocariasis* and *uncinariasis* was recorded at 2.9% in summer and 2% in autumn.

Seasonal dynamics of infection rate in cats are clearly natural.

It is believed that the condition of a great extent of invasion in summer and autumn is due to the appearance of helminth eggs and favourable environmental conditions for the infection of cats.

The dynamics of infection in cats by age provided the following data (Table 1).

Age characteristics of animals have a significant effect on the degree of infection with intestinal worms.

According to these data, the animals in the study were divided into age groups: 1 - 6 months, 7 - 12 months, 1 - 3 years, 3 - 5 years and over five years.

Table 1 - Infectivity of animals by age

Age characteristic	Number of examined animals	Number of infected animals	*IE %
1-6 months	76	35	46,0
7-12 months	50	22	44,0
1-3 years	47	16	34,0
3-5 years	41	11	26,8
5 years and older	42	8	19,0
Everything	256	92	35,9

*\*extent of infestation*

35 out of 76 head mares were infected between 1 and 6 months of age (IE - 46.0%)

And 50 cats between the ages of 7-12 months were examined, and 22 (IE - 44.0%) of them were infected.

In the course of the study, 16 animals out of 47 were infected between 1 and 3 years of age, accounting for 34.0%.

Out of 41 examined animals aged 3-5 years, the number of infected animals was 11 (26.8% IE).

And 42 animals over five years of age were examined, and the number of infected ones was 8 (IE - 19.0%).

Based on the results of the research, it was determined that the infection of cats with intestinal worms depends on their age. Some types of intestinal worms affect the generation of animals. For example, *toxocariasis* is common in 6-month-old cats. And due to the increase in age, infection with this worm disease decreases significantly; this worm disease occurs very rarely in cats over five years old.

There is a definite relationship between the age of the cat and its susceptibility to *toxocariasis* - up to 6 months of age, it is rarely registered,

### Discussion

In the city of Uralsk, a wide spread of helminthiasis, the most common in cats, was revealed, with the calculation of their invasive extensiveness, the percentage structure of which is reflected in our scientific study of IE – 36.1% of helminths occurring in cats.

The degrees of helminth infection in cats imported to different micro districts in the West Kazakhstan region, Uralsk, were revealed. Including in the village of Zashagan, the Central market "Mirlan", and the Meat-processing areas, helminths had a high degree of IE.

Accordingly, regarding the prevalence of helminthiasis, *Toxocara mystax* ranks first, accounting for

and as the age of the cat increases, an increase in an infestation is observed.

Infection of uncinariasis and dipylidiasis was recorded in animals aged one year, and the mixed infestation was recorded only in young cats under 3 years of age.

There is no significant difference in the degree of contamination of cats with intestinal worms in different districts of the Western Urals city.

A slightly higher degree of infection was observed in the village of Zachagan; the extent of infestation was 42%. After that, the central market is in "Mirlan" district (IE - 37.8%), "Myasokombinat" (IE - 35.3%), Selektсионny (IE - 34.4%), 6th sub-district (IE - 32.8 %) and in the territory of Orda and Gagarin streets (IE - 31.5%).

19.7%, and the causative agent *Toxascaris leonina* ranks second, accounting for 12.4%. And *Uncinaria stenocephala* – 1.8% - and *Dipilidium caninum*-1%. It was also found that they occur in mixed invasions: *Toxocara mystax* and *Uncinaria stenocephala* – 1.3%.

Also, the seasonal dynamics of infection of cats with helminths have been relatively calculated for the city of Uralsk. While the percentage of summer and autumn seasonal invasion increases, this indicator decreases in the winter and spring seasons.

Depending on the age, percentage degrees of invasion expansion was detected in cats aged 1-6 months to 3-5 years.

## Conclusion

It has been established that helminthiasis of cats is widespread in the city of Uralsk. (IE - 36.1%). *Toxocarosis* (the causative agent of *Toxocara mystax*) is in first place in terms of infection with intestinal worms - 19.7%. *Toxascariosis* (the causative agent of which is *Toxascaris leonina*) is in the 2nd place in terms of distribution - 12.4%. Accordingly, uncinariasis (causing agent *Uncinaria stenocephala*) – 1.8% and dipilidiosis (causing agent *Dipilidium caninum* – 1%) are found in the following places. At the same time, a mixed infestation of *Toxocara mystax* and *Uncinaria stenocephala* was detected - 1.3%.

