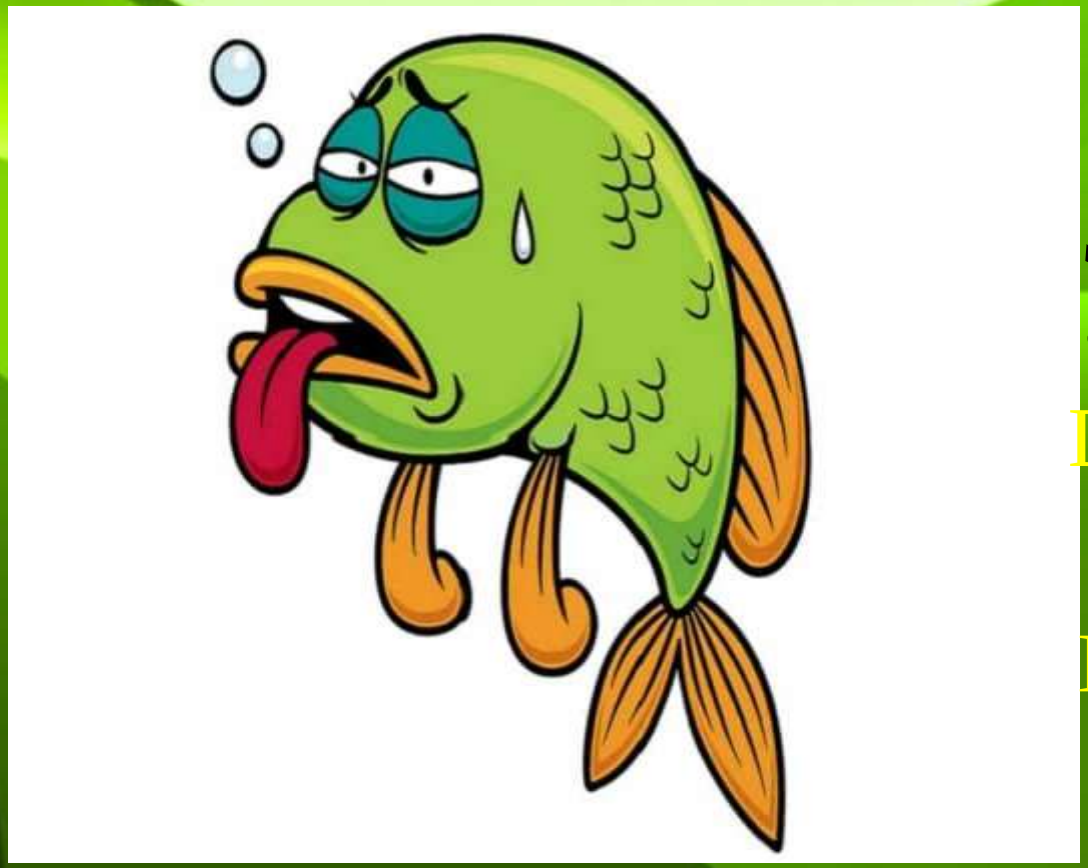
# BACTERIAL DISEASES OF FISHES



