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HAEMOTOXIC EFFECT OF UREA FERTILIZERS IN ANABAS TESTUDINEUS

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ABSTRACT

The Uear Toxicity is more pronounced than any other fertilizers. The toxic effect of urea resulted in sudden fall of hematological parameters- Hb, RBC count and WBC Count. In current study and attempt has been made to assessment the impact of urea on hemotoxic of Anabas testudineus. Sub lethal concentration of urea could disturb growth rate and reproduction causing community disturbance in the tropic Levels of Food chain.

KEYWORDS: *Fertilizer urea, Fishes, Haemoglobin, RBC count,WBC Count.*

INTRODUCTION

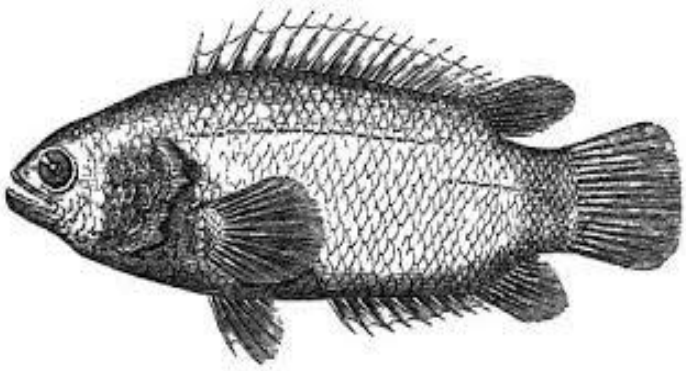
In India termendous growth in agriculture sector by the high yielding variety of seeds with the help of fertilizer. The presence of urea in ponds and Rivers through drainage system and runoff water ways cause ecological distrubances.

In aquatic Atmosphere, when the levels of fertilizer urea exceed leads to haemotoxic effect in Anabas Testudines.

DESCRIPTION OF ANABAS TESTUDINEUS:

The species, Anabas Testidineus widely cultured fresh water food fish in most parts of tropical and sub-tropical parts of Asia including Taiwar, Indonesia, India, Thailand.

It is locally know as KAWOI or KOI. The fish derives its name climbing perch. Which are usually grey and white, smooth and scaly skin with wide mouth and upper lip reddish. They are most commonly used as experimental fish.



Anabas testudineus (Bloch)

MATERIALS AND METHODS:

(A)Study Area:

The present study was carried out in Darbhanga District of Bihar. Darbhanga city is the administrative headquarters of this district and 5th largest city of Bihar as well. Darbhanga district is a part of Darbhanga Division. The district is bounded on the north by Madhubani district, on the south by Samsatipur district, on the east by Saharsa district and on the west by Sitamarhi and Muzaffarpur.

(B)Source of Sample Collection:

Five hundred figurelings of Anabas Testudines. Were obtained from premier Fisheries Limited and Local Government area as well as ponds of LNMU Campus. The mean body weight (g) and total lenght (cm) of species were 2.04±0.35 and 6.98±0.29 respectively.

(C)Expoure to Urea:

The fishes were categorized in two groups one group contained the Normal. Fish that is control group fishes whereas the other group contained the treated fishes. The treated group was exposed to the fertilizer urea for 24, hourse for study of haemotoxic alterations found in them.

The toxic effect resulted in a sudden fall hematological parameters, Hb, RBC count and WBC count. The blood so collection was mixed with heparin (100 unit, Biological Evans limited) as an anticoagulant.

