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Alteration in Urease Level in Brain & Liver of Fresh Water Fish Channa Straitus induced by Azodyes

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Abstract

Present manuscript is an attempt to observe the toxic effect of Chloramine blue and Malachite green in fresh water fish Channa straitus following the acute exposure (48 and 96 hrs) and chronic exposure (10,15,20,25 and 30 days). it was observed that the urease content was found to be elevated significantly (P<0.001) in brain and liver. The elevation was recorded maximum at chronic exposure of Chloramines blue and Malachite green in brain and liver of Channa straiatus.

Keywords: Urease level, Azodyes, Channa Straitus.

Introduction

Fish is a rich source of vitamins, the substances responsible for normal growth, maintenance and reproduction. Both fat and water soluble vitamins are present in fish. Regular consumption of fish helps to prevent disorders arising out of the deficiency of vitamins. Fish is therefore helpful to a large extent in solving the problem of food and malnutrition in developing countries.

The number of fish killed due to dye pollution every year is not known but a good number of mortality cases due to water pollution have been reported by Gordon (1960), Cottom (1960) and Pantulu (1965)

The present venture is an attempt to work out urease level in brain and liver of a fresh water fish Channa straitus due to effect of Chloromine blue and Malachite green.

Materials and Methods

Living healthy fish of 30 to 45 gm in weight was collected from local fresh water resources and acclimatized to the laboratory condition for a minimum period of 10 days before experiments. The fishes were divided into three batches. In which first batch served as control Second batch treated with Malachite green and Third batch treated with Chloramine blue.

The fishes of the first batch was kept in ordinary tap water under indentical Physio- -Chemical Condition. The fishes of second batch were exposed to sublethal concentration 0.21 mg/l of Malachite green and the fishes of third batch were exposed to sublethal concentration 9mg/l of chloramines blue for 96 hrs (acute) and 10,15,20,25 and 30 days (chronic) exposure intoxication. After acute and chronic exposure, brain and liver were dissect out and processed according to Sackett (1925), Bathing Solution replaced periodically and black covering was used on the aquaria to prevent any possible photo oxidation of the dyes.

The 't' test of Fisher (1963) was used to calculate the significance of Data.

Result and Discussion

A significant (P<0.001 & 0.005) increase in urease activities in the brain and liver of Channa striatus was observed with Malachite green and Chloramines blue.

The well Pronounced increase in brain found to be +5.6179% (T_1); +12.7348% (T_2); +35.5805% (T_3); +49.9438% (T_4); +52.8089% (T_5) and + 62.9213% (T_6) following the acute (96 hrs) and chronic (10,15,20,25 and 30 days) exposure of Malachite green + 15.3558% (T_1); 25.8426%(T_2); + 43.0711%(T_3); 50.9363% (T_4); + 73.0337% (T_5) and 80.8988% (T_6) under the all exposure of Chloramine blue respectively.

Similarly the Significant (P<0.001 & 0.005) elevation in liver + 26.9230% (T_1); + 40.000% (T_2); + 57.6825% (T_3); + 105.5384% (T_4); + 125.3846% (T_5); and + 148.4615% (T_6) following the acute and chronic exposure of Malachite green and + 44.6158% (T_1); + 58.4615 (T_2); 90.7692% (T_3); + 117.6923% (T_4); + 136.9230% (T_5); and 116.1538% (T_6) were recorded at both acute and chronic exposure of Chloramine blue.

Our findings are in accordance with those of Goal and Garg (1980), Garg (1981), Goel et al (1982), Agrawal et al (1981), and Garg (1983) who reported elevation in Urease level in different tissues but the present findings do not tally with those of Sumner and Somer (1953), Sastry and Agarwal (1979) and Christensen et al (1982) who reported decrease Urease activities in the different tissues.

The present finding revealed increased Urease activity indicating increase break down of Urea in response to Azodyes.

