

# Estimation of changes in glucose, plasma protein and total cholesterol content in blood of *Anabas testudineus* exposed to sublethal concentration of methyl parathion

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## ARTICLE DETAILS

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## ABSTRACT

The air breathing fish *Anabas testudineus* was treated for 96hrs. (acute toxicity and 30 day (chronic toxicity) and change in biochemical contents was recorded in blood. The glucose and cholesterol level was elevated and protein content was decreased during both the exposer times.

## 1. Introduction

The green revolution of 1960 has given reasonable hope for the country being not only self dependent in the production of adequate food and fodder but has become the largest producer of some important commodities.

The role played in green revolution but the magic chemicals called "Pesticides" are quite significant by they have given rise to serious health problem in terrestrial and aquatic animals.

Methyl parathion is an most commonly used organophosphate insecticide which inhibits the Acetylcholin esterase enzyme (AChE) of CNS and sometimes it proves fatal even to human being.

Therefore, it seems to be essential to investigate the toxicity and hazards of this pesticide. The present investigation was carried out to estimate the changes in the concentration of some biochemical constituents of blood of the experimental fish exposed to sublethal concentration of methyl parathion.

## 2. Materials and methods

The adult living specimens of *Anabas testudineus* were brought to the laboratory from the local fish market and were washed with 0.1% of KMnO<sub>4</sub> solution to remove dermal infection if any. The fish were kept in large glass aquaria to

acclimatize to the laboratory conditions before the investigation was started.

Two separate batch of ten fish each were kept in separate control and experimental tanks in proper care. The fish of experimental tank were exposed to the sublethal concentration of methyl parathion (0.42mg/L) for 96hrs and 30 days and biochemical parameters were measured.

To measure blood glucose, method of Sina (1990) was applied. Methods of vary et.al (1980) and that of Kabara (1966) were adopted to estimate the contents of plasma protein and serum cholesterol respectively.

## 3. Result

The blood glucose level increased significantly (P<0.001) at all exposure times but the percent increase in chronic exposer (30 days) is small (13.1%) as compared to acute exposer (59.4%)

**Table:** Showing changes in glucose, total protein and total cholesterol level of blood of *Anabas testudineus* exposed to

0.42mg/L of methyl parathion ( $\frac{1}{4}$ <sup>th</sup> of LC 50) for 96 hrs and 30 days.

**Table**

Sl.No.	Blood Parameters	96 hrs		30 days	
		1.	Blood glucose mg/dL	43.6±0.12	69.52±0.5
2.	Total plasma protein g/dL	3.66±0.23	3.30±0.15	4.70±0.25	3.50±0.20
3.	Total plasma cholesterol mg/dL	83.40±0.10	99.4±0.38	84.16±0.23	154.12±0.16

4. Observation

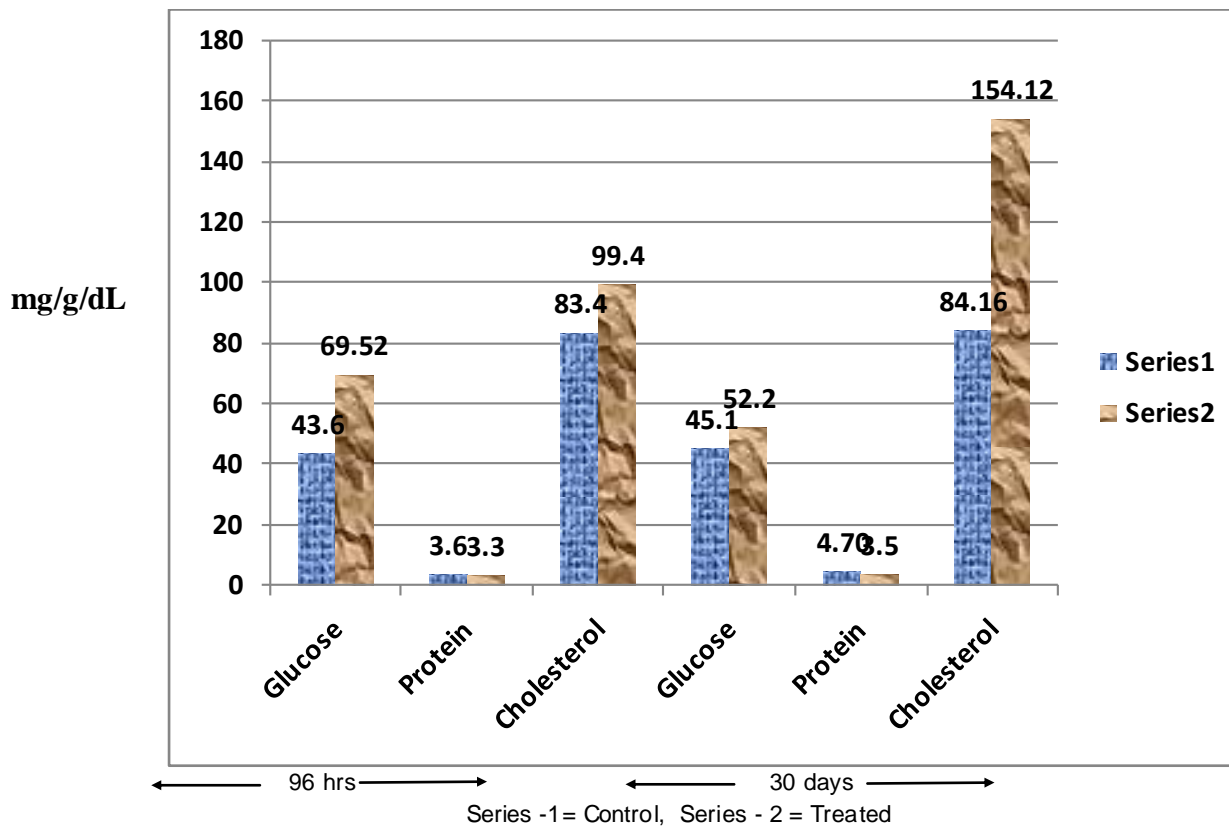


Fig. Showing changes in glucose, protein and cholesterol level in blood of *Anabas testudineus* exposed to 0.42 mg/L of methyl parathion ( $\frac{1}{4}$ th of LC<sub>50</sub>) for 96 hrs. and 30 days.

The plasma protein content decreased progressively during 96 hrs and 30 days exposure.

The total serum cholesterol showed 19.18% and 83.13% increase during acute and chronic exposures respectively.

5. Discussion

Blood biochemical parameters provide an important and sensitive bio-markers in eco-toxicological studies. (Folmer, 1993, and Sharma and Singh, 2004, 2006). The condition of hyperglycemia was also reported by Martin and Black (1998). Variability in the plasma protein values of various fish species

were generally thought to be a reflection of the different factors specially the aquatic toxicants. (Christensen et al. 1972 Gluth and Hanke, 1985). Similar results were reported during this investigation reflected as decrease in plasma protein content.

Serum cholesterol is an essential structural component of the cell and precursor of all steroid hormones. (Yand and Chen, 2005). But increased level of cholesterol causes weakness in the body and affects swimming ability of fish. (Vinodhini, 2009).

The findings of this investigation are supported by reports of many other investigators.

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