Neubauer haemocytometer and Hayman's solution were used for estimation of to total blood red blood corpuscles count. Blood was sucked up to 0.5 mark in RBC pipette and was diluted to 1:200 ratio by sucking diluting fluid up to 101 mark of the pipette and was mixed thoroughly for Hematological Investigations and found as follows:

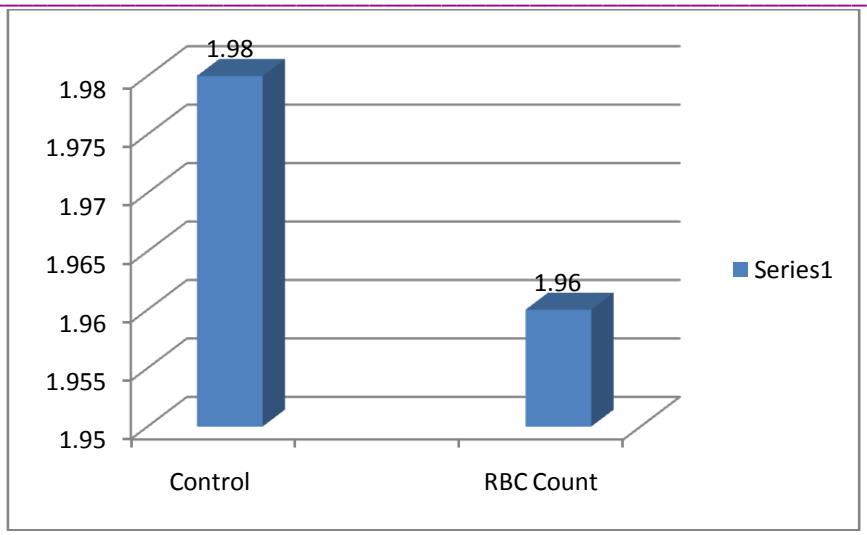
Total RBC Count:

The fish showed no significant change in the RBC count over the control, and was recorded to be 1.96 ± 0.44 on the 20th day (Table-1).

Effect of Urea on total RBC count of Anabas testudineus exposed to 200mg/l concentration for 20 days.

Table-1

Fertilizer	Control ($10^6 mm^3$)	Days of treatment	Concetration of fertilizer (mg/l)	Total RBC count ($10^6 mm^3$)
Urea	1.98±0.22	20	200	1.96±0.44



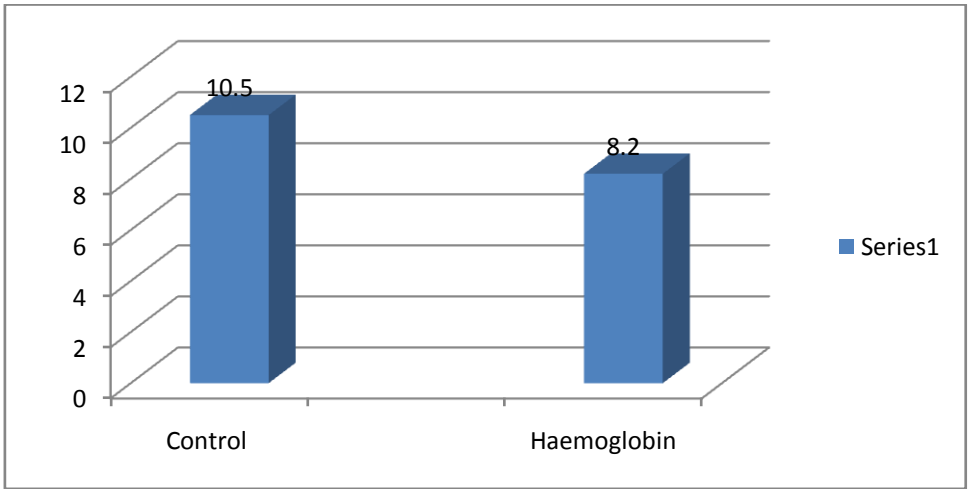
Haemoglobin Content:

The haemoglobin content was recorded to be 8.2 ± 0.05 mg/l in comparison to control. (Table-2)

Effect of urea on Haemoglobin control of Anabas testudineus exposed to 200mg/l concentration for 20 days.

