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## Feline Parasite Cenosis and Measures to Struggle Against it.

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### ABSTRACT

In this paper, an epizootic situation is described considering infection of cats with helminthiases: toxocarosis, toxascaridosis, dipilidiosis, protozoosis - toxoplasmosis, entomoses: *Linognathus*, *Trichodectos*, *Ctenocephalides*. In the city of Krasnoyarsk, monitoring of the infection of cats with bacterial, viral and fungal pathogens was carried out. Based on the conducted studies, the use of "Ligfol" in a combination with curative and specific therapy of infectious diseases of cats is recommended.

**Keywords:** virus diseases, bacterial diseases, *Microsporium*, parasitoses, *Ctenocephalides felis*, *Linognathus vituli*.

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## INTRODUCTION

In the days of the origin of mankind dogs and cats were the first animals, tamed by men. Growth of the number of dogs and cats, especially those that are stray, wandering around large cities, constitutes a serious danger of people and animals being infected with causative agents of many dangerous infectious diseases of various etiology. In addition to this, active and uncontrolled breeding of small pets leads steadily to the increase in the risk of infection and the spread of infectious and invasive diseases [9, p.97], [10, p.81].

Under natural conditions the associations of viruses, rickettsiae, bacteria, fungus, protozoans, helminths and arthropods can be created inside the living body either of animals or men. Such complex associations have been named by the academician Pavlovsky E.N. "parasite cenosis" which can further establish complex relationships not only symbiotic, but also antagonistic [4, p.158], [7, p.27], [8, p.34].

A number of helminths and protozoans in association with microorganisms can affect physiological state of animals. As a result of decrease in protective forces of an organism, weakening of its immune system and factors of natural nonspecific resistance, favorable conditions for a microcosm and all parasitic forms are created. First of all, it is reflected in the general state of an organism, the nonspecific immunity weakens, whereas the development of specific antibodies within active and passive immunization decreases sharply. If the immune system is impaired, the penetration of representatives of even normal microflora into blood can lead to pathological processes [3, p.13], [5, p.15], [6, p.27].

Nowadays, in both human and veterinary medicine humic medicines, one of which is "Ligfol", are begun to be used for the treatment of various pathologies. Chemically "Ligfol" belongs to the class of humic substances. According to its pharmacological properties, "Ligfol" has the positive anti-inflammatory, regenerating, antitumoral and adaptogenic effect [1, p.23].

## GOAL OF RESEARCH

To carry out studies on etiological structure of feline infectious diseases in the city of Krasnoyarsk and to adapt "Ligfol" for the scheme of treatment and prevention.

## SOURCES OF INFORMATION AND RESEARCH METHODS

Studies of the spread of feline infectious diseases were based on the statistical data of such Krasnoyarsk veterinary clinics, as "Fauna", "Healthy animals", "Friend", for the period 2012 - 2016. "Ligfol"'s adoption in the scheme of treatment and prevention of feline infectious diseases, has been carried out together with the practicing veterinarians.

The diagnosis of viral diseases, such as panleukopenia, feline calicivirus, rhinotracheitis, coronaviral and adenoviral infection, was determined on the basis of epizootic background (age, breed, housing conditions, etc.), clinical signs, laboratory researches (PCR, express - diagnostic tests).

The infectious diseases caused by bacterial flora (*Staphylococcus aureus*, *St.epidermidis* *Bor.vronchiseptica*, *E. Coli.*, etc.) were identified through microbiological researches according to the methods of Blochina I.N., Voronina E.S., etc. [2. p. 177].

The diagnostics of helminthoses (toxocarosis, Toxascaridosis, dipylidiosis, etc.) was carried out according to Kotelnikov-Hrenov's methods. Ammonium nitrate was used as floatation fluid.

The diagnostics of infecting with stationary ectoparasites (*Ctenocephalosis*, *Linognathus*, *Trichodectosis*) was carried out with thorough surveying of an animal and a microscopic examination of an arthropod, that eventually enabled to make the diagnosis on the basis of all the morphological features.

## RESULTS AND THEIR DISCUSSION

According to the results of the statistical analysis, now in Krasnoyarsk there are more than 380 thousand of cats. On average, from 2012 till 2016 about 43,7 thousand of sick animals have been brought to the reception

in such veterinary clinics, as "Fauna", "Healthy animals", "Friend". Judging by a nosological profile of the registered diseases of cats, the diagnosis of diseases of noninfectious etiology has been made in 28,9% of cases (12,6 thousand of animal units). Whereas, the amount of cats with infectious and invasive diseases was more than - 37,2% (infections) or 16,3 thousand of animal units, and 33,9% (invasion) or 14,8 thousand of animal units.

The results of a five-year monitoring have shown, that infectious diseases of cats have been caused by viruses - 40,1% or 6,536 thousand of animal units, by bacteria - 20,3% or 3,308 thousand of animal units and by mushrooms - 39,6% or 6,454 thousand of animal units.

