

Measures and Effective Methods of Treatment Against Ichthyobodosis (Costiosis) Disease of Fish

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ABSTRACT

Treatment of fish diseases is one of the most important areas of fishing. Through this field, measures for the treatment and prevention of various diseases in fish are developed and put into practice. Treatment will reduce fish mortality rates and prevent large economic losses to fish farms. The treatment of fish diseases is currently very advanced.

In this article, it is caused by single-celled parasites found in fish farmswilling (costiosis), the causative agent of the disease, its clinical symptoms, spread, damage caused to fisheries by the disease, new treatment methods and preventive measures of the disease are discussed.

KEYWORDS: *ichthyobodosis, costiosis, infusoria, flagella, unicellular parasites, cysts, protozoan diseases, sarcodales, sporals, invasion, punctol, costapur, FMTs, furazolidon, malachite green, methylene blue.*

Introduction: The decisions of the President of the Republic of Uzbekistan and the Cabinet of Ministers were adopted in order to develop the fishing industry in our republic, increase the volume of fish farming based on intensive technologies, increase the export potential, and effectively use the opportunities of the existing basins.

Many fishing farms were established in the republic, opportunities were created for their activity, special attention was paid to the cultivation of fisheries in an industrial way, subsidies were allocated to fishing farms. A new system of training personnel, scientific researchers, and ichthyological specialists for the fishing industry was created in higher and secondary special, vocational educational institutions for the development of the industry. Farmers have had the opportunity to use the intensive method of fish farming, closed water circulation system, intensive small water ponds, cage (sajok) and rice-fish methods have been proven to be beneficial for human health.

Advances in the development of the field, in turn, increase the responsibility of specialists. Specialists are conducting research on fish care, modern methods of breeding, researching, treating and preventing fish diseases, taking a positive approach to difficult and responsible work, working tirelessly on oneself, and learning and implementing best practices in this regard.

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Materials and methods. Infectious, invasive and other types of fish diseases are very common diseases, of which there are more than 500 diseases of fish belonging to unicellular parasites (pathogenic organisms). These pathogens are highly adapted to parasitize fish in freshwater ponds

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and cause massive fish kills.

Protozoan diseases of fish are caused by simple unicellular animals. The causative agents of protozoan disease are sarcoid, flagella, spore, microspor and infusoria.

Single-celled animals are called Protozoa, and the diseases they cause are called protozoa. The body of animals belonging to the unicellular suborder consists of a single cell or a set of cells that are similar to each other. Unicellular organisms are self-sustaining organisms that have metabolism, movement, expression, reproduction, and all the characteristics of living organisms. Such functions are performed by special organoids (organelles) in the cell. Unicellular organisms move with the help of false legs, flagella and cilia. Breathing is done through the surface of the body. More than 70,000 species of single-celled animals are known, and they are divided into types of sarcomastigophora, sporali, myxosporidia and infusoria. Protozoan diseases of fish include diseases such as ichthyophthiriasis, chylodonellosis, cryptobiosis, costiosis, trichodinosis, coccidiosis, microsporadiosis.

Ichthyobodosis (costiosis)-is an invasive disease of fish caused by single-celled parasites, characterized by the appearance of many gray spots on the skin of the fish body, wounding with a slimy substance and damage to fins, necrosis and decay of inflamed tissues. Young fish are mainly susceptible to the disease, and in some cases, cases of disease have also been observed in older fish. The disease has been recorded in Eastern and Western Europe, North America, China, Ukraine and the central regions of Russia. Illness in foreign literature *Costiosis, or Ichthyobodosis held as* **Although the disease is not recorded in our regions, its risk is always present.**

The causative agent-The parasite *Ichthyobodo necator* (*Costia necatrix*) belongs to the phylum Kinetoplastidea of the class Bodonina is younger in the series *Ichthyobodo* of the Bodonidae family generation infusoria. The body length of the trigger is 5-20 μm , width 2.5-10 μm . is From the ventral side, its shape is oval or kidney-shaped, the anterior part is thickened, the body consists of cytoplasm, a small nucleus and two shrinking vacuoles. It has two flagella. The parasite feeds on mucus, skin, and epithelial cells detached from the wound due to necrosis.

Ichthyobodo necator (*Costia necatrix*) is a very small organism that can be seen under a microscope. With the help of the two existing claws, the parasite attaches to the injured leaves or skin of the fish. Flagella penetrates deep into the body and wounds of fish and sticks to it. Multiplies by division. Under adverse conditions, it forms a cyst when the water temperature cools. The cyst consists of a thick shell and is more resistant to adverse environmental conditions. They are not pathogenic, but remain the object of injury for a long time.

The parasitic infusoria mainly parasitize the young generations of carp, salmonids and other fish. Large fish develop natural immunity to this disease. *Costia* infusoria occurs only in the form of cysts in fish. *Costia* causes more damage to fish during the summer of the year. Its damage is clearly visible only in spawning ponds. *Costia* can also kill fish during the winter, especially when the water environment (rN 5.0-5.5) has a low indicator. The winter form of *costia*'s disease is mainly recorded in fish wintering ponds. This type of infusoria reproduces in winter when the water temperature is 5-7°C.

Epizootology. The causative agent of ichthyobodosis (costiosis) disease is widespread in nature and occurs in fish in all water bodies. However, epizootic and enzootic forms of the disease have not been recorded among fish in natural reservoirs, and fish in rivers and lakes serve as a source of infection and a reservoir in nature. The disease can affect all types of juvenile fish in fresh water, including semi-transitional fish.