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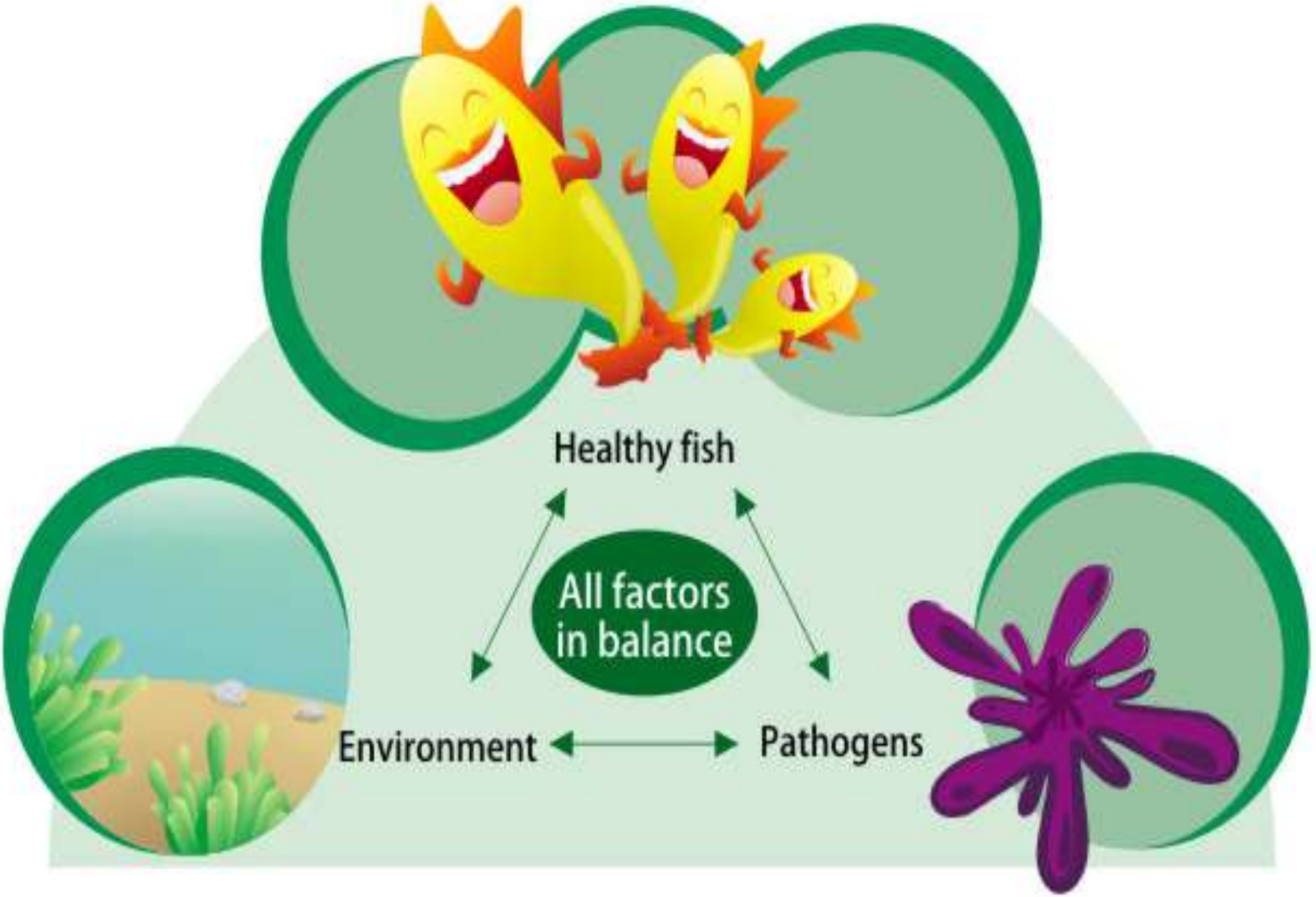
