



NUTRITIONAL & INTRINSIC DISEASES IN FISHES



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NUTRITIONAL DISEASES IN FISHES

FISH PATHOLOGY AND CURE

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Disease Caused Due To Nutritional Deficiency & Intrinsic Factors :-

Development and adoption of various scientific technologies in fisheries and aquacultural practices have led them to transform it from traditional nature to an important economic activity in India. The anthropogenic pressure and intensification in aquaculture has created some problem in the form of environmental stress resulting in out break of disease. There are many types of fish diseases known so far affecting the fishes externally as well as internally resulting in development of common external symptoms.

SIGN OF SICKNESS IN FISHES :

Sickness in fishes may lead to various ailments and diseases can be identified by some common symptoms :

- 1) The fish becomes listless.
- 2) The fish is incapable of maintaining its position in the column of water due to loss of balance.
- 3) Fish tends to lie on its side either resting at the bottom or floating at the surface.
- 4) The tails and fins of fish do not seem to function normally.
- 5) Persisting discoloration and gills appear pale.
- 6) The fish becomes less agile to its reaction to external disturbances.
- 7) Slightly grey excretion on skin
- 8) The fish scratches its bleeding
- 9) Aimless movement

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PATHOLOGICAL CHANGES IN FISH :-

Sickness in fish can lead to various apparent pathological changes in fish :

- 1) Hyperplasia of epidermis (overdevelopment due to increase in number of cells in epidermis)
- 2) Spongiosis of epidermis (intracellular edema i.e. abnormal accumulation of fluid in epidermis)
- 3) Ulceration of epidermis (complete loss of epidermis)
- 4) Dermatitis
- 5) Anaemia
- 6) Leukaemia
- 7) Neoplasia
- 8) Lamellar oedema of gills
- 9) Cirrhosis of liver
- 10) Visceral granuloma of gut
- 11) Glomerulonephritis of kidney
- 12) Cataract of eye
- 13) Lesions of muscles
- 14) Haemorrhage in testis
- 15) Sterility in ovary
- 16) Cotton tufts on skin & gills
- 17) Greyish blue marks on skin
- 18) Boils on skin and gills
- 19) Grey regions on gills
- 20) Gill damage etc.

NUTRITIONAL DISEASES IN FISHES

DISEASES OF FISHES :

- Besides the diseases caused by parasites and pathogens, fish disease also includes:
- 1) Nutritional diseases
 - 2) Diseases due to intrinsic factors

1) Nutritional diseases :-

Nutritional diseases are those diseases which occurs when the body doesn't absorb the necessary amount of a nutrient that are crucial for both development and prevention of diseases.

Nutritional diseases are difficult to specify since a pathological condition cannot always attributed to nutritional inadequacies.

Such diseases may fall under three main categories :

- a) Those arising due to under nutrition
- b) Those arising due to dietary deficiency or imbalance in the major component of food
- c) Those arising from toxic effect of the diet.

Following are the commonly occurring nutritional diseases in fishes :

PIN HEADS : A starved condition of body fish in a water body results in enlarged head and very slender body, darker colour. Starvation arises due to inadequate supply of water and food or due to the overstocking conditions.



NUTRITIONAL DISEASES IN FISHES

▪ **Lipoid Hepatic Degeneration Diseases :**

- This disease is caused by over feeding and characterized by following symptoms:
 1. The liver of the fish is affected resulting in yellow brown colouration.
 2. Liver gets swollen with rounded edge.
 3. Severe anaemia followed by the Pale colour of gills are the principal symptom.
 4. The hepatic cells are in filtered with lipid. Salmonids are more susceptible to this diseases.

Vitamin A Imbalance:

Both hypo and hyper dose of vitamin A is harmful to the fish health. In this case a varying degree of symptoms occur in fish. Its deficiency causes under growth , blindness, haemorrhage at the fin base and keratomalacia , a typical eye disorder. In fish. The excess of vitamin A in diet causes squamous metaplasia, splenomegaly and hepatomegaly.

Vitamin B6 deficiency:

It usually affects larval growth ,where it causes lesions in central and peripheral nerves. The affected fishes show as the nervous sign of gasping of opercular folds etc.