Table -2

Fertilizer	Control (mg/l)	Days of treatment	Concetration of fertilizer (mg/l)	Haemoglobin (mg/l)
Urea	10.5 ± 1.022	20	200	8.2 ± 0.05

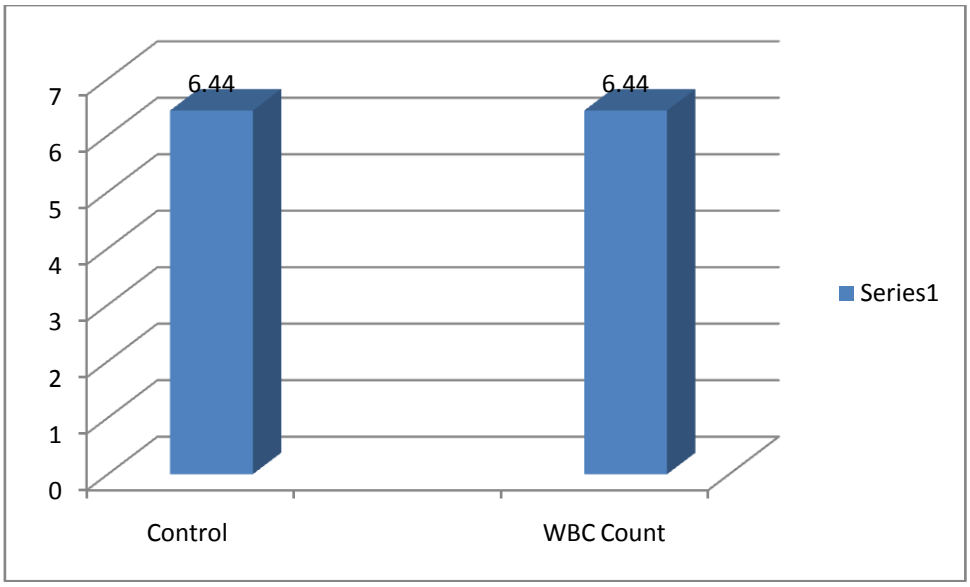


WBC differential count:

The fish Anabas testudineus exposed to 200mg/l. concentration of urea of 20 days, showed slight alterations in WBC differential count (Table-3).

Table-3

Fertilizer	Control (mm^3 10^3)	Days of treatment	Concetration of fertilizer (mg/l)	Total WBC count ($mm^3 10^6$)
Urea	6.44 ± 0.01	20	200	6.44 ± 0.01



DISCUSSION:

The fish under same concentration and duration of urea showed almost no response up to the 18th day of exposure, however after that restlessness and slightly increased operacular beat and excess of slime over the skin was noticed. Heamatological alterations are usually the first detectable and quantitiable responses to environmental change (Bonga 1997). Hematological properties of blood can provide important information about the internal environment of organism (Masopust, 2000).

During the present investigation, the effect of Urea on fish of Anabas testudineus, at 200mg/l concentration for 20 days, exhibited that and under same exposure and concentration of urea, the decline in RBC was recorded to be 1.96 $\pm$ 0.44, (10^6 mm^3) in comparison to control, which was recorded to be 1098 $\pm$ 0.22 (10^6 mm^3) and same concentration of urea the total WBC counts was recorded 6.46 $\pm$ 0.2 (mm^3 10^3) after 20 days, in comparison to control fish i.e. 6.44 $\pm$ 0.01 10^3 mm^3.

The haemoglobin content was estimated in under uear exposure the fish showed 8.2 $\pm$ 0.05 mg/l in comparison to control (1.5 $\pm$1.022 mg/l).

CONCLUSION:

In fish farms, chemical fertilizers are often applied before stocking the pond to stimulates the production of organisms that may serve as first food for many species of fish and also increase survival and growth. Such applications may not be harmful if enough time is allowed for the degradation of these fertilizers by the micro flora. In the context of fish nursary management, it would seem prudent to avoid situations where chemical fertilizers are added intermittently to the ponds, because such subsequent additions may result in total fingerling mortality.

The application of these fertilizers in aquatic ecosystems either in ponds, irrigations or farms should be carefully controlled or monitored, such that concentrations that are are lethal to aquatic life could be avoided. There is also a great need to provide further baselines data on urea fertilizers. Such studies should be concerned with providing information on research such as, the effects of sub- lethal concentrations of Urea fertilizers on the haematology.

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