Diagnosis of saproligniosis and protozoa of fish and veterinary and sanitary assessment of their meat (Uzbekistan)

Khudaynazar Yunusov[1], *Feruz* Kurbanov[1*], *Xojiakbar* Yuldashev[1], *Umid* Asomiddinov[1], and *Umida* Xolova[1]

[1]Samarkand State University of Veterinary Medicine, Livestock and Biotechnologies, Samarkand, Uzbekistan

Abstract. Recent experiments have shown that the pH value of saproligniosis in muasa ryb was found to be 7.3. In our experiments, it was clear that in the study of muasa ryb, b with chylodinilliosis, this indicator was higher (7.4-7.6) than in muasa ryb, infected with Saprolignia mixta. In the prevention of saproligniosis in fish, the high effectiveness of timely use of chloramine B, malachite blue, bleach, slaked lime, sodium chloride solution, formalin-sodium alkali, potassium permanganate, malachite blue has been established. The fish disease trichodinosis is widespread in nature and affects mainly juvenile, one- and two-year-old fish. Good results in the treatment of trichodinosis are obtained by using the bath method with appropriate solutions of table salt, formalin, chlorine preparations and treatment with a mixture of FMS according to 2 schemes. In order to prevent the disease, it is effective to regularly carry out fish reclamation, veterinary, sanitary and therapeutic measures.

1 Introduction

The relevance of the topic. In order to meet the demand of the country's population for high-quality and environmentally friendly food products, special attention is paid to the development of all branches of animal husbandry-cattle breeding, sheep breeding, goat breeding, and later -poultry farming, fishing, and beekeeping. For the development of the industry, first of all, it is necessary to create its scientific foundations.

Currently, along with the rapid development of the industry, conducting scientific research on the control, prevention and diagnosis of fish diseases is of great theoretical and practical importance.

Currently, numerous practical measures are being carried out in our country to implement decrees and resolutions. In the decree of the President of the Republic of Uzbekistan dated August 29, 2020 No. PP-4816 “on measures to support fishing and improve its efficiency”, 2018-yil December 3-978-sonli “ecotourism of development and educational and pedagogical education” the decision of the President of the Republic of Uzbekistan 2018 13-Jan PK-83-sonli “Balykchilik repair yanada revozhlanning Kyrgyzstan

* Corresponding author: feruz@gmail.com

measures-long-term measures"gi decision-making belgilab mehulgan dezhalardan: some diseases, including fish diseases found in fish during the breeding of fish and fish products, to some extent hinder the development of this area. However, qualified personnel are required on the ground, who must be able to choose optimal and cost-effective measures in specific conditions that will prevent and reduce damage from diseases. [1].

The purpose of the study. The research work was carried out from March to November 2020 in intensive reservoirs of the Pastdargam, Kattakurgan, Payarik and Agdarya districts of the Samarkand region, that is, in fish belonging to the family of cyprinidae, showing clinical signs characteristic of the causative agent of saprolegniosis and the parasite xylodinilliosis, at the age of 1-2 years. Saprolegniosis is a common psychological disease of fish, the causative agents of which are tuberous mold fungi saprolegnialis several species belonging to the genus saprolegnia of the saprolegniaparasitica group, S.mixta, C.such as Ferax, provoke. The disease is characterized by the destruction of fish epidermis cells, difficulty in oxygen access, formation of tissue necrosis and death of fish. Considering such problems, we, the researchers, strive for the following:

- I-detection of saprolegniosis and xylodinilliosis, common among intensively farmed fish.
- II-determination of chemotherapeutic agents for effective treatment of the disease.
- III-analysis of drugs used in prevention.
- IV - the use of effective methods of counteraction.
- V-consists of an assessment of the quality of meat of healthy fish affected by the causative agent of saprolegniosis and the parasite xylodinilliosis. [23, 4].

Fig. 1. Clinical signs of the disease.

2 Materials and methods

The experiments were conducted at the Samarkand State University of Veterinary Medicine, Animal Husbandry and Biotechnology and the Samarkand State University of Veterinary Medicine, Animal Husbandry and Biotechnology for the development of veterinary medicine, biotechnology and animal husbandry in Uzbekistan. intensive staff training at the mega Project Fish scientific business incubator in the experimental room to study the clinical signs of the disease, at first fish with suspected disease were isolated and kept in a specially prepared aquarium, where they were under constant supervision. In order to determine the hydrogen index of water by litmus test and diagnose infected fish, mycological studies based on the detection of hyphae pathogen were conducted in the

laboratory of the Department of Veterinary and Sanitary Expertise and in the laboratory of diseases of poultry, fish, bees and fur-bearing animals of the Department of Aro Optatech.