Pantothenic acid deficiency:

The deficiency of this vitamin causes nutritional gill diseases. The primary gill lamellae shows hyperplasia and the secondary gill lamellae are clubbed. This leads to respiratory failure.

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VITAMIN C DEFICIENCY :-

the deficiency of vitamin C causes spinal deformities in fish due to the abnormal skeletal development and poor wound healing. The deficiency of this vitamin also causes cataract of eye.

* Aflatoxin develops in mould infected soil seed meals from the metabolic activity of Aspergillus flavus. Such diets cause hepatoma (neoplasia) specially in trouts in which hard tumours appear on the body behind the pectoral fins.

Prolonged use of antibiotic therapy in fish culture produces necrosis of renal tubules and depression of haemopoiesis also takes place.

PREVENTION OF NUTRITIONAL DISEASES :-

Some measures keep a check on incidence of nutritional diseases. These include :

- a) Use of food rich in vitamins, and of good quality.
- b) Food should not have too much of salt content and the too much of fat content.
- c) Adoption of recommended doses and ration of supplementary food. The ration should not exceed 2.5% of the total weight of the fish in the pond.
- d) Controlled distribution of supplementary food.
- e) Overfeeding should be avoided.
- f) Fishes shouldn't be fed if climate is too hot or too cold.



INTRINSIC DISEASES IN FISHES

a) DISEASE DUE TO INTRINSIC CAUSE :

All ailments caused by the environmental factors are called as intrinsic ailments. These includes :

a) Due to alteration in H^+ concentration; pH of water :
If the water becomes too acidic (a pH of or below 5.5) or too alkaline (pH of or above 9), the fishes began to show sign of ailments.

In case of more acidic water, the fish skin gets covered with a whitish film & the gills turn brownish at the edges; the gills appear burnt and the fish give an injured look if the water is more alkaline.

b) Due to asphyxia caused by depletion in O_2 content in water :

Under such stress, the fishes show signs of suffocation & mouth wide open, gill opercula raised and gills (holobranchs) spread wide apart.

c) Due to chill and cold following drop in temperature of water :

The symptoms of ailment include congestion of gill apparatus and dull appearance of fish in look and behaviour.

d) Due to intake of food available in water resulting in indigestion and constipation :

Symptoms include listlessness and queer movement of fishes. The fish may remain stationary in mild water, stand on its head or lies at the bottom on its side. Scales are erected and stomach appears swollen.

e) Egg binding :

During the breeding time the body of the female fish is greatly swollen due to accumulation of ripe eggs that could not be released.

PREVENTION OF AILMENTS FROM ENVIRONMENTAL FACTORS :-

The pond must be hygienically maintained and some prophylactic measures should be taken for the prevention of ailments.

Hygiene Maintenance :-

- The following steps are generally recommended :
- The fish pond must be periodically dried and refilled with abundant water of good quality.
 - Fish pond should be well maintained to avoid silting and to control weeds.
 - Over feeding should be avoided.
 - High stocking densities should be avoided.
 - Fish pond should be free from pollution.
 - Entry of wild animals must be checked.
 - Restocking of fish ponds with unhealthy or subquality eggs and young fishes must be prevented.



