The Scientific Temper
VOL-IX, NO.1&2; JANUARY-JULY, 2018
ISSN 0976 8653, E ISSN 2231 6396
UGC SR NO 2535; JR NO. 47226
e-mail:letmepublish@rediffmail.com
Web: www.scientifictemper.com

EFFECT OF FURADAN ON HAEMATOLOGY OF *Channa punctatus* (BLOCH) IN CULTURE MEDIUM UNDER LABORATORY CONDITIONS

Tulika
Research Scholar, JaiPrakash University, Chapra (Bihar)
Email ID:tulikasv@gmail.com

ABSTRACT

Haematological studies of Channa punctatus of local reservoirs in Siwan district within the present study includes the erythrocyte count, hemoglobin concentration and haematocrit value or packed cell volume of blood and subsequently absolute values of MCV, MCH and MCHC were also calculated by the respective formulae. The key effects of butachlor on blood parameters are concerned with total RBC count, their size and differential count of WBC. The importance of this study is worried with pesticide pollution of paddy field in local area and therefore the effect of butachlor on the hematological profile of the exotic carp, Channa punctatus.

Keywords: Hematological, Paddy field, Channa punctatus.

INTRODUCTION

Siwan district located in north Bihar with Daha river in India. The local farmers used furadan in paddy fields for control of weeds, and, within the last decade tremendous change has occurred in the crop fields ecology with use of insecticides and chemicals to regulate weeds and increase the yield. A significant quantity of this chemical finally finds way within the rivers (Sangeeta and RK Agrawal, 2003).

The most icthyofauna of the river consists of *Channa punctatus* and other small fishes. *Channa punctatus* is an endemic fish species of local paddy fields.

Pestcide pollution has proved to be very hazardous for the final fauna and specifically for the icthyofauna of crop fields. Heavy inflow of furadan is extremely common in Daha river which brings general morphological and physiological changes in aquatic biota generally and to *Channa punctatus* specifically. Effect of heavy pesticide pollution on hematological parameters ofvarious

fishes has been studied by many workers. In this study, the effect of furadan on the hematological profile of *Channa punctatus* has been discussed.

MATERIALS AND METHODS

Live specimens of the fish *Channa punctatus* were collected from the local fishermen of Siwan district. The fishes of same size and body weights (20-25g) were taken for experimentation with prior 10 days acclimatization within the laboratory conditions. Than 10 fishes were selected for control and exposed conditions. Three glass aquaria were utilized in which the fishes were exposed to the sublethal concentrations of furadan for 10, 20 and 30 days. Preliminary bioassays showed that 12 ppm of furadan was the sublethal concentration for this fish in chlorine free water.

Blood was collected from each control and experimental fish after 10, 20 and 30 days from the caudal region. The erythrocyte count/mm3 through Naubar double hemocytometer, hemoglobin concentration in g/100mL followed Sahli's Hemometer and haematocrit value or packed cell volume (%) through microhematocrit pipette were evaluated during study.

Absolute values of M.C.V., M.C.H., and M.C.H.C. were calculated by following formulae: MCV=Hematocrit value (100 ml blood)/RBC count (Million/mm3), MCH=Hemoglobin in gm (100 ml blood×10)/RBC count (Million/mm3) and MCHC=Hemoglobin in gm (100 ml blood×10)/ Haematocrit value (100 ml blood)

The size of RBC, their nuclei and their surfaces were measured on air-dried methyl alcohol fixed blood films. The area was measured by the formula: Surface Area=GD×LD/2×2, Where GD = Greater diameter of RBC/their nuclei, and, LD = Lesser diameter of RBC/their nuclei. The WBCs were counted on morphological basis through L.M. and on the idea of morphological differences.

RESULTS AND DISCUSSION

It is clear that furadan has a good influence on the blood parameters as results are given (Table 1) up to the mark and furadan exposure after different days of investigation.

Table 1: Changes in Channa punctatus blood parameters up to the mark medium.

Parameters	After 10 days Control (Exposure)	After 20 days Control (Exposure)	After 30 days Control (Exposure)
RBC length	11.68 (11.24)	11.80 (11.64)	11.38 (11.76)
RBC width	9.72 (9.60)	9.56 (9.50)	9.62 (9.67)
RBC nucleus length	4.62 (4.66)	4.52 (4.56)	4.50 (4.58)
RBC nucleus breadth	4.24 (4.26)	4.12 (4.09)	3.98 (4.08)
TEC×10/mm	2.86 (2.57)	2.78 (2.40)	2.56 (2.40)
Hb (%)	15.21 (13.56)	14.62 (13.64)	14.24 (13.86)
PCV (%)	30.62 (26.34)	31.42 (25.24)	29.96 (27.42)
MCV (µm3)	109.36 (102.28)	114.22 (107.41)	112.10 (109.98)
MCH (pg)	52.24 (51.10)	55.12 (55.04)	54.98 (55.12)
MCHC (%)	49.06 (50.36)	46.34 (50.32)	48.46 (50.34)

It is clear that butacholar TEC, Hb content and PCV (%) showed a decrease during all the three periods. The length breadth ratio of the erythrocyte and their nuclei is sort of as regards to the control values altogether the cases of exposure showing no changes in shape. In some cases the hypochromasia and eccentrically placed nucleus were observed. Significant alteration in absolute values like MCH, MCHC and MCV were also noticed. The TLC increased in number after butachlor treatment. Significant increase in LL count and insignificant increase in monocytes and neutrophils were observed.

Table 2: Differential WBCs count.

Differential WBC	Control (10 days)	Exposure (10 days)	Control (20 days)	Exposure (20 days)	Control (30 days)	Exposure (30 days)
Large lymphocyte	27.50	32.46	30.12	36.22	27.32	33.42
Small lymphocyte	57.32	43.12	58.00	44.00	59.40	46.86
Monocyte	6.12	8.94	7.52	8.24	6.64	7.18
Neutrophyl	1.62	3.18	1.60	4.36	2.15	2.64
Eosinophil	1.72	1.46	4.24	4.74	5.26	5.32
Basophil	5.96	5.72	2.64	4.26	2.18	3.24

Histological studies are important from the pollution load, stress and disease point of view. Effect of furadan on blood parameters has been proved to be a burning issue. The increase in RBC count and Hb concentration suggests enhanced erythropoiesis. PCV is directly correlated with total erythrocyte count (TEC) in fishes. Significant alteration in absolute values like MCH, MCHC and MCV were also observed (Goel et al. 1985).

ACKNOWLEDGEMENTS

We are thankful to Head of Zoology Department, Ganga Singh College, Chapra (Bihar) to provide laboratory facility during study period.

REFERENCES

1. Goel KA, Gupta K, Sharma ML (1985): Haematochemical characteristic of *Heteropneustes fossilis* under the stress of zinc. Ind J Fish, 36:186-188.
2. Kumari I (2002): Effect of water pollutants on some aspects of physiology of teleost, *C. fesciatus*. PhD thesis Magadh University, Bodh Gaya, Bihar.
3. Sangeeta, Agarwal RK (2003): Drainage of water pollutants to rivers. Bionotes. 2003; 5(4):103.
4. Samuel KM (1980): Notes on clinical laboratory techniques. Hyderabad.
5. Srivastava PN, Narian AS (1982): Effect of weed pesticide upon freshwater fishes. Acta Pharmacol. Toxicol. 1982; 50:13-21.
6. Santha Kumar M, Balaji M, Ramudu K (2000): Pesticide contamination in water influences non-target aquatic organisms. Bull Environ Contam Toxicol, 2000; 64:398-405.