The epizootic appearance of the disease is mainly observed in spring and summer in reservoirs and fish farms where fish roe (seeds) are present, when the water temperature is +16+25°C. In such

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conditions, a favorable environment for the development of parasites is created. Healthy fish become infected when they come into contact with sick fish and become infected when they are kept in reservoirs where the pathogens are present.

The bone cysts are preserved in the mucus of adult fish for a long time and are kept for a long time in wet soil, in the mud of ponds, if they are filled with water, the movement of parasites becomes active and causes damage to the fish. Illness of fish in winter is observed mainly when fish are kept too densely in reservoirs, when the water temperature is 2-7°C.

In farms that breed fish of the flower moss type, the infection with costia is observed mainly when the fish are fed with raw meat. Pathogens are transported from one water body to another by transport of diseased fish or by water.

The physiological state of the fish organism is also of great importance in the development of osteoid disease. Costia parasitizes various types of fish, such as carp, salmon, and even aquarium fish. Costia infusoria develops well when the water temperature is 25-28°C, at a temperature of 28°C, more than 10,000 stages of costia can be seen in 1 cm³ of fish skin.

Costia reproduces very quickly. For example, if one copy of the initial costia is found on the skin of carp in a pond, after a few days all the fish can be seen to be infected with costia. The lower the obesity level of the fish, the more severe the disease, and vice versa, if the fish are fat, the disease will be milder. Alkaline environment (if not higher than pH-5.0-5.5), hydrological, hydrochemical, gas exchange regime and deterioration of zoohygienic conditions provide a favorable opportunity for the growth of bones and the development of the disease.

Clinical signs of the disease. As a result of the parasites parasitizing the skin and wounds of fish, the bones cause severe itching and destruction of the epithelial cells, as a result of which a large amount of mucus is released. At first, invisible gray spots appear on the body of the fish, and later, due to the progressive development of the pathological process, these spots merge and merge, covering the whole body. Necrosis occurs in some parts of the affected body, and as a result of the invasion and development of pathogenic microflora and parasitic fungi from these places, the pathological process deepens even more. Hemorrhage is observed, some parts of the suction apparatus are eroded and disintegrated, spilled, the wound is oozing due to anemia, covered with mucus, breathing and gas exchange are disturbed due to the increase of mucous substances in the skin and epithelial cells of the wound. Sick fish accumulate in the current or on the surface of the water, try to absorb more oxygen and air, do not pay attention to external environmental influences, and the disease ends with the death of the fish. Fish mortality in Costios is 95-97%.

Diagnosis. The disease is diagnosed on the basis of epizootological data, clinical signs and microscopic examination of mucus. If at least 10-15 parasites are found in each field of view of the microscope, it is diagnosed as costiosis, if 1-2 parasites are found, it cannot be a final diagnosis, but when favorable conditions arise, parasites multiply quickly and pose a danger to fish life.

The diagnosis is made after careful microscopic examination of the fish wound and the mucus separated from the skin. A large number of bones can be seen in the mucus. Because similar blue-silver mucous mass appears in chylodonellosis, trichodinosi, gyrodactylosis and other diseases.

Treatment, prevention and control measures. Treatment of the disease is carried out by the bath method. Keeping young fish in a 1-2% table salt solution for 15-20 minutes, keeping them in a 1:4000 formaldehyde solution for an hour gives good results. Adult fish are exposed to a 5% solution of table salt for 5 minutes. In winter pools, free chlorine is 0.5-1.0 mg/l. It is recommended to keep the dose for 30-50 minutes. In order to prevent and fight against the disease, it is effective to regularly carry out fisheries improvement, veterinary-sanitary and treatment measures.

As a result of the research conducted by experts, new methods of treating the disease are now giving

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positive results. In particular, the use of punktol (punktol) and costapur (costapur) drugs increases the effectiveness of treatment of the disease. In addition with a mixture of FMTs (formalin, malachite green and methylene blue).furazolidone(1 ml of FMTs + 0.5 grams of furazolidone) in two schemes:

- 1) On the 1st day, 1 ml of the drug per 100 l of water, on the 3rd day, change 30-40% of the water in the aquarium and pour another 1 ml of the drug. In this order, treatment is carried out for 5 days. Treatment is carried out 1 time in the early stages of the disease, and 2-3 times in the more severe period.
- 2) It is treated by adding 1 ml of FMTs to 100 l of water on the 1st day, 0.5 ml on the 2nd day, 0.25 ml on the 3rd day, and completely changing the water on the 5th day.

The composition of FMTs consists of: 0.5 l of formalin, 1.75 g of malachite green and 1.75 g of methylene blue. Activated carbon or zeolite is used to remove FMTs from water.

It is desirable to create optimal conditions for their growth and development in ponds where young fish are raised, to improve the zoohygienic conditions of ponds where mother fish are kept, to eliminate parasites in the external environment and in the fish body. Disinfection with quicklime (25 kg/ha) after catching fish in affected ponds.

Summary.In the treatment of ichthyobodosis (costiosis) disease of fish, use of baths with appropriate solutions of table salt, formaldehyde, chlorine preparations, treatment with Punctol (Punktol) and Costapur (Costapur) drugs, and 2-scheme treatment with a mixture of FMTs gives the expected results. In order to prevent protozoan diseases in young fish, it is effective to carry out fishery improvement, veterinary-sanitary and treatment activities regularly.

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