

The Studies on Morphological Abnormality and Epizootic Ulcerative Syndrome in Some Freshwater Fishes of Gandhi Sagar Reservoir

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ABSTRACT

During hydrobiological studies of Gandhinagar reservoir some fishes were collected having morphological abnormality and Epizootic Ulcerative Syndrome. Seven species of fishes such as *Catla catla*, *Labeo rohita*, *L. calbasu*, *Cirrhinus mrigala*, *Mystus seenghala*, *M. aor* and *Wellago attu* were infected severely. One *Catla catla* were reported with one eye on one side only. It was measured 79 cm in total length with 30.0 kg body weight. Summer infection of these fishes was correlated with the physico-chemical parameters.

Keywords-- Morphological Abnormality, Epizootic Ulcerative Syndrome, Physico- Chemical Parameters

I. INTRODUCTION

Epizootic Ulcerative Syndrome has been reported most destructive disease for freshwater fishes is considered to be an infection with the oomycete. This is commonly seen when there are low temperature and heavy rainfall. Gyrodactylosis or Dactylogyrosis often occur in March – April with an increase in temperature. Due to its potential impact Epizootic Ulcerative Syndrome has been listed by world organization for Animal Health (OIE).

Besides water quality parameters that adversely affected fish health making easy victims of pathogens, fish also suffer from nutritional deficiency and water pollution. Surface ulcerations, fish damage and epidermal lesions may be caused.

The first introduction of “Red spot” disease was in 1972 in Australia and ultimately entered in India during June-July of 1988 with the flood water from Bangladesh. Some notable contribution on EUS were reported by Biswas *et. al.* (2011); Das *et.al.* (1992); Katoch *et.al.* (2003); Kumar *et.al.* (1991); Kurup (1992); Pagrut *et.al.* (2017); Pradhan *et.al.* (2014); Sitdhi (1989) and Vishwanath *et.al.* (1998).

Morphological abnormality or deformity in dorsal fin in *Puntius conchonius* from Jammu has been reported by Dutta and Kumar (1991). Morphological abnormality of absence of one eye in *Catla catla* is being reported for first time from Gandhi sagar reservoir. Present study deals with the relationship between summer infection and physico-chemical parameters.

II. MATERIALS AND METHODS

Investigations on hydrobiological studies of Gandhisagar reservoir were conducted during 1993-1995. Some fishes were collected with the help of cast and haul nets. Among these few specimens showed morphological abnormalities such as white and red or grey spots or patches on skin and deep ulcers on gills, fins and other body surfaces etc. Infected fishes were brought to laboratory for further studies. The dead fishes were preserved in ten percent formalin. The physico-chemical parameters were recorded on a monthly basis from ten study sites for two years (Kumar, 1995). These were analyzed by adopting the methods of APHA (1985).

III. RESULTS AND DISCUSSION

Epizootic Ulcerative Syndrome was observed in seven species of fishes (*Catla catla* Figure. 3, *Labeo rohita* Figure 4, *L. calbasu*, *Cirrhinus mrigala* Figure. 4, *Mystus seenghala* Figure. 4, *M. aor* and *Wellago attu*). Morphological comparison were made between two fishes of *Catla catla* (Figure. 1 & 2). Figure. 1 showed normal fish while Figure. 2 represented one eye deformity in *Catla catla*. Morphometrical data of this fish total length 79 cm, standard length 67 cm and body weight 30.0 kg were recorded. This abnormality of one eye was difficult to correlate to any single factor as only one fish collected during the study period.



Figure. 1. Normal fish, *Catla catla*.

During summer observations on EUS fish develop red spots on the skin. These lesions expand to form ulcers and extensive erosion filled with necrotic tissue and mycelium (Figure. 3). The samples of EUS of different fishes showed bacterial and fungal infection in deep sores and on surfaces of skin. Figure. 4 exhibits light

red or grey spots and white patches on body surface of *Cirrhinus mirgala*, *Labeo rohita* and *Mystus seenghala*. Similar findings of summer presence of EUS was also reported by Pradhan *et. al.* (2014).



