

Viral diseases of cold water fish



Fish being a poikilothermic animal are very sensitive to its surroundings. Even minor changes in environment can lead to stress in fish.



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Viral hemorrhagic septicemia virus (VHSV)

Viral hemorrhagic septicemia virus (VHSV) is considered to be one of the most devastating pathogens of finfish. It is thus listed as notifiable disease by the world organization for animal health or OIE. The causative agent is a member of the genus *Novirhabdovirus*, within the family *Rhabdoviridae*. Infected fish can transmit the virus by shedding it in urine and reproductive fluids (ovarian fluid and milt).

Clinical Signs

Affected rainbow trout are usually anorexic and may be either lethargic or hyperactive. Swimming behavior can also be abnormal. Infected fish are usually darker than normal but the gills are pale due to anemia. Petechial hemorrhages may be observed over the body and at the base of fins. The optimal temperature for active infection is 9-12°C. Most outbreaks occur when water temperatures are less than 15°C.

Prevention and control

Viral hemorrhagic septicemia is a highly contagious disease. Quarantine is necessary to control outbreaks. There are evidences that VHSV can be transferred from wild fish to farmed fish and vice versa. There are no effective anti-viral agents for the control of this disease, and no commercial vaccines exist.

Infectious Hematopoietic necrosis virus

Infectious hematopoietic necrosis virus (IHNV) is a negative-sense single-stranded, bullet-shaped RNA virus that is also a member of the genus *Novirhabdovirus* of the family *Rhabdoviridae*. IHNV is transmitted by clinically ill fish and asymptomatic carriers. This virus is shed in the feces, urine, sexual fluids and external mucus. Transmission is mainly from fish to fish, primarily by direct contact, but also through water.

Clinical disease usually occurs when the water temperature is between 8°C and 15°C, but outbreaks have occasionally been reported at temperatures warmer than 15°C. Disease outbreaks are generally seen between spring and early summer. Young trout fish are most susceptible to disease, particularly during the first two months of life. Most epizootics have been linked to the importation of infected eggs or

fry, but IHNV can also be introduced in asymptomatic carriers. In areas where this disease is not endemic, outbreaks are controlled by culling, disinfection, quarantines and other measures.

Infectious Pancreatic Necrosis Virus

Infectious pancreatic necrosis (IPN) is an economically significant viral disease of salmonid fish worldwide. IPNV is the prototype virus of the family Birnaviridae. IPNV transmission takes place through two mechanisms: horizontal and vertical transmission. Horizontal transmission can occur by direct contact among healthy and infected fish by ingestion and vertical transmission takes place through reproductive products.

Clinical signs

Clinical signs include darkening pigmentation, a pronounced distended abdomen and The behavior of infected fish varies from quiescence with weak respiration to periods of sporadic hyperactivity during which fish swim in a corkscrew manner, rotating about their long axis or whirling violently.

Prevention and control

Prevention can be achieved by avoidance of fertilized eggs originating from IPN virus carrier broodstock and the use of protected water supply (e.g. spring or borehole).

Spring Viraemia of carp virus

Spring viraemia of carp, also known as Swim Bladder Inflammation, is caused by Spring viraemia of carp virus. The disease is usually observed during the Spring and the outcome depends on the general condition of the fish, the water temperature, and any secondary bacterial infections. At low water temperatures (less than 10°C) the immune status of the fish is compromised and the disease is usually fatal.

SVC primarily affects Cyprinids. Common carp and Koi carp are the most susceptible species. This virus is shed in the feces and urine and mucus. The virus enters most often through the gills. Infection can also occur through the base of fins and skin. The virus is transmitted by direct contact or through the water.

Clinical Signs

Fish can carry SVCV with or without symptoms. SVC outbreaks are most common in farmed carp, but can also occur in wild fish. The infection is characterized by dark body colouration, popeye, pale gills and a swollen abdomen. Sometimes pin-point haemorrhages can be observed in the skin, and there can be a thick mucoid cast trailing from an inflamed and protruding vent. Diseased fish tend to gather at the water inlet or sides of the pond. Such fish swim and breathe more slowly than normal and react sluggishly to external stimulus.

Prevention and control

There is no known cure for SVC, but fish held at temperatures above 18°C have a greater chance of survival, 20 - 22°C is the optimum.

Vaccines are available and should be used in the summer or autumn to prevent acute disease in the spring.

The concept that "prevention is better than treatment" is fundamental to the maintenance of a healthy stock of fish. Because fish are schooling animals, they are hard to observe individually, making the diagnosis and treatment of disease difficult. In addition, some fish diseases are still essentially incurable. Therefore, preventive measures are essential to the control of disease.

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