



Parasitic Diseases of Fish II



Chilodonella

- **Leaf-shaped** ciliated protozoans, oval, dorsoventrally flattened, slightly asymmetric.
- **Macro and micronucleus** well evidenced; the ventral surface has **two longitudinal rows** of ciliary kineties.



Chilodonella

- *Chilodonella* species are free-living but some of them parasitize the skin, gills and fins.
- Only two species have been observed causing damage in fish: *Chilodonella hexasticha*, mainly found in tropical fishes and *C. piscicola* (syn. *C. cyprini*) mainly parasitizing fishes from subtropical and temperate waters.



Chilodonella

Transmission

- The transmission of chilodonellosis occurs especially by direct contact among infested and healthy fish.



Chilodonella

Pathogenesis and clinical signs

- Clinical manifestation comprises non-specific signs such as respiratory difficulty, loss of equilibrium and appetite. Apart from these alterations, whitish lesions on the gills, scaleness, darkened skin, skin and fins ulcers, and haemorrhagic areas are common in mixed infection with bacteria.
- Infestations by *Chilodonella* cause severe lesions when compared to other ciliates.



Chilodonella

- Pathological changes caused by *Chilodonella* are related to its abrasive action on the host epithelium, being the gill filaments the most sensitive organ to the parasite attack. In acute cases, an increase in the mucus production with consequent congestion of the gills maybe found.



Chilodonella

- Consequently in severely infested fish, epithelial proliferation, necrosis and desquamation culminating in blood capillary rupture and mononuclear inflammatory cell infiltrate can be found.



Chilodonella

- **Malachite Green** and **Formalin** can be used separately for **treatment**



Ichthyophthiriasis

- The causative agent of ichthyophthiriasis or **white spot disease** is one of the most important fish parasites of worldwide distribution compromising skin, fins, gills and eyes of farmed fish.



Ichthyophthiriasis

- Ichthyophthiriasis comes in front of all parasitic diseases, as it is widespread in all types of intensive culture. Also, outbreaks of this disease lead to mass mortality and reduce the growth rate of fish.



Ichthyophthiriasis

- Disease caused by *Ichthyophthirius multifiliis*.
- It is round to oval in shape. The body surface covered with cilia.



Ichthyophthiriasis

- The parasite has three phases to complete its life cycle:
- **1. Adult phase**, it is embedded in the skin or gills of the fish, causing irritation and the **appearance of small white nodules**. As the parasite grows it feeds on red blood cells and skin cells. After a few days, it bores itself out of the fish and falls to the bottom of the aquarium.
- **2. Cyst phase**: after falling to the bottom, the adult parasite forms into a cyst with rapid cell divisions occurring.
- **3. Free swimming phase**, after the cyst phase, about 1000 free-swimming young swim upwards looking for a host. If a host is not found within 2 to 3 days, the parasite dies. Once a host is found the whole cycle begins anew.



Ichthyophthiriasis

Transmission:

- **1.** The disease is transmitted through direct and indirect contact with infected fish.
- **2.** Water act as vehicle for spreading the infection.
- **3.** The disease is easily introduced to fish culture by adding new infected fish or contaminated aquatic plants



Ichthyophthiriasis

Clinical signs:

- The disease is characterized by appearance of white spots on the skin, gills, fins and cornea of the eye.
- The white spots appeared as white specks on their skin as though they were sprinkled with salt.



Ichthyophthiriasis

Treatment and Control:

- **Physical control:** This type of control is used to break the cycle of infection in different stages:
- **Flushing method:** It is used mainly in hatcheries or tank. The fish are held in containers with perforated bottom and sides for two to three weeks and maintained in running water.
- **Transferring method:** It is used for ornamental fishes as the infected ones are transferred to parasite free aquaria every day or 12 hours.
- **Heat method:** This method depends on mainly raising water temperature up to 30 to 32C.
- **Chemical method:**
 - Sodium chloride.
 - Potassium permanganate
 - Formalin, firstly
 - Malachite green
 - Acriflavin
 - Methylene blue