

# Introduction and Control Measures of Common Fish Parasitic Diseases

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**Abstract:** Parasites, also known as invasive fish disease, can occur throughout the year. With the development of aquaculture in China, has become one of the constraints of the development of aquaculture in China. With the development of intensive aquaculture in China, parasitic diseases of fish frequently break out, causing great economic losses to aquaculture industry. Many scholars have carried out systematic investigation and research on fish parasitic diseases, and found out the species, distribution and prevention measures of many fish parasitic diseases. It provides scientific basis for the prevention and treatment of fish parasitic diseases in China. This paper mainly describes several common fish parasitic diseases, and gives the prevention and treatment of fish parasites combined with the domestic literature.

**Keywords:** Prevention and treatment; Fish parasites; Myxosporosis; Trichodiniasis; Ichthyophthiriasis; Dactylogyriasis

## 1. Introduction

Fish parasites can be divided into two categories, vivo parasites and ectoparasites, according to their parasitic parts. Parasite in vivo refers to parasitic in the internal organs, blood, intestinal tract and other tissues of vivid objects in water, such as all kinds of tapeworms, nematodes, worms, schistosomiasis, etc. Ectoparasite refers to the body surface, gill parasite in aquatic animals, the place such as fins, such as ring worm, anchor head Shi, such parasites is easy to spread infectious quickly. With the increasing density and yield of fishery aquaculture, fish diseases have gradually become the main restricting factors for the development of aquaculture, among which parasitic diseases occupy a certain proportion. In general, most parasites do not cause significant harm to fish. In a stable water ecosystem, there is often a balance between host and parasite populations. When the environment and ecology change dramatically, parasites may invade the host in large quantities, thus causing outbreaks of parasitic diseases and causing great losses to fishery production. When the parasite is seriously harmful, it may cause slow growth and development of fish, decline in resistance and even cause death. Sometimes the effects of parasites are not significant. From the production situation, the bacterial diseases of freshwater fish are mainly bacterial surface diseases, and the damage caused by parasites is often the main reason for the occurrence and prevalence of these diseases. Therefore, the damage to the parasite should be highly valued.

## 2. Common Parasitic Diseases in Fish

### 2.1. Myxosporosis

Disease source and disease: the disease is myxosporidium and belongs to the class Sporidium, which has many species and is harmful to fish. The parasites are parasitic on the surface of the fish and on the fins and gills, forming many grayish white punctate or tumorous cysts; parasitic on the intestinal tissue, the intestinal mucosa will be damaged; parasitic on the nervous system and sensory organs, will make the fish tail upwarping.

### 2.2. Trichodiniasis

Disease source and disease: the disease source is Trichodinid .It will cause this disease se fish to appear "white mouth and white head" symptoms, fish experience wasting, breathing difficulties, serious can lead to fish body death.

### 2.3. Ichthyophthiriasis

Disease source and disease: the disease source is the ichthyophthirius. In the early stage of the disease, the surface, fins and oral cavity of the fish presented punctate cysts; in severe cases, the skin of the fish was covered with small white spots. The body surface mucus increases, the fish body is thin, the sick fish swims slowly, the breathing difficulty, does not eat, also can appear the scale to fall off.

### 2.4. Dactylogyriasis

Disease and disease: the origin of the disease are taihuensis or aristichthys. The diseased fish have no obvious surface features. They are generally shown as being weak in body, weak in swimming, increased in the mucus of the Gill filaments floating on the surface of the water, pale in color, difficult in breathing, and often open and

open the branchial cover due to the swelling of the branchial filaments. There are irregular patches on the gills.

### **3. The Harm of Parasitic Diseases on Fish**

Parasitic diseases of fish not only affect the growth of fish, but also lead to emaciation, weakened immunity and poor disease resistance. Moreover, the quality of fish is extremely poor, which affects commodity prices and leads to serious and direct death (especially the high mortality rate of fish fry). The harmfulness of parasitic diseases is mainly manifested in the following four aspects: Damage fish tissue, causing mechanical damage. If the body surface, gills, intestines and so on, causes the bacterial infection. If happen in body surface, affect commodity value.

Absorb fish body nutrition, affect fish body growth effect, serious person even dies. Such as parasitic sturgeon gills on the trematode Niger. Each worm body draws 0.5ml of blood from the gills every day, and each tail sturgeon can host 300 ~ 400 worms when it is serious. In this way, the host can lose up to 150 ~ 200ml of blood every day, so the diseased fish will lose weight quickly.

Destroy gill filaments, affect fish respiratory function, cause death.

The production of toxins. During parasitism, metabolites of parasites are excreted into the host body. Some parasites can also secrete specific toxic substances, which have a certain impact on the host. Like a Shi mouth base of glandular cell can secrete toxins, etc.

