

Aquaculture & Fishery Biology

➤ VI Sem B.Sc. Zoology – Elective Paper

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DISEASES AND PARASITES IN AQUACULTURE



DISEASES

THREE TYPES

1. **COMMUNICABLE:** *Infectious diseases caused by microbes & contagious diseases caused by parasites.*
2. **NON-COMMUNICABLE:** *Caused by environmental, nutritional & genetic factors*
3. **NEOPLASTIC:** *Tumours & cancers*

VIRAL DISEASES

- Limited to young fish stock
- Pathogenicity depends on environmental parameters
- Effects on fishes may be acute, resulting extensive tissue damage and rapid death
- Viral diseases rare in tropical region
- Seen in temperate region
- Like pancreatic necrosis, haematopoietic necrosis, etc.

THERAPY

- STILL INFANTILE STAGE
- NO EFFECTIVE THERAPEUTICS
- IODINE TREATMENT, ADMINISTRATION OF VITAMINS, EXPOSURE TO UV LIGHT AND USE OF VACCINES
- DEVELOPING DISEASE RESISTANT STRAINS BY HYBRIDIZATION IS THE BEST METHOD

BACTERIAL DISEASES



DROPSY (Bacterial haemorrhagic septicaemia)

- *Pseudomonas fluorescens*
- Extreme enlargement of belly
- Exophthalmos
- Scale protrusion
- Inflammation of intestine
- *Clarius batrachus*,
Ospronemus gourami, etc



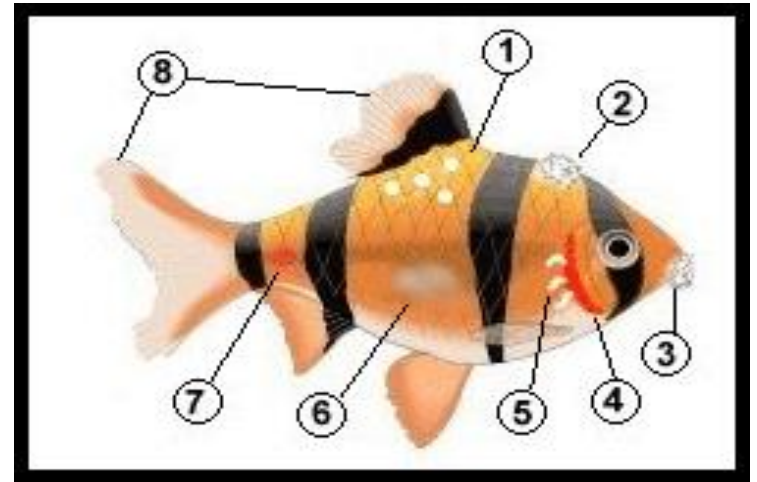
TUBERCULOSIS (Mycobacteriosis)

- *Mycobacterium marinum* (marine habitat)
- *M. fortuitum* & *M. salmoniphilum* (fresh water habitat)
- Retarded growth
- Extreme emaciation
- Incomplete gonad development
- Lesions in internal organs



COTTON WOOL (COLUMNARIS DISEASE)

- *Flexibacter columnaris*
- Grayish white spots on body – around mouth
- Affects young fishes in unfavourable temp. & in eutrophicated waters



FIN ROT

- *Aeromonas hydrophila*, *A. punctata* & *Pseudomonas fluorescens*.
- *Appears as white line on the fin margins, erosion starts progresses towards base and finally fin rays alone remain.*
- *Seen in wide variety of fishes.*