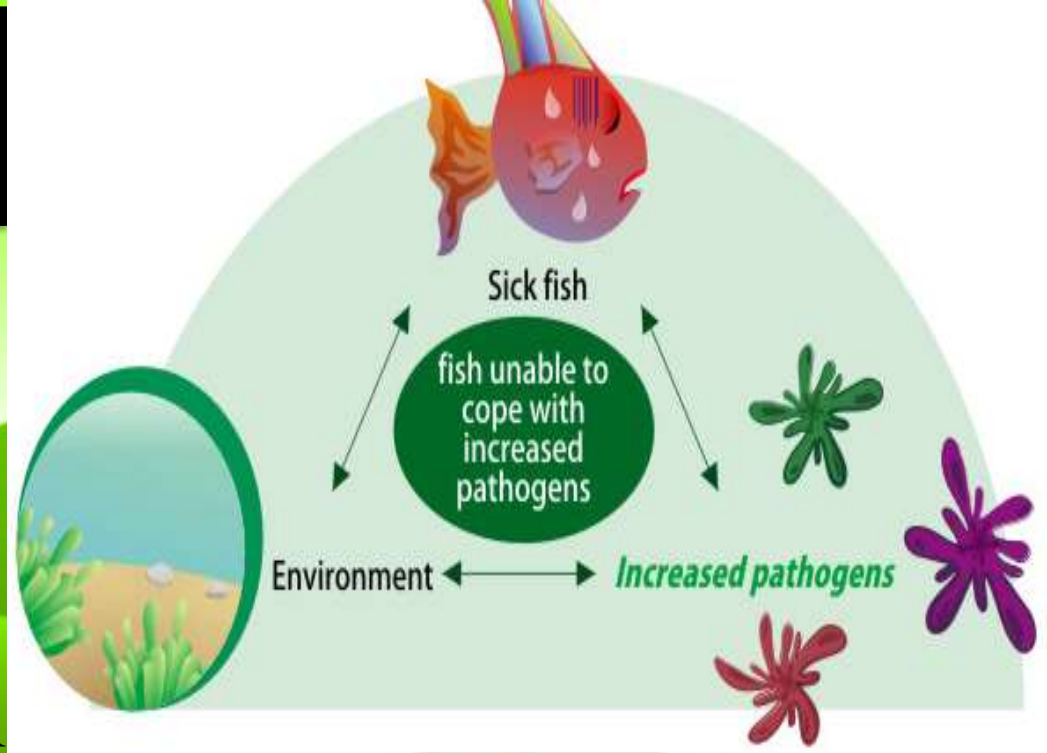
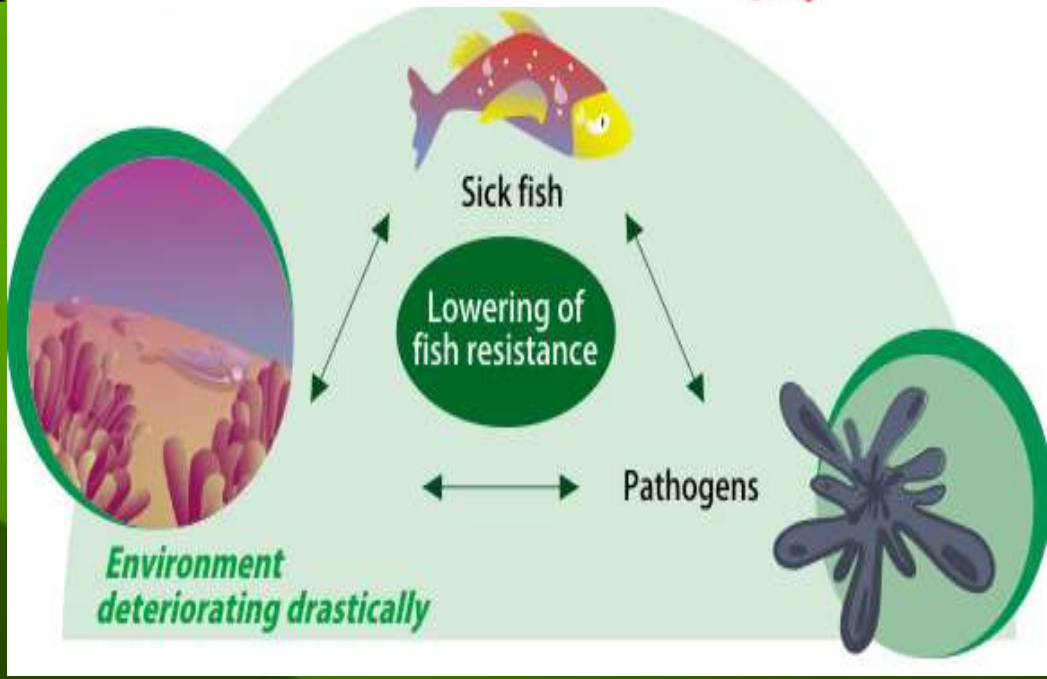