Figure. 2. One-eyed Catla catla.



Figure. 3. Catla catla infected with EUS.



Figure. 4. *Cirrhinus mirgala*, *Labeo rohita* and *Mystus seenghala* infected with EUS.

The physico-chemical parameters of Gandhisagar at the site of fish collection were reported as: water temperature (27.0 – 29.5 °C), humidity (46 - 48 %), transparency (1.90 – 1.94 m), power of hydrogen ion (8.5 – 8.8), conductivity (285.0 – 290.0 micro mhos/cm), turbidity (7.0 – 11.0 NTU), dissolved oxygen (7.40 – 8.40

mg/l), total alkalinity (162.0 – 180.0 mg/l), chloride (29.9 – 31.9 mg/l) and total hardness (122.0 – 128.0 mg/l). These characteristics do not indicate polluted water. Therefore, the abnormality and EUS cannot be associated to pollutants. These could be related to mechanical stress, bacterial and fungal infection or genetic disorder but reasons could not be ascertained.

REFERENCES

- [1] APHA, (1985). Standard Methods for the Examination of Water and Wastewater. 16th edition APHA Inc. New York 1193.
- [2] Biswas, A., Bhowmik, M.K., Mukhoupadhyay, S.K., Ganguly, S. and Niyogi, D. (2011). Epizootic ulcerative syndrome in freshwater fishes in Gangetic alluvial zone of West Bengal, India. *Anim. Sci. Rep.* 5(4): 147-152.
- [3] Das, P., Mishra, A. and Kapoor, D. (1992). Some observations on Epizootic ulcerative syndrome around Allahabad. *Adv. Biosci.*, 12: 1-8.
- [4] Dutta, S.P.S. and Kumar, S. (1991). Deformity in dorsal fin in *Puntius conchonius* (HAM.) from Jammu. *Geobios new Reports* 10: 169-170.
- [5] Katoch, R.E.C., Sharma, M., Pathania, D., Verma, S., Chahota, R. and Mahajan, A.L. (2003). Recovery of bacterial and mycotic fish pathogens from carp and other fish in Himachal Pradesh. *Ind. J. Microbiol.* 43: 65-66.
- [6] Kumar, S. (1995). Limnological studies in Gandhisagar reservoir with special reference to oxygen and thermal regimes. Ph.D. thesis, Vikram University, Ujjain.
- [7] Kumar, D., Dey, R.K. and Sinha, A. (1991). Outbreak of Epizootic Ulcerative Syndrome of fish in India. *Aquaculture productivity*. Oxford and IBH, New Delhi: 345-356.
- [8] Kurup, B.H. (1992). Appraisal of aquatic ecosystem of the Epizootic Ulcerative Syndrome struck regions of Kuttanad (Kerala). *Fishing Chimes*. 12: 27-33.
- [9] Pagrut, N.K., Ganguly, S., Jaiswal, V. and Singh, C. (2017). An overview on Epizootic Ulcerative Syndrome of fishes in India: A comprehensive report. *J. Ent. and Zool. Stud.* 5(6): 1941-1943.
- [10] Pradhan, P.K., Rathore, G., Sood, N., Swaminathan, T.R., Yadav, M.K., Verma, D.K., Chaudhary, D.K., Abidi, R., Punia, P. and Jena, J.K. (2014). Emergence of epizootic ulcerative syndrome: large-scale mortalities of cultured and wild fish species in Uttar Pradesh, India. *Curr. Sci.* 106(12):1711-1718.
- [11] Sitdhi, B. (1989). A report on epizootic ulcerative syndrome of fish in India. Govt. of India, New Delhi, India.
- [12] Vishwanath, T.S., Mohan, C.V. and Shankar, K.M. (1998). Epizootic Ulcerative Syndrome, associated with a fungal pathogen, in Indian fishes. *Aquaculture*. 165: 1-9.