### **4. Prevention of Fish Parasitic Diseases**

Breeding ponds should be thoroughly cleaned and drained. Each mu (667 square meters) with block quicklime 100 ~ 150 kg of slurry whole pool sprinkling. Carry out quarantine system to seedling, do not put the fish seedling that raises pathogen, before fish breed enters pool with 200 milligram, litre potassium permanganate solution immerses 30 minutes. During the breeding period, the whole pond was sprayed once a month with the solution of trichlorfon. The quality and quantity of feed and other inputs should be strictly controlled to prevent water pollution. Adopt standard breeding measures for healthy and ecological breeding, improve the immunity of fish, reduce the incidence of diseases, and reduce the use of drugs.

Better compound feed should be selected during overwintering. In the beginning of spring feeding should pay attention to the addition of some nutrients and immunomodulators, as soon as possible to restore the body of fish consumption due to overwintering. Improve your immunity by networking. When loading live fish, it is necessary to avoid injury to the fish body and reduce the chance of pathogen invasion.

During the winter, the metabolic wastes of all kinds of aquatic organisms are stored in the water because the

ponds change less water. These metabolized wastes decompose quickly and consume a large amount of dissolved oxygen in water. Lack of oxygen can produce a large number of toxic intermediate products, so that the resistance of fish greatly reduced, the risk of infection including parasites and other diseases increased. Therefore, in addition to proper water change, we must maintain the water body of high dissolved oxygen and good water quality environment. We can regularly use water quality improver and disinfectant, effectively promote the growth of phytoplankton in water, improve the water color and fish feeding, prevent the accumulation of metabolic waste, and effectively improve the aquatic environment where fish live.

Because the fish body more or less carries certain parasites before overwintering, once the water temperature rises, these parasites are easy to multiply in large numbers, making the fish body a large number of infections. In order to prevent the outbreak of parasitic diseases, some safe, efficient and pollution-free drugs on the market can be selected to completely kill a small number of parasites carried by the overwintering fish body itself.

## **5. Diagnosis and Treatment of Fish Parasitic Diseases**

### **5.1. Diagnosis**

The sample of the sick fish: the fish body should be soon dead. If the road is far away, the sick fish are wrapped with wet cloth. First, observe the characteristics of the fish body, examine the body surface of the fish, take the scales of the dorsal fin, and then dissect the fish body.

According to the following order: the oral cavity heart - bladder gallbladder liver splenic adipose tissue enteric intestinal membrane Gonadal - swim bladder - stomach - eye - eye - brain - spinal - muscle disease fish eye observation: the body surface is examined from head, mouth, eye, gill cover, scale, fin, and so on. If the body surface has a larger body, it can be seen by the naked eye. After the body surface examination, the gills begin to be examined. Gills are fish owners. It is easy to be polluted because of the respiratory organs contracting in the water, so it is an important inspection site, especially the gill filament of fish. Check if the gill filament color is normal, mucus increase, gill ends swelling, white and spoilage.

Microscopic examination of diseased fish (light or electron microscope): a drop of normal saline or aseptic water on a slide. Then take a small piece of tissue from the diseased fish, drop blood or inclusions in the water drop on the slide, cover the slide, and observe it under a microscope or anatomic microscope. The results were confirmed by supplementary histopathology or transmission electron microscopy. Fish are mainly located in the mucus, gills and intestines of the skin.

Diagnosis of sick fish.

Corresponding preventive measures shall be taken.

## 5.2. Treatment

Except for a few species, most parasites do not pose a serious threat to fish in natural waters. In a stable water ecosystem, a balance is often maintained between host and parasite populations. However, when the environment and ecology change sharply and the original balance is broken, the parasite will multiply in large numbers and invade the host, causing the host to grow and develop slowly and decline in resistance, which will lead to the occurrence of parasitic diseases and bring losses to fishery production. Almost every year in southern China, fish parasitic diseases occur, the death rate of 20% ~ 30%, serious up to 90%). Therefore, the parasitic fish body can not be ignored. We should kill and control parasites periodically according to their reproductive cycle.

### 5.2.1. Strengthen feeding management

Feed cleaning pathogens often adhere to the feed into the pond, so feed must be clean, fresh, preferably through disinfection, insecticide (especially feed grass and agriculture, by-products of the fish pond). It is better to feed pellet feed. Food field drugs kill residues and baits often become the breeding place of pathogens.

### 5.2.2. Improve the water environment

During the winter, due to less water change in the pond, the metabolic wastes of various aquatic organisms are stored in the water. When the water temperature rises in spring, these metabolic wastes decompose faster and consume a large amount of dissolved oxygen in the water. Lack of oxygen can produce a large number of toxic intermediate products, which greatly reduces the resistance of fish and increases the risk of various diseases, including parasites. Therefore, after entering the spring, in addition to proper water change, must maintain the water body of high dissolved oxygen and good water quality environment. We can regularly use water quality improvers and disinfectants to improve the aquatic environment where fish live.