Healthy fish
All factors in balance
Environment
Pathogens

# CAUSES

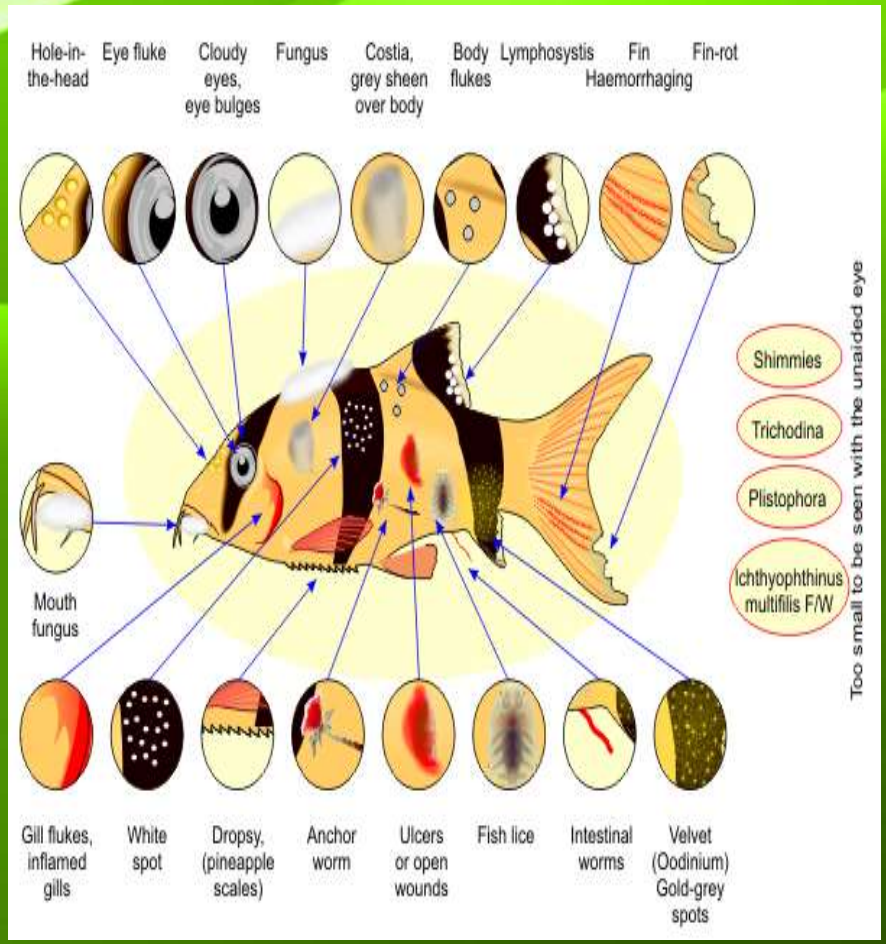
- Poor water quality
- Fluctuation in temperature
- Improper nutrition
- Access waste deposition



# General Symptoms

- Lethargic swimming
- Loss of appetite
- Respiratory distress
- Jumping from the water
- Colour of gill changed
- Fins become frayed



# BACTERIA

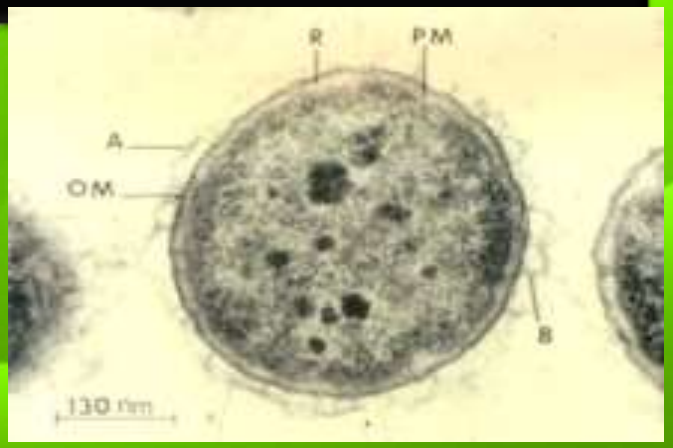
- Unicellular or Single celled microscopic organisms.
- Cell membrane made up of cellulose and chitin.
- Vacuoles.
- Gram-positive and negative .
- Cell walls are thick and thin .
- Lack nuclei and other organized cell structure.
- Some bacteria are pigmented .

