TOXIC EFFECTS OF TWO LEATHER DYES BISMARCK BROWN AND ACID LEATHER BROWN ON BLOOD PARAMETERS OF FRESH WATER TELEOST, *CIRRHINUS MRIGALA* (HAM.)

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ABSTRACT

Fishes are one of the greatest creations of the God, water fauna biodiversity is one of the prime problems in front of researchers from long, as population boom exploits almost all water bodies of the world especially in the underdeveloped countries. The haemoglobin concentration of blood was estimated by the Standard Sahli's method out lined by Wintrobe (1968). In *Cirrhinus mrigala* (Ham.), decreasing trend in Hb. Conc. on exposure to Bismarck brown and Acid leather brown at different time intervals (24 hrs, 48 hrs, 96 hrs and 1 week) and at all three concentrations has been observed. The decreasing trend in Hb. Conc. on exposure to Bismarck brown and acid leather brown at different time intervals and at all three concentrations has been observed. However, the effect was more in acid leather brown exposure. Haemoglobin is an integral part of RBCs and its decrease is obviously due to decrease in RBCs count after Bismarck brown and acid leather brown administration in the present investigation. Reduction in haemoglobin concentration may also be due to hypohaemoglobinemia.

Keywords:- Haemoglobin concentration, Bismarck brown, Acid leather, water pollution**,** *Cirrhinus mrigala***.**

INTRODUCTION

Fishes are one of the greatest creations of the God, water fauna biodiversity is one of the prime problems in front of researchers from long, as population boom exploits almost all water bodies of the world especially in underdeveloped countries. India is on the heavy exporters of the leather the current research work awares people about the leather dye pollution and its effect on the fishe fauna. Many sources of water pollution cause devastating consequences to aquatic life. Fish and marine mammals at the top of the food chain are exposed to higher levels of toxins due to the fact that they are exposed to toxins directly from the water and toxins from eating other fish exposed to toxins in the water, aquatic mammals that rely on blubber to regulate body temperatures have high levels of toxins. Many toxins store in fat. Because blubber animals have large amounts of fat, high amounts of toxins accumulate in the blubber aquatic animals.

MATERIALS AND METHODS

The haemoglobin concentration of blood was estimated by the Standard Sahli's method out lined by Wintrobe (1968) The method is based on the principle of making an acid haematin solution of blood under experimentation in the graduated tube and then comparing it with sealed comparison tubes containing the standard acid solution. The graduated tube of Haemoglobinometer was first ringed with distil water and then methyl alcohol and the tube was dried. The N/10 HCl acid was taken up to the mark 2 gm percent with the help of fine glass dropper. Later 20 cubic ml of blood sample was sucked in the Hb. pipette and transferred carefully in the graduated tube containing N/10 HCl acid. The graduated tube was shaked well for 5 minutes so that the contents got thoroughly mixed. The distilled water was poured into graduated tube drop by drop and stirred continuously with a glass rod till the color of content matched with that of standard brown plates. When the color matched, the reading was noted as gm/100 ml.

RESULTS AND DISCUSSION

The experiment was conducted in the laboratory. At different time intervals as in table (1&2) the experimented were conducted on fresh water teleost, *Cirrhinus mrigala* (Ham.)

In *Cirrhinus mrigala* (Ham.), decreasing trend in Hb. Conc. on exposure to bismarck brown and acid leather brown at different time intervals (24 hrs, 48 hrs, 96 hrs and 1 week) and at all three concentrations has been observed. However, the effect was more in acid leather brown exposure. The decrease in the haemoglobin concentration has also been reported by Rai and Qayyam (1984) in *Catla catla* due to intoxication of lead[1]; Thakur and Sahai (1987) in *Channa punctatus* exposed to BHC[2]; Garg and Tyagi (1989) in *Heteropneustes fossilis* due to manganese poisoning[3], Goswami and Dutta (1991) in *Heteropneustes fossilis* due to vit. A deficient diet[4]; while Singh and Shrivastava (1992) in *Heteropneustes fossilis* due to propoxur toxicity[5]; Nath and Banerjee (1995) in *Heteropneustes fossilis* treated with devithion[6]; Singh (1995) in *Channa punctatus* due to copper sulphate and potassium dichromate poisoning[7]; Raizada and Rana (1998) in *Clarias batrachus*[8], Ananadkumar *et al*. (2001) in *Heteropneustes fossilis*[9], Saxena and Seth (2002) in *Channa punctatus* after cypermethrin treatment[10], Das *et al*. (2004) after nitrate toxicity in *Labeo rohita*[11]. Masud *et al*. (2005) in *Cyprinus carpio* following mercuric chloride intoxication[12], Kumar *et al*. (2006) in *Clarias batrachus*[13] and Singh and Singh (2007) in *Heteropneustes fossilis*[14].

