

# Epizootological Features Of Trypanosomiasis (Sleeping Sickness) In Camels And Horses In The Northern Regions Of The Republic Of Karakalpakstan

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## Abstract

The epizootic situations of trypanosomiasis in camels and donkeys in the northern zones of the Republic of Karakalpakstan were studied, while the spread of trypanosomiasis in most farms was noted, trypanosomiasis strains were isolated and a cryopreservation was created.

## The actuality of the problem

In the program of the Action Strategy for the Development of the Republic of Uzbekistan 2017-2021, one of the priority issues is the strengthening of organizational and practical measures for the "consistent development of production, by deepening structural transformations in agriculture, based on the development of agriculture, to provide the population with livestock products and ensure their safety, and expand the production of environmentally friendly products." At the same time, it is important to carefully study the epizootic situation of trypanosomiasis, develop a modern system of control measures and introduce scientifically based diagnostic methods and means of combating sleeping sickness of camels in veterinary practice.

The materials of the article are based on the applied science project.

**"Development of technologies for creating productive herds of one-humped dromedary camels and processing camel products in the conditions of the Republic of Karakalpakstan". (Uzb.)**

**"To create productive herds of dromedary one humpback camels and improve food processing technologies in the conditions of the Republic of Karakalpakstan".** In the Republic of Karakalpakstan, protozooses of farm animals and, first of all, theileriosis of cattle and trypanosomiasis of camels, horses and humans pose a great danger to animal husbandry and cause the greatest economic damage.

Trypanosomiasis affects many species of domestic and wild animals, as well as humans. For example, in 1987, while conducting experiments in the laboratory of protozoology, lab. A.B.Djumamuratov R.P. accidentally got infected. The disease proceeded severely with fever, swollen lymph nodes, manifestation of thaleric plaques on the body, anemia, loss of appetite, exhaustion and metabolic disorders of the body. In the Samarkand medical clinic, treatment was not amenable. In this regard, the patient in a state of agony, on the recommendation of the Ministry of Health of the Republic of Uzbekistan, was taken to the Institute of Tropical Diseases and in the conditions of the clinic of the Botkin hospital and under the supervision of Professor Andrey Yakovlevich Lysenko, the patient was

cured, for which we are very grateful to everyone who helped us with resuscitation of the patient. From this, it can be seen that trypanosomiasis is severe in humans and, of course, in many ways ends in death. Therefore, it is necessary to pay great attention to this disease both on the part of medical and veterinary specialists-researchers of protozoan diseases.

The causative agent of trypanosomiasis in the Republic of Karakalpakstan is *Trypanosoma ninaekholiakimovae*. Trypanosomiasis refers to obligate-transmissible diseases transmitted from diseased animals by carriers of the pathogen to healthy ones, mainly through blood-sucking insects (horseflies, flies, bloodsuckers, etc.). **The epizootic situation according to sleeping sickness** is represented by farms where camel breeding and horse breeding are developed. An increase in pasture conditions for keeping animals creates additional prospects for the development of these traditional branches of animal husbandry in the Republic, or the local population from time immemorial has been using dietary camel meat, medicinal dairy products (shubat from camel milk and koumiss from mare), their meat (kazy), as well as highly valuable camel hair.



Fig. 1 Horseflies are the main distributors of trypanosomiasis

Sleeping sickness (trypanosomiasis) of camels, horses, donkeys and dogs, as well as people, is more often a chronic transmissible blood parasitic disease. On the clinical side, it is characterized by edema in the chest area, head, limbs, keratitis, swollen lymph nodes, paresis and paralysis of the hind limbs, and exhaustion.

In order to properly organize measures to prevent the spread of sleeping sickness, chief veterinarians of regions, districts, heads of veterinary departments are required to keep maps of the distribution of sleeping sickness and species of insects that are the main carriers of the disease.

Farms that are unfavorable in sleeping sickness, threatened and safe are marked on the map with an indication of the type of animals that fell ill in this outbreak. In the future, all changes are made to these maps on the distribution of the sleeping sickness on the territory of a given district, region, republic.

In order to prevent the disease in disadvantaged farms, it is necessary to conduct an annual survey of camels, horses, donkeys, dogs on sleeping sickness using clinical, microscopic and serological methods of (RSK, RNGA) studies.

**Diagnosis:** When making a diagnosis for sleeping sickness, the epizootic state of the area, the season of the year, clinical signs of the disease, the results of microscopic, serological and biological studies are taken into account:

## Of the clinical signs take into account;

-in camels, fever, emaciation, diarrhea, nasal discharge, enlargement of superficial lymph nodes, dimness of wool, keratitis, paresis of the buttocks and sometimes signs of agitation;

- in horses - swelling of the lips, eyelids, cheeks, submandibular space, dewlap, limbs, keratitis, paresis and paralysis of the buttocks, sometimes signs of excitement, circular movements.

- in people, loss of appetite, exhaustion of the body, metabolic disorders, intoxication, severe anemia, a decrease in erythrocytes, leukocytes and hemoglobin to a minimum level, an increase in lymph nodes by 4-5 times, etc.

## Purpose and task of the research

**The aim of the research** is to study the epizootic situation of camels' trypanosomiasis and the isolation of pathogens, as well as the study of immunobiological properties.