Also the results of the conducted researches have shown that in the city of Krasnoyarsk the most frequently registered viral diseases of cats are panleukopenia, feline calicivirus, rhinotracheitis, adenoviral and rotavirus infections.

During the studied period, 1961 cats were diagnosed with panleukopenia (30,0%), a virus of Caliciviridae family has been found in 1699 of cases, that amounts to 26,0% of all viral diseases. As for rhinotracheitis, the number of animals diagnosed with it amounted to about 15,0% (981 animal units). Adenoviral and rotavirus infections were diagnosed quite often too: 16% (1045 animal units.) and 13% (850 animal units) accordingly.

The infectious diseases caused by bacterial microflora have been presented generally by staphylococci, streptococci, a *Bordetella* and *collibacillus*. As a result of the microbiological research *Staphylococcus aureus* was detected by 926 tests (probes) or in 28,0% of all the cases of bacterial infections, *St.epidermidis* has been detected in 695 cats, that amounts to 21,0% of cases, *Bordetella bronchiseptica* - 728 cats (22,0%), *Escherichia coli* – 959 cats (29,0%).

The *dermatophytosis* diseases of cats, caused by mushrooms, in the city of Krasnoyarsk, are mostly presented by *Microsporum*. During the studied period the positive result for a microsporia has been observed in 6454 cats. In general it amounts to 39,6% of all infectious diseases.

The share of parasitic diseases is about 33,9% (14,8 thousand of animal units) of all infectious diseases of cats. According to its etiological structure the amount of causative agents of invasive diseases relating to helminthes, like *Plathelminthes*, accounts to 35,0% (5181 animal units.), to protozoa, like *Apicomplexa*, - 17,0% (2521 animal units), to arthropods like *Arthropoda* – 48,0% (7100 animal units).

Cats are mostly infected with Toxocarosis and Dipylidiosis among all types of helminthoses. The results of the carried out helminthoscopic and helminthoovoscopic researches have shown that eggs and segments of *Toxocara cati* and *Dipylidium caninum* are found in more than 50% of animals.

Although, in general, the spread of dangerous zoonothroponosis around the city does not exceed the average allowable values, cats' toxoplasmosis is registered constantly. The most spread type of protozoiasis among cats is lambliosis– 16% (2269 positive tests).

The rate of infecting of small pets with such causative agents as *Entomoses* and *Arachnoses* is rather intense - 48,0%.

In particular, 3408 animal units (48% of all) had the diagnosis of otoacariasis, caused by *Otodectes cynotis*. Stationary ectoparasites have been detected in 3690 cats that is more than 52,0%. The examined animals tested positive for the following Entomoses: *Ctenocephalosis*, *Linognathus* and *Trichodectosis*. *Ctenocephalides felis* have been identified in 2583 animal units (70,0%), *Linognathus vituli (setotus)* – 590 animal units (16,0%), *Trichodectos (Felicola) subrostratus* – 517 animal units (14,0%).

"Ligfol", as an immunomodulator and immunostimulator, has been tested on cats with panleukopenia of different forms of the disease progression. The experimental animals have been selected and divided into two groups by the principle of analogy. In group No. 1 and No. 2 cats, with symptoms of panleukopenia (high temperature of a body, polydipsia, vomiting, painfulness of intestinal tract, flatulences, etc.), have been selected.

Animals of the first group were treated by a conventional method. Since the first days of a disease, in order to affect viruses directly, a specific immune serum of the Globfel type was applied. So as to withdraw the arising organism intoxication, sterile saline or 5% glucose solution was introduced dropwise. "Katazal" was applied necessarily as an immune stimulator, and to suppress the secondary microflora antibiotics of a broad spectrum of activity were introduced. Cats from the second group were treated according to the similar scheme, but "Katazal" was replaced with "Ligfol".

"Ligfol" has been applied since the first days of a disease in a dose 0,1 ml/kg of body weight. "Ligfol"'s injections need to be repeated on the second day since the beginning of a disease, then on the fifth day and, if it is necessary, on the tenth day.

The results have shown that the treatment of cats with panleukopenia by the conventional method led to lethal outcome in the first experimental group in 45% of cases. The treatment course prolonged for 9-11 days. After adoption of "Ligfol" in the therapy, the percentage of lethality became on average 27%, the period of treatment reduced and was about 6-8 days. What is more "Ligfol" had no negative influence on animals' organisms.

The treatment of infectious diseases is rather difficult, protracted and expensive process. The application of treatment regimen in order to achieve fast recovery of an animal always demands particular development procedures taking into account special features of parasite cenosis which has developed in each geographical zone.

Consequently, the researches, conducted in the city of Krasnoyarsk, enabled to discover the existence of complex associations of parasitic organisms, protozoa, viruses and bacteria among feline infectious diseases. It is necessary to develop the general and specific methods of controlling and prevention so as to fight against parasite cenosis successfully. According to the treatment regimen of a panleukopenia of cats, approved by us, we recommend to apply "Ligfol" as an immune stimulator.

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