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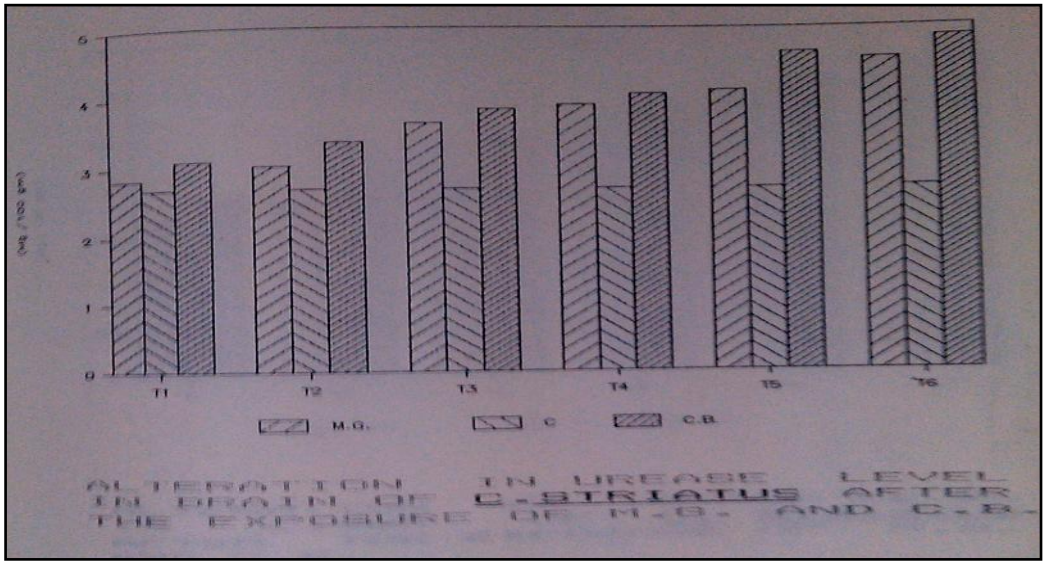
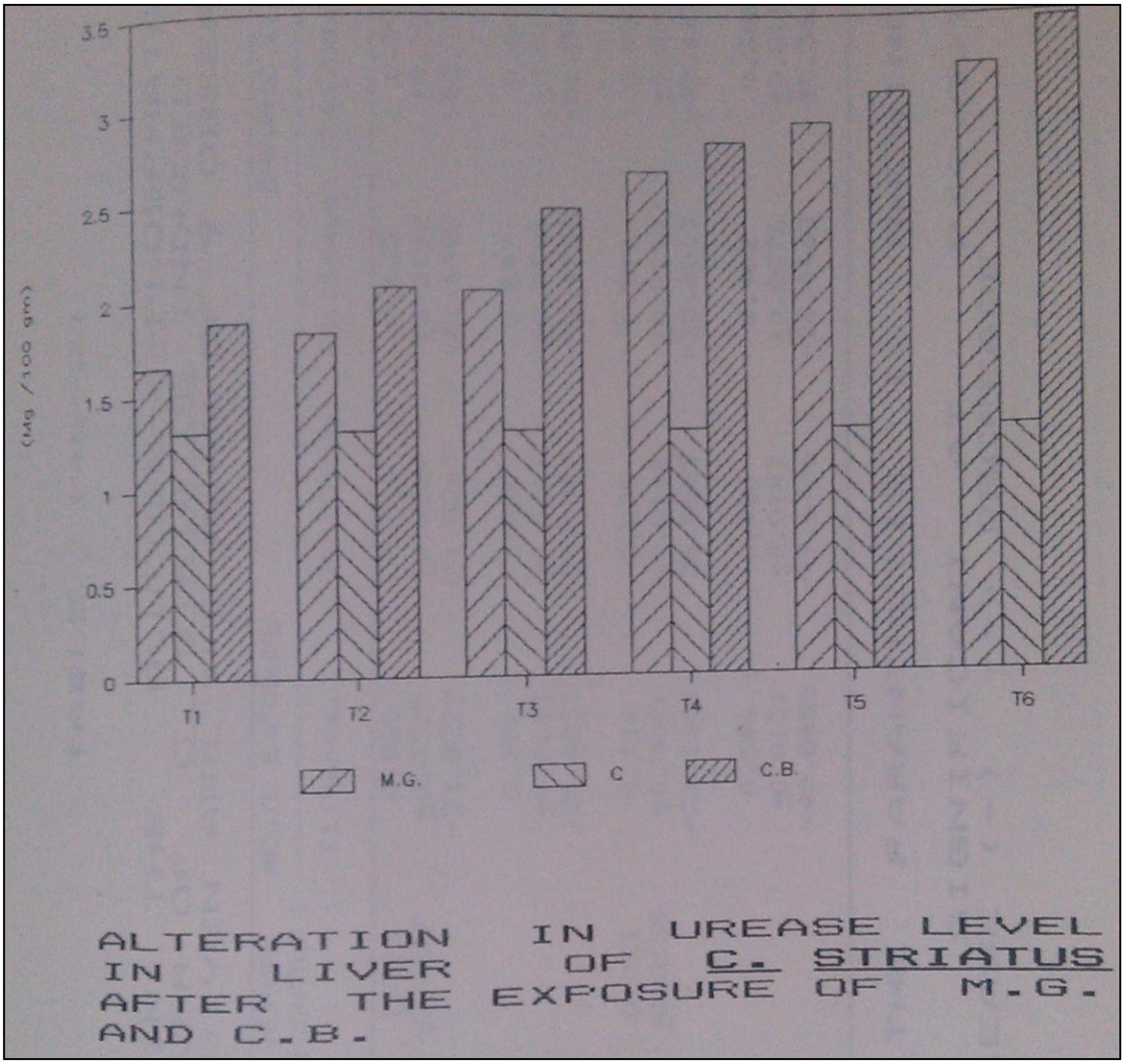
Alterstion in the Urease Level in the Brain and Liver of C. Straitus Induced by Azodyes
The Value Given are the Mean of Nine Observations