### 5.2.3. Cut off the transmission path

Establish quarantine system to carry out quarantine on fish and seedlings imported from other places or introduced to other places. It is forbidden to carry pathogens, and soak them in 200mg/L potassium permanganate for 30min before the fish pond, and then release them after confirming that there is no disease and no pathogen, so as to prevent the spread of regional parasitic diseases. Every year, the pond shall be thoroughly cleaned before fish fry and fish species are released for free, sundries and weeds shall be removed, and pathogenic organisms in the pond shall be eliminated with drugs. We must insist on disinfection every year in order to prevent fish disease. The

tool that raises fish USES, often become the medium that spreads fish disease, below the circumstance that the condition permits, had better accomplish the tool is special pond is used only. If it is difficult, disinfect the tool before using it. Public appliances can be soaked and washed with 10ppm copper sulfate solution for 20min, and then used after drying. The large tool that should not use medicaments dip to wash should be basked in in sunshine after using every time dry, reoccupy.

### 5.2.4. Commonly used disinfection and insecticidal methods

Copper sulfate disinfection. Per cubic metre of water use 8 g, water temperature 10 °C ~ 20 °C, 15 ~ 30 min baptism. It can prevent and cure the fish diseases caused by branchial cryptomastigophora, stomatoderma, wheel worm, oblique pipe worm and trichoderma.

Bleach and copper sulfate mixture to disinfect. 10g bleach and 8 g copper sulfate per cubic meter of water. Two drugs should melt mixture again after respectively, the water temperature is 10 °C ~ 20 °C, dip 15 ~ 30 min.

Potassium permanganate disinfection. Per cubic metre of water with potassium permanganate 20 g, water temperature 10 °C ~ 20 °C, dip 2 ~ 2.5 h. Leaching and washing water should be as far as possible to choose water containing less organic matter, to prevent direct sunlight leaching and washing, so as not to affect the efficacy. Can prevent and control three generations of worms, ring worms, wheel worms, oblique tube worms caused by fish disease.

Disinfect dichlorfon. 10 ~ 15 min was rinsed with 2% dichlorfon (90% crystal) solution. Can prevent and cure ring bug disease, 3 generation bug disease to wait.

Salt disinfection. Washing with 3% ~ 4% salt water for 5 min has killing effect on myxobacteria, water mould and wheel worm. Specific use of what kind of drug disinfection, depending on the local prevalence of fish disease and drug sources. Pay special attention to the movement of the fish in the process of operation. If the fish cannot bear it, they should be put into the fishpond immediately.

## 6. Conclusion

China has not done well in anti-parasite. Some drugs still used have been used for 50 or 60 years, leading to some parasites producing antibodies. And some of the drugs that worked better but had more side effects have been banned. With the increase of drug cost, some farmers even use human medicine to treat fish. There is also a lack of line farming personnel and poor equipment. All of these show that there is still much room for improvement in the fight against parasites in our country. Therefore, I think the country should increase investment in aquaculture, at least we can not be so backward in the research and development of antiparasitic drugs, can not still use drugs developed in the 1950s and 1960s. There is

also to strengthen the guidance of farmers, parasite prevention and control to them more basic knowledge. Then, it is necessary to increase the number of talents to be put in. At present, the number of fishery workers in our country is obviously missing. I think we should think about why agricultural studies cannot retain talents, while the financial industry is constantly pouring in talents. There is a line of aquatic workers in our country too simple equipment, which also needs to increase financial input.

## References

- [1] Xiong Guoyong, Li Fei. Common parasitic diseases of freshwater fish and their prevention and treatment. Jiangxi Fisheries Science and Technology. 2014, 2.
- [2] Huang Xingzhou, Wei Lilan. Fish mainly have parasitic diseases and their prevention and treatment. New Countryside. 2013, 9.
- [3] Yu Hefeng. Prevention and treatment of common parasitic diseases of fish in winter. Wanfang Data. 2006, 1.
- [4] Wang Likun, Gao Junfeng, Luo Hongwei. Chinese journal of animal husbandry and veterinary sciences. 2014, 30.
- [5] Li Meiyong. Preliminary investigation and control of parasitic diseases of aquaculture cold-water fish in hebei province. Hebei Normal University, 2009, 1-55.
- [6] Huang Yuliu, Li Xiaozheng, Wu Xiangqing. Procedures for the detection and diagnosis of parasitic diseases in fish and their applications. China Fisheries, 2010, 1.
- [7] Zhou Yanxia. Some guidance on fish parasitic diseases. Scientific Fish Breeding. 2015, 2.