Photo courtesy TFH Publications



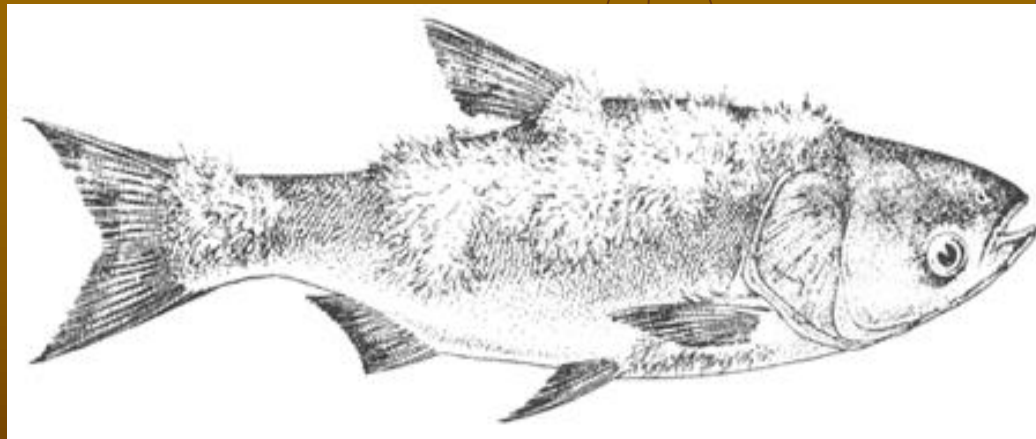
FUNGAL DISEASES

- ATTACKS EGGS, FRIES, FINGERLINGS & ADULTS OF FISHES.
- SEEN IN MAJOR CARPS ALL OVER INDIA



SAPROLEGNIASIS / MYCOSIS

- Saproleginia & Achlya
- Tufts of minute hair-like outgrowths appears followed by ulceration.