Toxicants	Tissue	Normal (Control)	Acute Exposure	Chronic Exposure				
			T1 (96hrs.)	T2 (10 days)	T3 (15 days)	T4 (20 days)	T5 (25 days)	T6 (30 days)
Malachite Green	Brain	2.67 ±0.0152	2.82 ±0.0243 +5.6179	3.01 ±0.0208 +12.7348	3.62 ±0.0235 +35.5805	3.87 ±0.0139 +49.9438	4.08 ±0.0125 +52.8089	4.53 ±0.0104 +62.9212
Chloramine Blue	Brain		3.08 ±0.0062 +15.3558	3.36 ±0.0119 +25.8426	3.82 ±0.0234 +43.0711	4.03 ±0.0248 +50.9363	4.62 ±0.0294 +75.0337	4.83 ±0.0161 +80.8988
Malachite Green	Liver	1.30 ±0.0336	1.65 ±0.0098 +26.9230	1.82 ±0.0265 +40.0000	2.05 ±0.0201 +57.6923	2.67 ±0.0139 +105.5384	2.93 ±0.0272 +125.3846	3.23 ±0.025 +148.4615
Chloramine Blue	Liver		1.88 ±0.0174 +44.6153	2.06 ±0.015 +58.4615	2.48 ±0.0161 +90.7692	2.83 ±0.0104 +117.6923	3.08 ±0.0471 +136.9230	3.46 ±0.0294 +166.1536

Values of the Paranthesis are Showing Percentage Acceleration
Values are Significant at P<0.001
(+) → Increase
(-) → Decrease





ALTERATION IN UREASE LEVEL IN LIVER OF C. STRIATUS AFTER THE EXPOSURE OF M.G. AND C.B.