

S. S. College, Jehanabad

Department: Zoology

Class: M.Sc. Semester IV

Subject: Zoology

Topic: Fish diseases

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Fish diseases - Pathogenic & Environmental diseases & its control

1) Introduction :

Like human and other animals, fish suffer from diseases and parasites. Fish defences against disease are specific and non-specific. Non specific defences include skin and scales, as well as the mucus layer secreted by the epidermis that traps microorganisms and inhibits their growth, if pathogens breach these defences fish can develop inflammatory responses that increase the flow of blood to infected areas and deliver white blood cells that attempt to destroy the pathogens.

Waters get easily polluted from unhygienic food and decomposing organic matters leading to rapid unhygienic conditions. O₂ depletion in such water is also common.

Antibody formation in fishes is temperature dependent. Lowering of temperature below the range of natural environmental temperature for a particular fish may delay or suppress antibody formation in the fish, thus affecting its immune response.

Pathogens which can cause fish diseases can be divided into two groups:
diseases caused by pathogens and parasites.

- i) Viral infections, such as eosinophil lymphocystoma found in EXO species.
- ii) bacterial infections, such as pseudomonas fluorescens leading to fin rot and fish dropy.

iv) fungal infections

v) water mould infections such as *Saprolegnia* sp.

vi) metazoan parasites, such as copepods

vii) unicellular parasites, such as *Ichthyophthirius multifiliis* leading to Ich.

viii) Certain Parasites like Helminths for example *Eustrongylides*.

may be divided into three types or

Types of fish disease or diseases caused by pathogen or parasite

① Pathogenic type

Fish ailments can be

separated into 4 general types including bacterial infections, fungal infections, parasitic or protozoan infections and physical ailments and wounds.

i) Bacterial disease — bacterial diseases are usually characterized by red streak or spots and swelling of the abdomen or eye. These are best treated by antibiotics such as penicillin, amoxicillin or erythromycin.

ii) Fungal disease — common fungal infection often look like gray or white fluffy patches.

3) Parasitic disease — The most common parasitic disease called "Ich" can be treated most effectively with copper or malachite green in the right dosage. Most treatments will have copper as an ingredient. Many water treatments like "Aquarisol" will also contain copper as an ingredient. If the treatment you use is an antibiotic or copper based, remember to remove all carbon from the filtration system.

to 95 Physical Alterations. Pinf are often the result of environment. Poor quality water conditions can lead to fish gasping, not eating, jumping out of the tank and more. Tanks water problems can result in nipped fins and bite wounds.

(B) Environmental or Icthyotic Causes: —

A abrupt fluctuation in temperature is frequent and also alteration of pH ranges between extreme limits - from too acidic conditions too alkaline ones. All these contribute in creating conditions favourable to quick spread of diseases in fishes.

(i) Due to alteration in H⁺ concentration (pH) of water: —

Water becomes too acidic or too alkaline then the small fishes begin to show signs of ailments. In the former case, the fish skin get covered with brown or whitish film and the gills turn brownish all over the edges, and the mucus secretion is increased, whereas in the latter case the gill operculum burst and the fish give an injured look.

(ii) Due to asphyxia caused by depletion in O₂ content in water: —> under such stress the fishes

show signs of suffocation mouth wide open. Gill opercula raised and gills spread wide

apart. Due to chill and cold following drop in temperature of water: — The symptoms of ailment include congestion of gill apparatus and dull appearance of fishes in tank and behavioural

(v) Due to indigestion and constipation following intake of food available in water. —

Symptoms include listlessness and no dorsal movements of fishes. The fish may remain stationary in water, stand on its head or lies at the bottom on its side.

(vi) Egg binding : — This is the illness of female fishes during breeding time. The body of the female fish is greatly swollen due to accumulation of ripe eggs that could not be released.

(c) Nutritional diseases : —

Following are the commonly occurring nutritional diseases in fishes: —

(i) Pin heads — with enlarged head and slender body, are starved larvae in the nurseries. Starvation may arise from inadequate supply of food or persons behavioural starvation.

(ii) Lipoid hepatic degeneration disease : —

The liver takes up a yellow brown coloration. Anemia follows with gills looking pallor. The liver itself is swollen with rounded edges. It is caused by overfeeding particularly where trash fish or pelleted diets are used in which fat develops and acidity.

(iii) Vitamin A - Imbalance

In this case varying degree of syndromes occur. Its deficiency causes undergrowth blindness, haemorrhage at the pin base and keratomalacia. Its excess in the diet causes squamous metaplasia splenomegaly and hepatomegaly.

Vitamin B₆ deficiency — It usually affects larval growth where it causes mainly lesions in the central and peripheral nerves. The affected fishes show such nervous signs as gasping of the opercular folds etc.

The deficiency of this vitamins in the diet causes nutritional gill diseases, show hypoaer hyperplasia, inappetance, respiratory troubles and anaemia.

iv) Vitamin C deficiency

It brings in skin and deformities due to abnormal skeletal development and poor wound healing.