3 Results and Discussion

The results obtained and their analysis. Our experiments were conducted in four districts of the Samarkand region. In particular, our research was divided into three groups In unhealthy fish farms in the Pastdargom, Kattakurgan, Payaryk and Akdarya districts, where we used fish using three preparations. The I group isolated 220 pieces of infected fish and, with a two-time application of a mixture of 100 grams of copper sulfate per 10 kg of carcass in a ratio of 10/0. 1 twice a day, 11 of them (5%), 9 heads (4%) out of 230 pieces of infected fish from the Suthor fishery Kattakurgan district, 170 pieces of 13 heads of fish (7.6%) and 7 heads (4.7%) of 150 infected fish infected with saproligniosis in the farm of the Payaryk district were killed in the Agdar district. The effectiveness of the applied treatment method was 95, 96, 92.4, 95.3%, respectively. The average efficiency rate was 94.8% in all four districts.

Applying a mixture of Metelin blue + slaked lime solution in a ratio of 0.01/100 to group II, we recorded the following results: 200 units of infected fish were isolated in the Pastdargom district, of which 12 units (6%) were used for three days, 15 units (7%) out of 215 infected fish in the Kattakurgan district, saproligniosis infection was detected on a farm in the Payaryk district. Out of 190 fish, 17 (9%) died, and out of 140 infected fish in the Akdarya region, 10 (7.1%) died. The effectiveness of the applied treatment method was 94.93.91.92.9%, respectively. The average efficiency rate was 92.8% in all four districts (Table 1).

Table 1. Intensively farmed fish against saprolegniosis the effectiveness of the drugs used.

No	The drugs used	The effectiveness of treatment of affected fish by area											
		Carp			Crucian carp			White dungpeshona			White amur		
		Number of infected fish	After using the drug		Number of infected fish	After using the drug		Number of infected fish	After using the drug		Number of infected fish	After using the drug	
			Died	I.E. (%)		Died	I.E. (%)		Died	I.E. (%)		Died	I.E. (%)
1	Salt solution + copper bridge In the ratio of 10/0. 1	220	11	95	230	9	96	170	13	92.4	150	7	95.3
2	Methylene blue + slaked lime 0.01/100	200	12	94	215	15	93	190	17	91	140	10	92.9
3	Calcium hypochlorite 65% + slaked lime after 2 days 1/10	210	23	89	180	21	88.3	130	14	89.2	115	5	95.7
The control group		50	50	-	30	30	-	25	25	-	35	35	-

Two days after applying a 65% solution of calcium hypochloride of group III of 12 kg per hectare of slaked lime, when applying 80 kg per hectare, the following results were obtained: 23 grains (11%) out of 210 affected fish in the Pastdargom district, 21 grains (11.7%) out of 180 affected fish in the Kattakurgan district, 21 grains (11.7%) in the farm

of the Payaryk district, 130 pieces affected by SAPROLIGNIOSIS in the Agdarya district, 14 out of 115 infected fish died (10.8%), and in the Agdarya district-5 (4.3%). The effectiveness of the treatment used averaged 90.1% in all four districts.

During the experiments, it turned out that all the medicinal preparations and methods used have an efficiency above 90%, including by using a mixture of 100 grams of copper sulfate per 10 kg of table salt in a ratio of 10/0.1 94.8%, a mixture of meteline blue solution + slaked lime in a ratio of 0.01/100 per 92.8% group, hypochloride solution calcium 65% per hectare Two days after applying 12 kg of slaked lime, it was noticed that 80 kg of slaked lime per hectare had an efficiency of 90.1% (Table 2).

Table 2. Disinfectants used in the Prevention of fungal diseases.

Disinfectant	**Usage, expenditure or quantity**				
	By water	**By pool level**	**Fish placement container**	**Transport**	**Devices**
Bleach	Up to 5 1-3 g/m^3 More than 5 ha 0.1-0.2 g/m^3	300-500 kg/ha	5%		5%
Calcium hypochlorite	Up to 5 g 0.5-1.5 g/m^3 More than 5g to 0.05-0.1 g/m^3	150-250 kg/ha	1.5%		1.5%
Slaked lime	100-200 kg/ha	2500 kg/ha	10-20 %	10-20 %	10-20 %
A solution of table salt	100-150 kg/ha	2000 kg/ha	5-10 %	10-20 %	10-20 %
Formalin is an alkali sodium	-	3-5 % 2-1 l/m^2	4% 3% 0.5 l/m^2	4%	2-4% 3-5% 2-1 l/m^2
Potassium permanganate	10 g/m3 5-15 g/m^3		0.5% 10-50 g/m^3	10-50 g/m^3	1g/l 10-50 g/m^3
Malachite Blue	0.15-0.2 g/m^3	In the bathtub	5-10 %	4-5 hours or more	Artificial reservoirs, pools

Seasonal preventive treatment of fish and checking the epizootic condition, liming the pool 2-3 times in 1 month and using 5-10% table salt solution, not exceeding the pH value of water above 8-8.5, bleach, calcium hypochlorite, slaked lime, table salt solution, formalin sodium alkali, potassium permanganate, chloramine B, malachite should be used blueberry baths, as well as feeding fish with nutritious feeds (Table 2).