## Task of the research

1. Study of the epizootological situation of trypanosomiasis in the context of the northern regions of the Republic of Karakalpakstan.
2. Isolation of field strains of trypanosomiasis, development of a cryopreservation method.

## Materials and methods

The work was carried out in private and farm enterprises of the Republic of Karakalpakstan and at the Republican Veterinary Laboratory.

The study of the distribution of trypanosomiasis was carried out with a visit to farms with the taking of smears and a crushed drop of blood and a clinical study of animals, biological samples were taken on white mice.

Taking from animals and preparing appropriately smears from peripheral blood were fixed with ethyl alcohol for 3 minutes, and then stained according to Romanovsky Giemsa for 30 minutes. When leaving the farms, blood smears were taken from suspicious animals and examined under a microscope using the crushed drop method. When trypanosomes were detected, blood was taken for a biological sample and administered to 3-4 mice by subcutaneous injection.

## Results of the research.

In order to detail the epizootological situation on trypanosomiasis in camels and horses, in addition to studying veterinary reports, trips were organized to a number of farms in the northern regions of Karakalpakstan, where 134 camels and 16 horses were examined by clinical and microscopic examination.

In order to study the epizootic situation in December 2020 and March 2021, expedition trips were organized to the northern regions of Karakalpakstan to the farms of the Kungrad, Kanlikul, Shumanay, and Khodjeyli regions. Clinically and microscopically, 38 camels and 12 horses were examined on the "Otamura" farm; farm "Akmat" 36 camels and 2 horses, on horseback. "Ispanov Oset" of the Kungrad region 20 camels; on the farm "Geshuravulin" of the Khodjeyli region, from 3 camels from which they took 3 ml of blood and infected 3 mice subcutaneously, 0.2 ml each. Experimental mice were subjected to clinical and parasitological studies. As a result, a strain of trypanosomiasis was isolated. The cryo strain was conserved in liquid nitrogen at a temperature of -196 degrees to create a cryopreservation of strains and conduct experiments (Fig. 2).

A clinical examination of one camel suspected of trypanosomiasis was carried out at the "Kangli Tursunbay" farm in the Kanlikul region. The camel was examined clinically and parasitologically. They took 3 ml of blood from venous vessels and put biological samples on white mice, as a result of which a strain of the causative agent of trypanosomiasis was isolated (Fig. 3)



Fig.2. "Otamura" farm

In the farms of "Ketenler" 32 camels were examined, of which 4 were suspected of trypanosomiasis. They took a crushed drop of blood and looked under a microscope, in one of which they found trypanos. From 4 camels, 3 ml of blood was taken and 3 porpoises were infected at a dose of 0.2 ml subcutaneously. The laboratory animals were observed for 7 days. As a result, parasitemia in the blood and deterioration of the body were observed. The strain was isolated and cryo-preserved.



Fig.3. *Trypanosoma ninae-kholi-yakimovi* from the blood of mice.

Also in September, 4 camels were examined at the “Azat” farm in the Nukus region. As a result of clinical and microscopic studies, trypanosomiasis was found in one camel. In the study of 3 camels in the village of Sverdlov, Khodjeyli district, trypanosomiasis was detected in one. In the village "Ustyurt" of the Kungrad region, out of 16 camels examined clinically and by parasitological methods, trypanosomiasis was detected in one.

Table 1

Regions	Farms	Number of surveyed camels and horses	Animals identified with trypanosomiasis	Biological test results
Kungrad	1.farm “Otamurat”	38 camels and 12 horses	In each case, blood was taken from 3 camels and horses and 3 white mice were infected.	In each case, blood was taken from 3 camels and horses and 3 white mice were infected.
	2. farm “Akhmat”	36 camels and 2 horses	Blood was taken from 3 camels and 2 horses and 3 white mice were infected	As a result of a bioassay, trypanosomiasis was not detected in two camels, and negative results were obtained from 2 horses.
	3. farm “Isbanov Oset”	20 camels	Blood was taken from 3 camels and 3 mice were infected at a dose of 0.2 ml subcutaneously.	Received a negative result
Khodjeyli	Farm “Geshirovul”	Examined 3 camels	Blood was taken from	Not isolated by trypanos

region			3 animals and 3 mice were infected	
Kanlikul region	Farm “Kanli Tursunbay”	Examined 10 camels	Examined microscopically	Received a negative result
Shumanay region	Village “Ketenler”	Examined 21 camels	They put bioassays from 4 camels	Positive results were obtained from 2 bioassays
Nukus region	Farm “Azat”	Examined 4 camels	They put a bioassay	Trypanosomiasis has not been isolated

Thus, as a result of the research, it was found that in the southern regions of the Republic of Karakalpakstan, trypanosomiasis of camels and horses is widespread. Among the examined horses, animals with trypanosomiasis were not identified, however, there is a wide risk of the disease among horses.

### Conclusions:

There are places for the spread of trypanosomiasis in camels and a risk for the spread of trypanosomiasis in horses in the northern regions of the Republic of Karakalpakstan. Trypanosomiasis strains were isolated from sick animals and immunobiological properties are being studied.

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