# BACTERIAL DISEASES IN FISHES

- *Furunculosis*
- *Columnaris*
- *Dropsy*
- *Vibriosis*
- *Tuberculosis*
- *Bacterial gill disease*
- *Fin rot/tail rot*


# FURUNCULOSIS

- Furuncles = boils
- Caused by *Aeromona salmonicida* in salmon fishes.
- It is a non motile,gram -negative bacterium




## SYMPTOMS

- appearance of boil like lesions
- blood-shot fins,
- blood discharge from the vent,
- hemorrhages in muscles and other tissues and necrosis of the kidney


FURUNCULOSIS

# TREATMENT

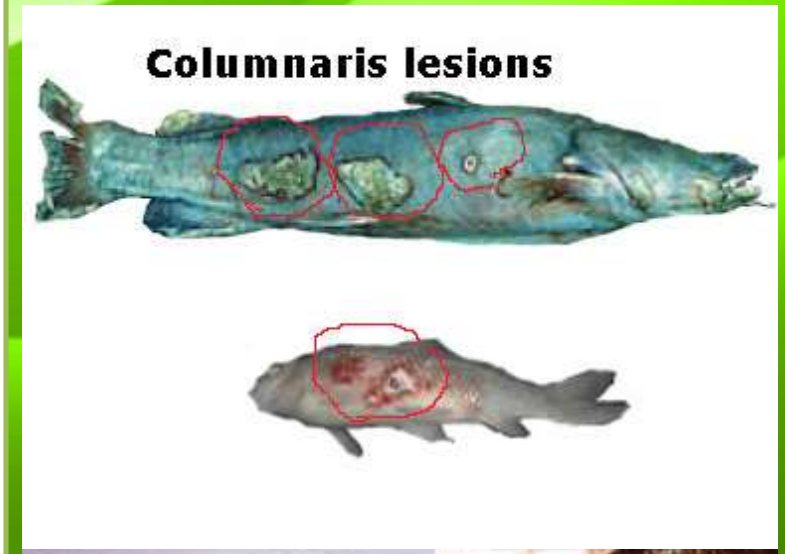
- Remove the severely infected fishes from the pond and supply food containing antibiotics like **sulphonamides or nitrofurans.**
- Sulfonamides like **sulfadiozine or sulfaguanidine** are given orally with food at the rate of 22 g / 100 kg of fish / day.
- Other antibiotics like **chloromycetin and tetramycin** are most effective at a dose of 5-7.5g / 100 kg of fish / day. Disinfect the eggs with 0.015% solution of **methiolate** or 0.185% **acriflavin**.

# COLUMNARIS

- Caused by *Chondroccus columnaris* and *Cytophaga columnaris*
- It is a long, thin, flexible, gram-negative slime bacterium (myxobacteriales).

## SYMPTOMS

- appearance of grayish-white or yellowish-white patches on the body.
- The skin lesions change to ulcerations and fins may become frayed.
- Gill filaments are destroyed and eventually lead to the death of the fish.




# TREATMENT

- Addition of **1 ppm copper sulphate** in the pond to control this disease is effective.
- **Tetramycin** administered orally with food at a rate of 3 g / 100 pounds of fish / day for 10 days is very effective.
- Dip treatment in **malachite green** (1:15000) for 10-30 seconds and one hour bath in 1 ppm **furanase** is very effective to control this disease.


# DROPSY

- *Pseudomonas punctata* is the causative agent

## SYMPTOMS

- Characterized by accumulation of yellow coloured fluid inside the body cavity, protruding scales and pronounced exopthalmic conditions. This is known as “Intestinal Dropsy”.
- In case of ulcerative dropsy, ulcers appear on the skin, deformation of back bone takes place and show abnormal jumping. This is a fatal disease in culture systems.

# TREATMENT

- Removal and destruction of fishes, followed by draining, drying and disinfecting the pond with **lime** are preventive measures to control the disease.
- **5 ppm potassium permanganate for 2 minutes dip bath.**
- **Streptomycin and oxytetracyclin**

# VIBRIOSIS

- Vibrio bacteria are the causative agents (in Salmon)
- These bacteria are small gram-negative bacilli, characteristically curved.

## SYMPTOMS

- Diseased fishes show large, bright coloured, bloody lesions in the skin and muscles, haemorrhages in eyes, gills may bleed with slight pressure, and inflammation of the intestinal tract.

# TREATMENT

- **Sulfamethazine** at a rate of 2 g / 100 pounds of fish / day gives good results.
- 3 – 4 g / 100 pounds of fish / day for 10 days of **tetramycin** also give satisfactory results.

