

# Cryptosporidiosis of farm animals in the Republic of Armenia

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## Abstract

The research on farm animal cryptosporidiosis has been carried out in three regions of Armenia. 26 samples of cattle faeces, 41 of sheep, 34 of pigs, and 65 of poultry faeces has been examined. Native smears were prepared from these samples, and then dyed by Ziehl-Neelsen. The oocysts of *Cryptosporidium* were found in 8 samples of cattle faeces (30.8%), 12 samples of sheep faeces (23.3%), and in 17 samples of pig faeces (50.0%), and mainly in young animals. Therefore cryptosporidiosis is rather prevalent in farm animals in Armenia.

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Cryptosporidiosis of humans and farm animals is a widespread disease in the world, representing a danger to human and animal health. The study of cryptosporidiosis began to engage only in the last years of the last century. In the literature data concerning cryptosporidiosis appeared since 1976. It is known that the first *Cryptosporidium* isolated from the gastric mucosa of white mice Teaser in 1907. *Cryptosporidium* was considered to be safe micro - organisms-commensally until 1955, and therefore did not merit serious research by professionals. The attention of scientists, these microorganisms were attracted after they were found in the litter of birds with gastroenteritis. In 1970, after cryptosporidiosis was isolated from the digestive tract and respiratory system of animals, scientists transferred them from the category of komensals to the category of conditionally pathogenic microorganisms. Subsequent studies have shown that the oocysts of cryptosporidia, trapped in the external environment with the faeces of animals, for a long time remain viable in the soil, where, together with rain water fall into aquatic biotomes infecting fish and crustaceans. The use of untreated water from such biotopes for drinking can cause contamination of both animals and humans. Studies have shown that the source of infection with cryptosporidiosis of people can also be vegetables and fruits obtained from agricultural land, irrigated with water from reservoirs contaminated with faeces of farm animals. Thus, the main factor in the spread of cryptosporidia is water contaminated with oocysts of the pathogen. In recent years, it has been found that oocysts of cryptosporidia pass through filters used at treatment plants, and chlorination of water has no effect on them. It also emerged that even the smallest doses of cryptosporidia can cause disease in animals. For example, primates have only 10 oocysts that enter the body by enteral route, can cause clinically expressed cryptosporidiosis. By mathematical modeling it was found that the defeat of the mucous membranes of the digestive tract can cause even one oocyst. In the former Soviet Union, the problem of animal cryptosporidiosis was not given due attention, and in modern Armenia, this disease was not studied. Currently in Armenia prevail small farms, which are not conducted for the disposal obtained from animal manure, animal waste fall into water or Sewerage system, or used uncleared for fertilizer of the soil, which creates optimal conditions for accumulation in the environment and subsequent spread of *Cryptosporidium* oocysts. The reason for the infection of the local population with cryptosporidiosis can also be the features of national cuisine, when different types of greens are used as food and spices in raw form.

The aim of this work was to conduct parasitological studies for the first time in Armenia to detect animals infected with cryptosporidia. The research was covered by private farms of the two border regions Yerevan: Kotayk and Armavir. Samples of feces taken from cattle, sheep, pigs and chickens were studied. Just was investigated from cattle 26, from sheep 41, from pigs 34 and from chickens 65 samples. The studies revealed that by *Cryptosporidium* oocysts were infected from cattle 8, from sheep 12, from pigs 17 samples of faeces and litter in the same chickens *Cryptosporidium* was not detected. Microscopy of bacteriological smears, prepared from fecal samples, usually revealed one or two colored oocysts in one field of view of the microscope. Among animals, especially young animals of the farms, surveyed by us, short-term signs of violation of function of digestive system are periodically observed. In the samples of feces taken from these animals, along with cryptosporidia, oocysts of *Eimeria* and eggs of intestinal helminths were also found in cattle and sheep, and in pigs -eggs of ascarides. The obtained data indicate the course of mixed invasion in the body of the

examined animals. At this stage, the study covered only private farms, in which the number of animals reached 23, and birds -20. Larger farms were not surveyed.

Thus, it can be confirmed that cryptosporidiosis of farm animals is registered in Armenia, but the data obtained are insufficient for a full assessment of the epizootic situation on this invasion.

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