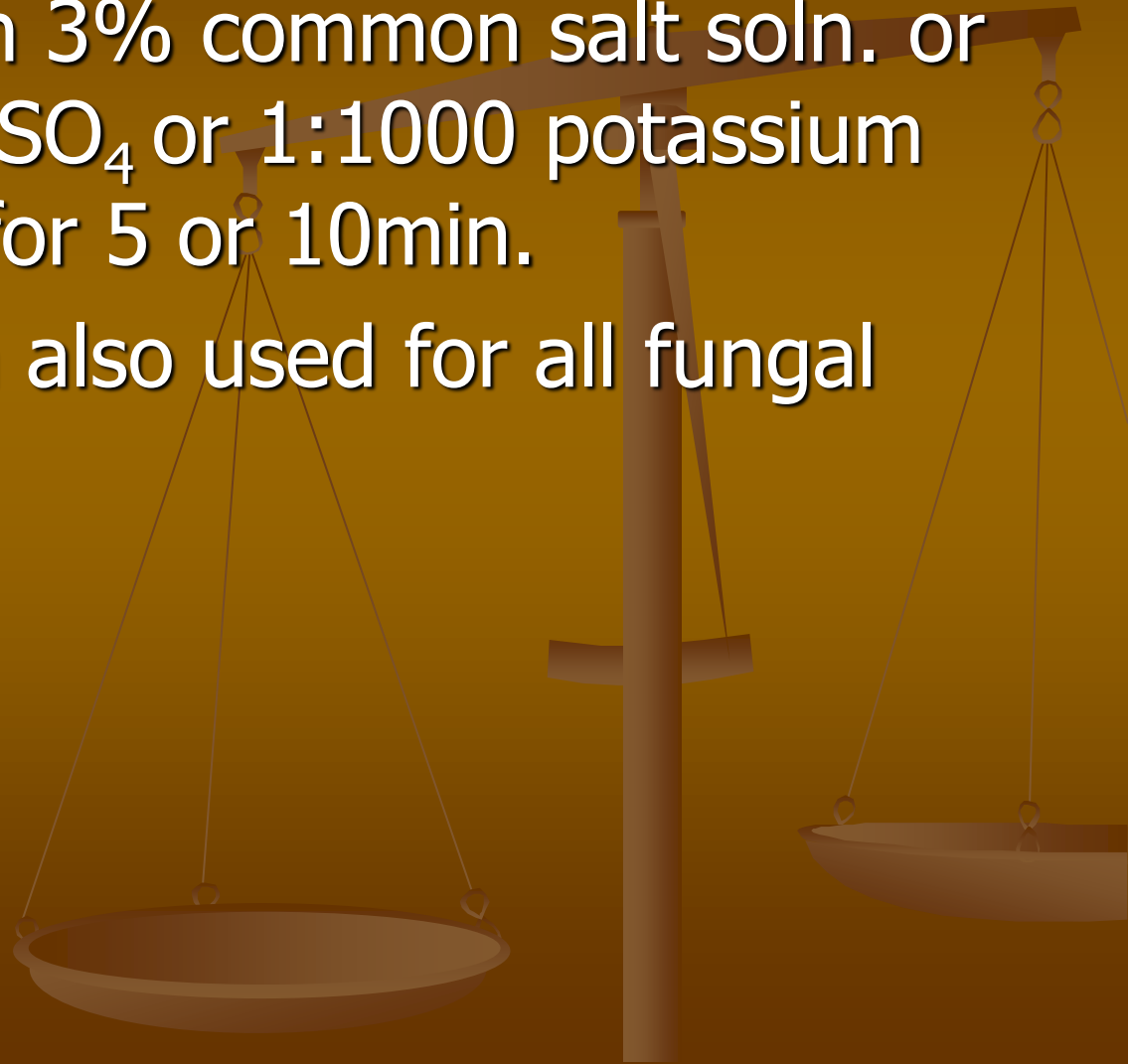
GILL ROT / BRANCHIOMYCOSIS

- Branchiomyces
- Spreads in summer



TREATMENT

- Dip treatment in 3% common salt soln. or 1:2000 soln. CuSO_4 or 1:1000 potassium permanganate for 5 or 10min.
- Malachite green also used for all fungal diseases.



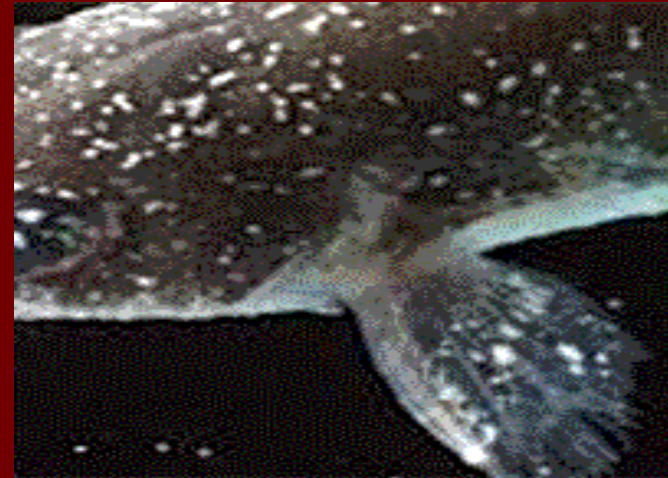
PROTOZOAN DISEASES

TRYPANOSOMIASIS

- Caused by *Trypanosoma*
- Carps, Eels, Clarias, Heteropneustes, & Wallago
- Sleeping posture on water surface, slow breathing and slow movement.
- Transmitted by aquatic leeches

WHITE-SPOT DISEASE (ICHTHYOPHTHIRIASIS)

- *Ichthyophthirius multifiliis*
- Small white specks all over body surface, gills etc
- Each spot is encysted parasite
- Flashing & rubbing symptoms



OTHER DISEASES

◆ **DISEASES CAUSED BY WORMS**

- ◆ Trematodes, cestodes, nematodes, leeches, etc.

◆ **DISEASES CAUSED BY CRUSTACEANS**

- ◆ Argulus or fish louse
- ◆ Anchor-worm (Lernaea) a copepod parasite

◆ **DISEASES CAUSED BY MOLLUSCS**

- ◆ Glochidium larvae

EPIZOOTIC ULCERATIVE SYNDROME (EUS)

- ◆ Most dangerous disease of fresh water habitat.
- ◆ *Etroplus suratensis*, *E. maculatus*, *Puntius* sps., *Clarias*, *Wallago attu*, *Channa* Sps., *Glossogobius* & *Scatophagus argus*.
- ◆ Wide spread in Kuttanad area- lowering salinity, load of pollutants, pesticides, etc retard immune power of fishes, succumb to infection.



Symptoms


- ◆ Grey patches on body surface becomes red and ulcerative
- ◆ Deep ulcers in body and internal organs
- ◆ Tissues necrotic and degenerative
- ◆ Fish stops feeding, swims erratically, deep wounds appear and finally succumb to infection
- ◆ No effective treatment.

DISEASES BY ENVIRONMENTAL FACTORS

◆ **PHYSICAL FACTORS**

- ◆ Temperature
- ◆ Light

◆ **CHEMICAL FACTORS**

- ◆ Oxygen
 - ◆ pH concentration
 - ◆ Ammonia
 - ◆ Intoxicants
 - ◆ Hydrogen sulphide
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THANK YOU!