

Fungal disease in coldwater fish-diagnosis and control



The diseases caused by fungi in fishes are referred to “FISH MYCOSIS”. Fungal infections are generally restricted to chronic, steady losses.



Directorate of Coldwater Fisheries Research

(Indian Council of Agricultural Research)

Bhimtal -263 136, Nainital (Uttarakhand)

Phone: 05942- 247280/247279, Fax: 05942- 247693

Email: director@dcfr.res.in, Website: www.dcfr.res.in



Mostly the fungal infection starts when the host gets injured or as a result of infection other than of fungal origin. Coldwater Aquaculture industry, particularly rainbow trout farming has been rapidly developed in many areas of hill states in India. One of the most serious problems in trout culture is oomycete infection.

COMMON FUNGAL FISH DISEASES

Saprolegniosis

Saprolegniosis is caused by *Saprolegnia* sp., which affects a wide variety of coldwater fishes. *Saprolegnia* is generally a secondary pathogen but under some circumstances it can act as primary pathogen as well. Most frequently, it targets fish both in wild and in tank environment through cellular necrosis and other epidermal damage. All the life stages of fish including the eggs are prone to such infections.

Infected fish becomes lethargic, listless and less responsive to external stimuli, Loss of equilibrium often occurs shortly before death. *Saprolegnia diclina* infections found more common in winter months, whereas *Saprolegnia ferax* occurs predominantly in the spring and autumn.

Branchiomycosis

Branchiomycosis also termed as GILL ROT is characterized by a yellow to brownish discolorations of the gills sometimes leading to disorganization and loss of a portion of the gill in the infected fish. The affected fish gasps for air and ultimately dies due to asphyxiation. Gills are affected due to serious obstruction of blood vessels. The affected gills lose their normal bright red colour and shows brownish areas due to hemorrhage and thrombosis and lighter whitish or grayish areas as results of ischemia. The disease is common in ponds having abundant decaying organic matter.

Achlyaeosis

Achlya infestation has been reported by in hill stream temperate fishes. Symptoms of this disease are almost similar to the Saprolegniosis. There are no freely flowing primary zoospores in the fungi of the genus *Achlya*; secondary oocysts emerge from the cyst and appear at the sporangium opening. In species of the genus *Aphanomyces* the cysts are produced in the same way as in *Achlya* but unlike the latter, the former have much thinner hyphae and the zoospores in their zoosporangium are arranged in a single line. The infected fish shows physical abnormality and abnormal behavior with white to grey cotton like growth on skin, fins and gills.

Causes and Clinical signs of the fungal infected fish

The infected fish shows physical abnormality and abnormal behavior. Clinically, affected fish found with white to grey cotton like growths on skin, fins and gills. Initially the disease appears as white mat over the skin which gradually spreads and invades in deeper tissues causing mortality in acute cases.

As the infection progresses the fish become increasingly lethargic due to restriction of movement because of overgrown mycelium.

In the fish, fungus remains as an ulcerative mycosis that converts into a deep necrotic lesion involving the muscle.

Depending on the degree of infestation, the affected fish stops taking food and lose their escaping reflex. Loss of equilibrium often occurs shortly before death. They contain white-grey wool-like fungal growth of different sizes, prominently on their body surface.

Sudden decrease in temperature and a significant number of pathogenic fungal zoospores in the water have been identified as risk factors for the disease.

Prophylactic measures and cure

Dip treatment of fish with potassium permanganate sodium chloride at high concentrations have been recommended for the cure of fungal infected fish. Currently, the most effective strategy for controlling and preventing Saprolegnia infections is a combination of good fish management and husbandry techniques, combined with salt treatment. Water flush treatment with 2-3% of common salt, weekly, for 3 weeks can be given to the infected stock. 1ppm potassium permanganate dip treatment for 2-3 minutes is also recommended.

Prevention is much better than the cure. Following are the preventive measures for reducing the risk of fungal infection-

- ❖ Proper handling of stock to avoid the physical injury.
- ❖ Ensuring hygienic environment for fish with regularly cleaning of the tanks.
- ❖ Feeding with appropriate rate, frequency and with quality feed.
- ❖ Stocking of diseased free seed in appropriate density.
- ❖ Maintaining water flow in the trout raceways.



Edited & Compiled by

Dr. N. N. Pandey, Sr. Scientist (Aquaculture)
Dr. Amit Pande, Sr. Scientist (Biotech. AS)

Published by

Director, DCFR Bhimtal



हर कदम, हर डगर
किसानों का हमसफर
भारतीय कृषि अनुसंधान परिषद

AgriSearch with a human touch