Therapeutic, preventive and fire-fighting measures. In existing farms, treatment and preventive treatment of fish is carried out mainly in spring and autumn, when fish are moved from one pond to another, as well as at a time when they are imported from other farms. Fish processing activities were carried out at any time of the year. At the same time, the instructions for the use and action of medicinal products were strictly followed. The use of medicinal products is carried out in two ways: short treatment (baths), long–term treatment - in fish ponds, in transport cargo compartments. The selected similar treatments and their result were carried out depending on the degree of the disease and the general physiological condition of the fish.

With the acute appearance of the simplest restrictions in the household, there are no. Up to 0.2% sodium chloride is injected into the water and water exchange is stopped for 2 days. 0.1 g/m3 of organic dyes were poured into the boats. Before the transfer, the fish was kept for 5 minutes in a bath with a 5% salt content. The dishes were cleaned for 1 minute using a bath containing 0.2% ammonia (Table 3).

Table 3. The use of antitumor drugs in cupping methods.

Disease	Medicinal substances	Concentration	The exposition	Place of processing
Disease *Short-term bath (boat, pool)*				
Saprolegniosis, Protozoa	Sodium chloride	5 % solution	5-10 mines	swimming pools
Long-term baths (vehicles, swimming pools, natural-artificial pond)				
Saprolignioz, Protozoozlar	Sodium chloride	0.2-0.5 % li mixture	3-5 day	Winter natural reservoirs
	Copper sulfate	0.2-0.5 g/m^3	Day 1 (water exchange does not stop)	Winter natural ponds, (fishing ponds), swimming pool, boats
	FMS	100 litr/1 ml	4-5 watch	Swimming pool or aquarium
	Diamond Green	0.1-0.2 g/m^3	1-5 Until the day	Winter natural reservoirs, swimming pool or aquarium
	FMO mixture (0.5 g furazolidone, 1.75 g copper sulfate and 1.75 g oxytetracycline)	10 g/m^3	1-5 days (water exchange does not stop)	Winter natural ponds, fish ponds

In the course of our research, new effective methods of treating protozoa and saprolegniosis in practice give positive results. In particular, a two-circuit method of using furazolidone (1 ml of FMC + 0.5 g of furazolidone) with a mixture of FMO (0.5 g furazolidone, 1.75 g copper sulfate and 1.75 g oxytetracycline):

- On day 1, a mixture of FIMO 10 g / m^3, on day 3, replacement of 20-30% g and water in the basin (aquarium) and another 10 g / m^3 of the drug. Thus, the treatment lasted 5 days. High efficiency was achieved by the 2-3 th time, when the disease first worsened in the initial period.
- Administration of 1 ml of FMS mixture per 100 liters of water on day 1, 0.5 ml on day 2 and 0.25 ml on day 3 gave good results in treatment with complete water replacement on day 5. Without unhealthy agricultural protozoa and saprolinias, the rate of re-development was completely lost.

When creating pools unfavorable for the development of protozoa, the following works were carried out. As soon as the disease noticed the vectors and pathogens, small fish were transplanted and cleaned, that is, dried after emptying the pond and fought with slaked lime (bleach). Inverters in contact with infected fish were quickly dried and cleaned. Light filters are installed at the entrances to the pools.

For disinfection, it was cleaned 3 times using bleach 5 c / ha. The reverse fishing was carried out after the complete elimination of infusoria.

Sanitary assessment of fish. Fish infected with trichodinosis, without any external signs of muscle swelling due to accumulation of water, fish in which all parts of the body are in good condition and which retains its productive appearance, is sold as suitable for consumption. If the opposite turns out to be the case, then after cooking it can be given to animals as food.

At a weight of 700 g and 1000 g at a height of 35-40 cm and a width of 10-12 cm, veterinary sanitation of fish meat with Saprologniosis and xylodinilliosis was carried out by determining the peroxidase reaction and hydrogen ions (pH).

As a result of the reaction of peroxidase 1, hydrogen peroxide rapidly decomposed into water and oxygen under the action of the enzyme peroxidase in the extract of fish meat affected by saprolignia Mixta in the experiment. Oxygen oxidizes benzidine to form a

compound that combines with non-oxidized benzidine to form a substance from blue-green to brown.