# TUBERCULOSIS

- *Mycobacterium* is a disease causing agent

## SYMPTOMS

- ulcers on body,
- nodules in internal organs,
- fin and tail rot,
- loss of appetite and loss of weight of fish.

# TREATMENT

- This can be cured with dip treatment in 1:2000 **copper sulphate** for 1 minute for 3-4 days.
- Antibiotics are not successful.
- The fishes should be destroyed and potassium permanganate or lime used in the pond.

# BACTERIAL GILL DISEASE

- The disease is caused by *Cytophaga* sp., *Flexibacter* sp. or *Flavobacterium* sp.
- The bacteria usually attack fingerlings.

## SYMPTOMS

- Affected fish become anorexic, lethargic and dark in color.
- Fish tend to remain near the surface and may be flaring their operculum.
- The gills produce excessive amounts of mucus and the gill filaments may stick together.
- The gills of affected fish become yellowish in color indicating gill rot.

# TREATMENT

- A high mortality rate of >80% may be observed within a week in affected populations.
- Affected fish may be treated with **oxolinic acid** mixed with feed at 20 mg/kg of fish and **oxytetracycline** at 75 mg/kg of fish/day for 10 days.
- **Acriflavin** dip at 100 ppm for 1 minute, and potassium permanganate at 2-4 ppm added to the water and allowed to dissipate over time could also be used to treat diseased fish

# TAIL ROT/FIN ROT

- Caused by *Aeromonas salmonicid* and *A. liquefaciens*
- It is characterized by appearance of white lines along the margins of fins, the opacity usually progresses towards the base eroding them and causing **haemorrhage.**
- The fin rays become brittles first and later break leading to the complete destruction of the fins. The infection may also spread on the body surface.

# TREATMENT

- Fin and tail rot are associated with poor sanitary conditions in fish ponds and with water pollution in nature.
- The Fin and tail rot may be checked at an early stage by keeping fishes in 0.5% copper sulphate solution for 2 minutes.
- Control may be achieved with **10-50 ppm tetramycin and 1-2 ppm of benzalkonium chloride.**
- In severe infections the affected parts are surgically removed and the fishes are then kept in **0.04% potassium dichromate.**

# VERTICAL SCALE DISEASE/PINE CONE DISEASE

- Caused by *Pseudomonas punctata*

**SYMPTOMS**

- Skin becomes rough
- Scales are stretched out resembling pine cone
- Scale capsule are filled with semi opaque and sanguinous liquid that makes the scale vertical
- Bleeding and inflammation of skin
- Exophthalmos(protruding eye)
- Swims slowly and shows dyspnea
- Fish dies 2 or 3 days later


# TREATMENT

- Disinfect pond with **quicklime or bleaching powder**
- Mix **aureomycin or terramycin** with feed in a dose of 5% of the feed.
- Inject 3 to 6mg of **chloromycetin** into abdominal cavity.

# ERYTHRODERMA

- *Pseudomonas fluorescens(rod shaped gram negative bacterium)*

**SYMPTOMS**

- Inflammation of skin
- Loss of scales
- Bleeding from skin
- Necrosis of terminal fins
- Loss of apetite
- Ascites can be seen if the abdomen is dissected.
- Intestinal wall shows hyperamia and inflammation.
- Red blotches along upper and lower jaw

# TREATMENT

- Sulphaguanidine for 6 days

First dose: 1 kg /10 kg of fish

Next 5 days:1 kg /20kg of fish

- 1 to 2 kg of garlic /100kg of fish daily for 6 days

# POP EYE/CLOUDY DISEASE

- Caused by Aeromonas liquifaciens
- Mostly affects catla(Catla catla)

## SYMPTOMS

The eye ball gets putrified leading to the death of fish.

## TREATMENT

Treatment with potassium permanganate @ 1 mg/PL and maintain high dissolved oxygen content in the medium

# COTTON MOUTH DISEASE

- The filamentous bacteria, **Flexi bacteria** are the causative agent of this disease.
- The main symptom is appearance of **fungus like tuft** around the mouth.
- This can be treated with antibiotics like **10 ppm chloramphenicol** for 2-5 days and **0.3 ppm furanace** for long term bath.

# THANK YOU...