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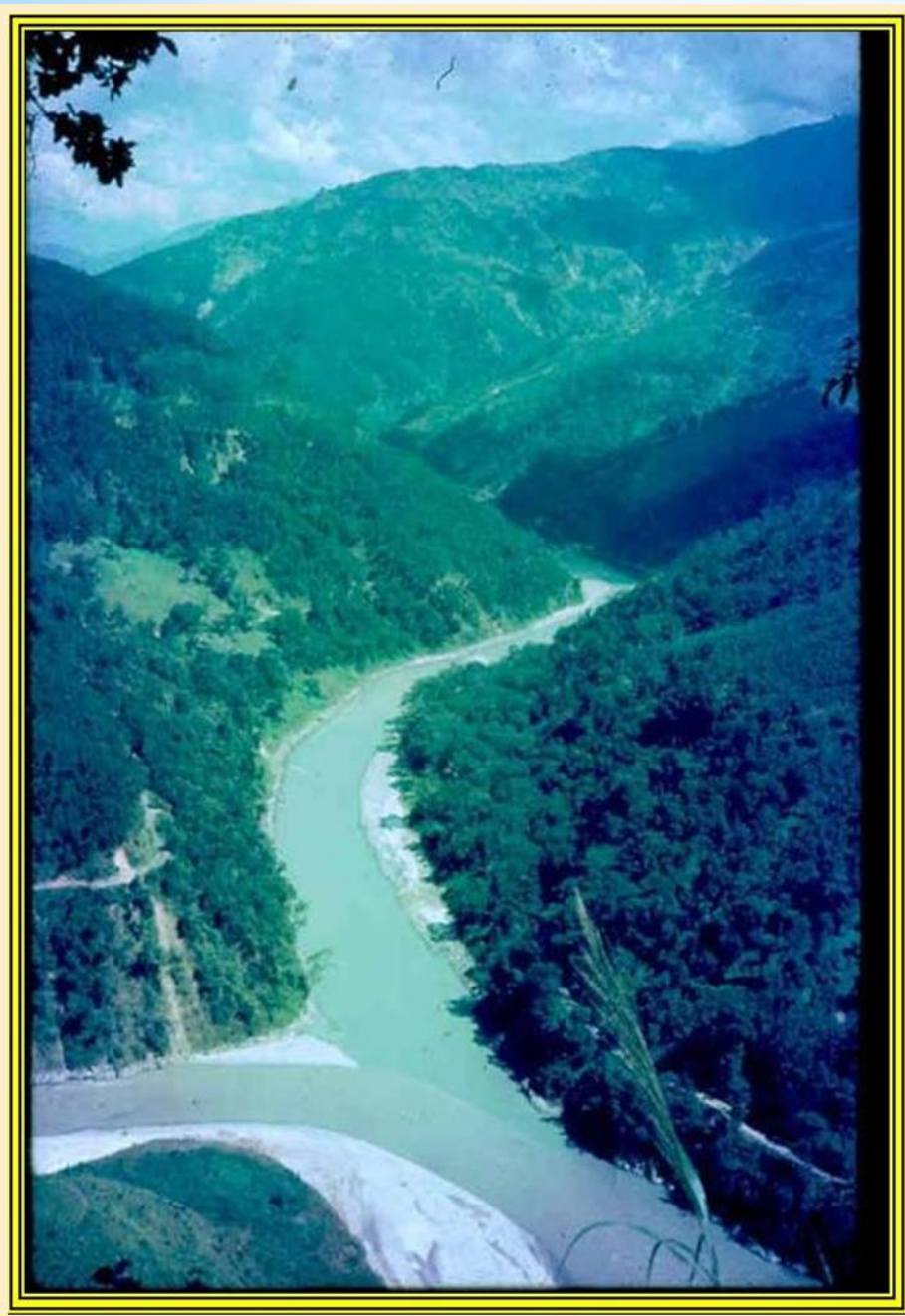
- the health of gills must be checked periodically.
- For the transfer or transport of fishes, too frequent handling should be avoided.
- As soon as onset of any disease, moribund fishes the dead ones must be removed from pond.
- Prophylactic measures must be taken to disinfect the ponds and gears.

PROPHYLAXIS :-

- the nets, nets and other fishing tools must be routinely disinfected with benzalkonium chloride solution of about 100 mg/L strength.
- In routine way, when ponds are dried periodically, each time they should be disinfected with quicklime before water is filled.
- the bottom has to be spreaded with 200 kg of quicklime/hectare and then some water is allowed to give milky layer.
After two weeks, the milky water of the ponds is drained out, bottom dried and then refilled with fresh water. The water should fall from the water inlet into the pond below, so that the water mixes with O_2 from the air as it falls into the pond.
- For meeting end the O_2 depletion in pond water, fish farmers are advised to stir the water with poles.
- Ponds having fish threatened with disease outbreak may be disinfected with either $KMnO_4$ (1000 gm

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(200 litres) or benzalkonium chloride solution (600 mg/L) fishes, before they are stocked, may be given a salt bath. For eg: For carps the common dose is 1.5 kg of NaCl in 100 litres of water for 1-2 hours (under good aeration).



THANK YOU