It was found that there is no significant difference in the degree of contamination of cats caught for intestinal worms in different areas of the city. According to the degree of contamination, the extent of infestation in the territory of Zachagan district is

42%. Central Market «Mirlan» (IE - 37.8%), «Myasokombinat» district (IE - 35.3%), «Selektsionny» district (IE - 34.4%), in the 6th sub-district (IE - 32.8%) and Orda and was registered in the territory of Gagarin street (IE - 31.5%).

It has been determined that the seasonal dynamics of infection in cats depending on the time of year. In summer and autumn, the amount of infestation increased by 43.9-50.5%, and in winter-spring, it significantly decreased by 23.5-26.3%.

It was found that the high degree of contamination is more common in 1-6-month-old cows, making up 46.0%. And in cats from 7 to 12 months, the extent of the infestation is 44.0%; from 1 to 3 years - 34.0%; from 3 to 5 years - 26.8%. In cats older than five years, the infection rate was 19.0%.

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### **Аннотация**

Частое распространение кишечных гельминтов среди плотоядных животных обнаруживается в ряду заболеваний, представляющих опасность для организма человека. Среди бездомных собак и кошек, а также домашних животных, содержащихся в домашних условиях, показатели заражения кишечными гельминтами показывают высокие результаты.

В научной работе были проведены исследования с целью дифференциации кишечных гельминтов у кошек, завезенных из микрорайонов города Уральска Западно-Казахстанской области, в результатах исследований определена степень распространения кишечных гельминтов среди кошек и их видовой состав, сезонная динамика заражений и уровень возрастного заражения.

По городу Уральск выявлено широкое распространение гельминтозов кошек. (ИЭ-36,1%). По заражению кишечными гельминтами первичный токсокароз (возбудитель *Toxocara mystax*) составляет 19,7%, а по распространению токскарриоз (возбудитель *Toxascaris leonina*) – 12,4%.

Определена степень экстенсивности инвазии в зависимости от времени года, установлено, что в летнее и осеннее время инвазия достигает высокой степени экстенсивности.

Было обнаружено, что заражение кошек кишечными глистами связано с возрастом. Токсокароз чаще встречается у 6-месячных кошек. А с возрастом заболеваемость данным гельминтным заболеванием значительно снижается, у кошек старше 5 лет это заболевание встречается очень редко.

**Ключевые слова:** распространенность инвазивных заболеваний; кошки; гельминты животных; плотоядные животные; гельминтоз; инвазия; токсокароз.

### Түйін

Етқоректі жануарлар арасында ішек құрттарының жиі таралуы адам ағзасы үшін қауіп тудыратын аурулар қатарынан табылуда. Иесіз қалған ит-мысықтар, сонымен қатар үй жағдайында ұсталатын үй жануарлары арасында да ішек құрттарымен залалдану көрсеткіштері жоғары нәтижені көрсетуде.

Зерттеу жұмысында Батыс Қазақстан облысы, Орал қаласының шағын аудандарынан ауланып әкелінген мысықтарды ішек құрт ауруларын дифференциациялау мақсатында зерттеулер жүргізіліп, зерттеу нәтижелерінде мысықтар арасында ішек құрттарының таралу дәрежесі, олардың түрлік құрамы, зарарланудың маусымдық динамикасы және жас ерекшеліктеріне байланысты залалдану деңгейі айқындалды.

Орал қаласы бойынша мысықтардың гельминтоздары кеңінен таралғаны анықталып отыр. (ИЭ – 36,1%). Ішек құрттармен зарарлануы бойынша бастапқы кезекте токсокароз (қоздырғышы *Toxocara mystax*) – 19,7%-ды құраса, ал таралуы бойынша токскарриоз (қоздырғышы *Toxascaris leonina*) – 12,4% көрсетіп отыр.

Инвазияның экстенсивтілігінің жыл мезгіліне байланыстылығы айқындалып, жазғы және күзгі уақыттарда инвазия экстенсивтілігі жоғары дәрежеге дейін жететіндігі анықталды.

Мысықтардың ішек құрттарымен зарарлануы жасына байланысты екені анықталды. Токсокароз 6 айлық мысықтарда жиі кездеседі. Ал жасының ұлғаюына байланысты аталған құрт ауруымен зарарлану айтарлықтай төмендейді, 5 жастан жоғары мысықтарда бұл құрт ауруы өте сирек жағдайда кездесіп отыр.

**Кілт сөздер:** инвазиялық аурулардың тарауы; мысықтар; жануарлардың гельминттері; ет қоректілер; гельминтоз; инвазия; токсокароз.