



RESEARCH ARTICLE

Studies on Morphological Changes in *Catla catla* in Chambal River at Dholpur District

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ABSTRACT

In contaminated waters, fish may exhibit whole animal, morphological, histopathological, cellular, organismic, or parasitic aspects of abnormalities, some of which can be used as biomarkers of contamination exposure. The use of abnormalities in fish as biomarkers has become more prevalent in recent years. Biomarkers in fish can provide a chronic indication the environmental condition than can more general and acute indices such as plankton analyses or water quality parameters. Due to above reasons morphological effects on fishes has been observed in present study.

Key words: Morphology, *Catla catla*, Chambal River

INTRODUCTION

There are three approaches normally used for the analysis of the any system, theoretical experimental and semitheoretical. Theoretical approach is considered more appropriate as it provides inside information and allows both extrapolation as well as interpolation and also help in optimization with full coverage. Experimental data are taken to calculate the information desired. This may be considered as the second best as it may be determined independently. This method does not permit extrapolation and interpolation with high degree of reliability and accuracy. The third approach is based on combination of experimental investigation and theoretical development. In present investigation efforts have also been made to obtain accurate data on the effect of temperature, pH, D. O. on *Labeo-calbasu* and *cutla-cutla* obtained from River Chambal and finally the experimental results obtained have been explained. However, the cause-and-effect relationships between biomarkers and certain suspected pollutants cannot always be established. Assessing morphological deformities is one of the most straightforward methods to study the effects of contamination on fish because of the ease of recognition and examination when compared with other types of biomarkers. Different types of morphological abnormalities have been reported in fish taken from contaminated waters, including fin erosion skull deformation; jaw deformities; skeletal deformities such as lordosis, scoliosis, and kyphosis; opercular deformity; fin deformity; lower lip protrusion; gill deformity; ocular disorders; scale deformity and disorientation; and neoplasia or hyperplasia.

MATERIALS AND METHODS

(Collection of fishes from Chambol River at Dholpur)

Water pollution especially in River Dholpur, which receives domestic and industrial effluents either directly or indirectly, the following parameters have been selected for details investigation. Temperature, pH and D. O. The main features of the present investigation are as follows-

1. Collection of fishes from River Chambol at Dholpur and their acclimatization in laboratory condition.

2. Study of the Morphological changes of control and high temperature, pH and low. D. O. treated fishes.

RESULTS AND DISCUSSION

EFFECT OF TEMPERATURE ON GROWTH AND DEVELOPMENT OF *CUTLA CUTLA*:

In control group, the weight and length increased by 0.05% and 0.04% respectively after 20 days. In high temperature treated fishes, the weight and length were decreased by 1.02% and 2.9% in 35°C after 20 days.

EFFECT OF PH ON GROWTH AND DEVELOPMENT OF *CUTLA CUTLA*:

In control group the weight and length were increased by 0.27% and 0.7% respectively after 20 days. In high pH treated fishes, the weight and length were decreased by 5.0% and 4.0% in 10.0 pH after 20 days.

EFFECT OF DISSOLVED OXYGEN ON GROWTH AND DEVELOPMENT OF *CUTLA CUTLA*:

Growth and development were observed by means of weight and length. In control group, the weight and length were increased by 0.14% and 0.12% respectively after 20 days. In low dissolved oxygen treated fishes the weight and length were decreased by 11.5% and 9.0% in 3.0-4.0 ppm after 20 days. The morphological changes due to input of different parameters, e.g. Temperature, pH and dissolved oxygen on growth and development on *Labeo calbasu*.

In case of temperature the weight and length increased by 0.37 and 0.04% respectively. In high temperature treated fish, the weight and length decreased by 1.9% and 3.02% in 35°C after 20 days. In case of pH in control group weight and length increased by 0.9% and 0.29% respectively. In high pH treated fishes weight and length were decreased by 3.0% and 4.8% in 10.0 pH after 20 days. In case of dissolved oxygen the weight and length increased by 0.10% and 0.12% respectively after 20 days. In low dissolved oxygen treated fishes the weight and length were decreased by 7.0% and 9.5% in 3.0 to 4.0 ppm after 20 days.

REFERENCES

1. Ansari K.K. and Prakash S. (2000): Limnological studies. On Tulsidas Tal of Tarai Region of Balrampur in relation to fishrieps. Poll. Res. 19(4): 651-655.
2. Chakrabarty Gouri and Konar S.K. (1974): Chronic effects of sublethal levels of pesticides on fish. Proc. Nat. Acad. Sci. India. 448: 241-246.
3. Fry F.E.J. (1947): Effects of the environment of animal activity. Univ. Toronto stud. Biol. Ser. 55, Publ. Ont Fish. Res. Lab.
4. Hoffman G.L. and Meyer F.P. (1974): Parasites of fresh water fishes. A review of their control and treatment T.H. F. publications Inc, Ltd. Neptune. City N. J.
5. Johnson D.W. (1968): Pesticides and fishes-A review of selected literature. Trans. Amer, Soc. 97:398:424.
6. Kopperdhal F.R. (1976): Guide lines for performing static acute Toxicity fish bioassays in municipal and industrial waste waters. Report to calif. State Resources, Control Board, Sacramento.
7. Lagler K.F.J.E. Bardach and Miller R.R. (1962): Ichthyology. The study of Fishes. John Wiley and sons, New York, N.K.
8. Lewis W.M. (1962): Maintaining fishes for experimental and Instructional purposes, Southern. III. Univ. Press Carbondale.