2 ml (1:10) of fish toad extract was placed in a test tube and 5 drops of 0.2% alcohol solution of benzidine were added. The contents of the test tube were shaken, then 2 drops of 1% hydrogen peroxide solution were added.

Under the action of a peroxidase enzyme, such as a fish meat product infected with saprolegniosis in xylodylliosis through a peroxidase reaction, hydrogen peroxide rapidly decomposes into water and oxygen. Oxygen oxidizes benzidine to form a compound that combines with non-oxidized benzidine to form a substance from blue-green to brown.

When we examined fish meat with saproligniosis and xylodinilliosis using a peroxidase reaction with a negative reaction to blue color failed, the extract suddenly turned brown, and the fish meat was considered unsuitable for consumption from the point of view of veterinary sanitation.

When we examined healthy fish meat using the peroxidase reaction, we found that the positive reaction was blue coloration and the blue coloration disappeared after 3-4 minutes. From this it can be seen that we found that the meat of the sick fish in our experiment was inedible, and the fish in the control group was inedible.

While the fish in group 2 hydrogen ions (pH) value was considered one of the important laboratory indicators in determining whether the fish was sick or healthy, edible or inedible, as well as fresh, we conducted our second stage experiments in this style.

It was noticed that in healthy (normal) fish in our experiment, the pH was close to neutral (6.94 pH) when tested, and when retested after a few (8-9) hours, it began to change to the alkaline side (7.4). The PH of the fish was determined using a “pH meter" and a Michaelis comparator. When using the Michaelis comparator, we conducted experiments by adding a methanitrophenol indicator.

To prepare the extract from fish meat, 25 grams of meat sample were taken and cut into 40-50 pieces of 250 ml each. we place it in a volumetric flask. This is 100 ml per flask. pour distilled water and mix well. After this meat mixture stood for 15 minutes (Meanwhile stirred 3 times every 5 minutes), we passed it through a paper filter and filtered it out.

The extract from the meat of healthy fish quickly passed through the filter paper, and the color of this extract became transparent. The spoilage process is underway, i.e. the extract from the meat of infected fish is poorly filtered during filtration, and the resulting filtrate has become cloudy. In our experiment, we used both filter products, which were easily and indistinctly absorbed by the extraction filter during filtration.

In order for us to determine the concentration of hydrogen ions in our studies, 2 ml of the meat extract under study was poured into a second tube, adding 1 ml of the indicator (methanitrophenol), 4 ml of distilled water; 2 ml of meat extract and 5 ml of distilled water were added to the first and third tubes, and only 7 ml were poured into the fifth tube ml of water. The tubes located in the fourth and sixth chambers of the Michaelis comparator were selected, the color of which was similar to the color of the second tube, the pH value was written on these selected tubes, and we determined the value corresponding to the second tube.

Under control: pH of healthy fish is 6.8-7.

On the other hand, the pH of sick fish is 7.2 and higher in saprolegniosis.

When determining the index of hydrogen ions in fish meat with saproligniosis, when we selected a test tube similar to the second test tube, we had a higher index of hydrogen ions, i.e. the pH was 7.3-7.4, while in the study of fish meat with xylodinilliosis, this indicator was higher than that of fish meat infected with saprolignia mixta with a Ph of 7.4-7.6, the meat of this fish is unsuitable for consumption from the point of view of veterinary sanitation, it was found that.

When we determined the hydrogen ion index for healthy fish meat, we found that the hydrogen ion index (pH) was 6.9 when we selected a tube similar to the second tube. Our experiments showed that the meat of sick fish was determined using the Michaelis comparator as inedible, and the controlled fish as inedible.

4 Conclusion

During the experiments, it was found that the high effectiveness in the prevention of saprolegniosis of fish is due to the timely use of bleach, calcium hypochlorite, slaked lime, salt solution, formalin, sodium alkali, potassium permanganate, chloramine b, Malachite chenille.

Fish trichodinosis is widespread in nature and more often affects mainly young, one- and two-year-old fish. Good results in the treatment of trichodynosis are obtained by using the cupping method with appropriate solutions of table salt, formalin, chlorine, as well as treatment according to 2 schemes with a mixture of FMS. A good effect in the prevention of the disease is provided by regular fishing reclamation, veterinary, sanitary and therapeutic measures.

The experiments have shown that the content of hydrogen ions in the meat of fish suffering from saprolegniosis is pH 7.3. Our experiments have shown that the meat of this fish is unsuitable for consumption from the point of view of veterinary sanitation. During our experiments, it was proved that in the study of fish meat with xylodinilliosis, this indicator was higher (7.4-7.6) compared with fish meat affected by saprolignia Mixta.

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