Table 1: Haemoglobin concentration (mg/dl) in *Cirrhinus mrigala* (Ham.) after bismarck brown treatment

Conc.	Control (Mean±S.Em.)	24 hrs (Mean±S.Em.)	48 hrs (Mean±S.Em.)	96 hrs (Mean±S.Em.)	1 week (Mean±S.Em.)
0.6mg/L	13.5±0.30	13.0±0.09*	12.3±0.02*	10.3±0.24**	6.7±0.12**
0.7mg/L	13.6±0.29	12.5±0.05*	11.0±0.04**	10.4±0.14***	7.7±0.11****
0.8mg/L	13.9±0.31	12.0±0.08*	11.3±0.03**	9.8±0.04***	5.9±0.02****

* Non significant (P>0.05); **Significant (P<0.05); ***Highly significant (P<0.01); ****Very highly significant (P<0.001)

Table 2: Haemoglobin concentration (mg/dl) in *Cirrhinus mrigala* (Ham.) after acid leather brown treatment

Conc.	Control (Mean±S.Em.)	24 hrs (Mean±S.Em.)	48 hrs (Mean±S.Em.)	96 hrs (Mean±S.Em.)	1 week (Mean±S.Em.)
8mg/L	13.5±0.30	13.2±0.06*	12.7±0.08*	10.7±0.29**	7.8±0.92**
9mg/L	13.6±0.29	12.9±0.08*	11.5±0.07*	10.9±0.12**	7.9±0.18***
10mg/L	13.9±0.31	12.5±0.07*	11.9±0.53**	10.2±0.34***	7.1±0.12***

* Non significant (P>0.05); **Significant (P<0.05); *** Highly significant (P<0.01); **** Very highly significant (P<0.001)

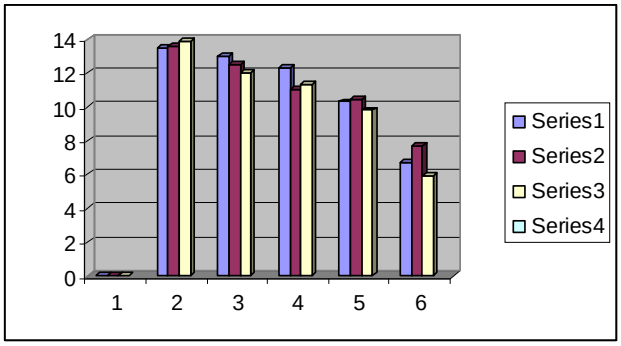

Figure: A

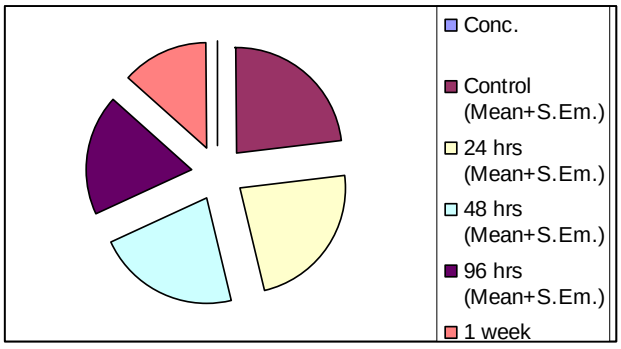

Figure: B

In *Cirrhinus mrigala* (Ham.), decreasing trend in Hb. Conc. on exposure to bismarck brown and acid leather brown at different time intervals (24 hrs, 48 hrs, 96 hrs and 1 week) and at all three concentrations has been observed. However, the effect was more in acid leather brown exposure. Haemoglobin is an integral part of RBCs and its decrease is obviously due to decrease in RBCs count after Bismarck brown and acid leather brown administration in the present investigation. Reduction in haemoglobin concentration may also be due to hypohaemoglobinemia.

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