ISSN 2581 – 4303

Available Online at www.ijpba.info
International Journal of Pharmaceutical & Biological Archives 2018; 9(1):195-196

RESEARCH ARTICLE

Hematological Study on Obligate Air Breathing, Fish *Channa punctatus* (Bloch) Exposed to Cythion

Rina Kumari[1]*, D. P. Yadav[2]

Department of Zoology, Rajendra College, Chapra, Bihar, India

Received: 02 May 2018; Revised: 12 June 2018; Accepted: 02 July 2018

ABSTRACT

An attempt has been taken to analyze the effect of cythion on the hematological parameters of an air-breathing fish *Channa punctatus*. It is found that this pesticide causes a significant reduction in red blood cell count, hemoglobin content, oxygen capacity, and packed cell volume.

Keywords: Endosulfan, Fish *Channa punctatus*, hemoglobin count, packed cell volume, red blood cell count

INTRODUCTION

Pesticides are known to exhibit changes in the hematological parameter of fish which are reported to be probably responsible for changes in oxygen uptake by fish. Changes in haematological parameters has been reported in some air berating fishes as Channa punctatus exposed to organophosphate insecticide (Anees 1978, Thakur and Sahai, 1993), Channa striatus exposed to metasystox (Natrajan 1981, 1984).[1,2]

Besides accumulation of methaemoglobin there is causing methaemoglobinamia in blood, was reported in Channa punctatus challenged by sodiuin nitrite (Koundinya,1946), serotherodon mosambicus exposed to sevin (Manthirasalam, 1993). Through the effects of pesticides on haematological parameter of water and air breathing fishes have been extensively studied. Information on the effects of the cythion on the air-breathing fish, *C. punctatus* (Bloch), is not available, though the fish showed alterations in its bimodal respiration. Here, an attempt has been made to study the effect of sublethal (120 h lethal concentration 50 [LC_{50}]) and lethal (24 h LC 100) concentration of endosulfan on total hemoglobin (Hb) content, hematocrit erythrocyte count, mean erythrocyte Hb content, oxygen capacity, and methemoglobin content, in the blood of the air-breathing fish *C. punctatus* (Bloch).[3]

***Corresponding Author:**
Rina Kumari
Email: Rinakumari45@yahoo.com

MATERIALS AND METHODS

Live specimen of *Anabas testudineus* (Bloch) was procured from local fish dealers at fish *C. punctatus* Mouna Chowk Saran (Bihar) and placed in a glass aquarium (50 L) in the laboratory for 7 days. Proper acclimatization was provided to the aquarium. In the laboratory, the fish *C. punctatus* was fed daily with a piece of goat liver. The LC_{50} value of cythion at 96 h was determined as 1.675 mg/l. In the present work, an attempt has been made to study the toxic effect of sublethal (120 h LCO 1.e 1.4 mg/L) concentration of cythion on hematological parameters of the fish.[4]

The oxygen capacity of blood was calculated by multiplying the total Hb content with the oxygen combining power of 1.28 ml of oxygen per gram of Hb (johansen 1970). The oxygen capacity of blood was calculated as volume percentageee (vol%).[5]

RESULTS AND DISCUSSION

The total hematological content in the blood of control fish *C. punctatus* was estimated to be 5.81 ± 0.50 g/100 ml. Exposure of *A. testudineus* to sublethal (1.3 mg/l) and lethal (3.8 mg/l) concentrations of cythion elicited in the total Hb content of the blood. The reduced (from control level) total Hb contents estimated - 1, 3, 6, 12, 24, 48, 72, 96, and 120 h of sublethal exposure were 4.60 ± 11 mg/100 ml, 5.4a ± 0.70 g/100 ml, 5.93 ± 0.07 g/100 ml, 3.266 ± 0.04 g/100 ml,

2.4 ± 0.20 g/100 ml, 4.4 ± 0.10 g/100 ml, 4.10 ± 0.72 g/100 ml, 4.34 ± 0.07 g/100 ml, and 2.43 ± 012 ml/100 ml, respectively. The hematocrit value of the blood of control Fish *C. punctatus* was 13.80 ± 3.84% which depicts highly significant changes when the fish was exposed to sublethal and LC. The erythrocyte count in the blood of control fish *C. punctatus* was estimated to be 1.04 ± 0.06 million cell/cu mm blood.

The calculated mean erythrocyte Hb content of control *A. testudineus* Fish *C. punctatus* was 44.02% which showed different magnitude of changes under sublethal and lethal of cythion concentrations. The calculated oxygen capacity (vol%) of the blood of sublethal exposed.

Fished were 5.900, 7.21, 7.92, 4.82, 3.20, 5.44, 4.82, 5.8 and 3.20 following 1, 3, 6, 12, 24, 48, 72, 96 and 120 hours respectively. Fish *C. punctatus* showed a control metHb level of 38.72 ± 2.79% in its blood. Change in hematological parameters has been studied in fishes under different pesticide stress. Several findings however, significant elevations in erythrocyte count and Hb content were also reported in water breathing fish, *Tilapia mossambica* exposed to Sevin (Koundinya and Rammurthi, 1980, Natrajan, 1984, Goel *et al.* 1984). The pattern of change in the methemoglobin content of blood of *C. striatus* under Sevin toxicity (karuppiah, 1996) methaemoglobin is known to contain the heme in ferric (Fe+) state, thereby reducing its oxygen combine Ig capacity. In the present investigation, the effect of cythion resemblances with the finding of natrajan 1984 and Goel *et al*. 1984.

REFERENCES

1. Rahman AA. Commercial Breeding of Verral a Popular Article In tamish Thorhi Ulagan a Monthly Tamil Journal. November 1995. p. 30-4.
2. Annon. Report on fish Toxicity Procedure EIFAC/T-24 European Indian Fisheries Advisory Coonmssion, F.A.O. Rome; 1975.
3. Anees MA. Hepalic pathology in Frehswater teleost *Channa* panctatus (Bloch) posed to sub - Lethal and chronic levels of three organophosphate inseticides. Bull Envirn Contam Toxicol 1978;19:525-7.
4. Goel KA, Sandhya A, Agrawal v. Alachlor toxicity to a Fresh watar teluost, claias batrachas. Curr Scl 1984;53:1050-2.
5. Johansen K. In: Hoar WS, Randall DJ, editors. Air Breathing Fishes in Fish Plysieology vol. 4th ed. New York: Academic Press; 1970. p. 367-411.