

# *Acute Toxicity of Indo – Sulphan on rate of respiration of fresh water Gastropod *Lymnea luteola**

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## **Abstract**

Toxicity of sumithion to the fresh water field snail has been study by Bhagya Laxmi and Rammurti (1981) Aness (1975) and verma et.al.(1978) observed the toxicity of some organo phosphate compounds. The oxygen consumption has been estimated by Alam and Lomate (1984) after exposing the gastropods considering the study on pesticide pollution on the fresh water gastropod. *Lymnea luteola* the present investigation has under taken within the view to understand the acute toxicity and the effect on the rate of oxygen consumption. Organophosphate compounds are now extensively use in place of organo-chloride compounds and account of their lesse4 residuals toxicity. But the prevention of aquatic animals mortality remains an important object of water pollution research, kaviraj and konare (1982) have studied the effect of heavy metals on accut3 toxicity of mercury .

## **Introduction**

The fresh water environment is becoming increasingly polluted with various pesticides since they are applied directly to aquatic fauna. They increase the agriculture production. None of the pesticides since they are applied directly they increase the agriculture production and none of the pesticide are specific to target species and so these chemicals causes deleterious effects or even system. The pesticides are causing undesirable effects to the organisms (Johnson 1968) are particularly susceptible to these pollutants.

## **Material and methods**

The Snail *Lymnea luteola* were collected from Chankapur Dam Near Kalwan. Animals were brought to the laboratory and they were cleaned to remove algae, biomass and mud.etc. They maintained in laboratory conditions for a period to five days in de- chlorinated water, during no food was provided.

The physico- Chemical parameters like temperature, Ph total carbonates by the standard techniques of APHAC (1985) the healthy specimens were ranging 3.0 to 3.3 cm in length and 0.5 to 0.6 cm. in width was used for experimentation .The Indo – Sulphan 33 EC was dissolved so as to get the appropriate concentration for the exposure periods .

The acute toxicity tests were performed by using indo sulphan 35 CC for period or 24,48,72 and 96 hours it is an organophosphate pesticide manufactured by VOLRHO INDIA LIMITED Secunderabad .After exposing the animals for 24,48,72, and 96 hours to the pesticide survivals and the behavior of gastropods were recorded. The observed by the observation like failure of snails to respond to protruding the foot in to the shell, when it is pricked by needles. The percentage mortality was calculated and then in has been converted in to the profit values by means of profit table and the concentration were conver6ed in to long concentrations the graph using long concentration and profit mortality (Bailey).

The equation is calculated with long concentration and profit mortality by using formula  $Y = bx + a$  A from this equation the values of  $Lc_{50}$  for 24,48,72, and 96 hrs were calculated. The  $Lc_1$  value also

determined with the help of same equation. The rate of oxygen consumption has been estimated by using oxygen electrode which has been provided by century instrument 1965 Pvt. Ltd. Chandigarh. All five value of respiration are subjected for the statistical analysis from “+” test (Dowdswell 1957).

## Results

The physico- chemical parameters of the water for holding the animals and used as diluents is given in table No.1.

The water does not contain any toxic substance to the snails as hence no mortality was recorded in controlled group . The gastropod partly opened operculum and slightly protruded food gastropod attached to substratum with extend foot & tentacles out of the shell.

The gust period to the death the gastropods retracted the body inside the shell at its max. extent and they could not extent even when they are subjected to mechanical stimulus .

The regration equations calculated  $LC_{50}$  and  $LC_1$  valued and the exposure periods (214,42,72adn 96hrs.) are given table to for 24 hrs calculated  $LC_{50}$  value is 150 – 0.0125 ppm. And  $LC_1$  value is 0.00027ppm and calculated  $LC_1$  values is 0.0017 for 96 hours of exposure to indo- sulpham the calculated value is 0.00013ppm.

The rate of oxygen consumption was estimated in controlled  $LC_1$  and  $LC_{50}$  groups after exposing the animals for the periods of 24,48,72 and 96 hrs to indo sulpham The effect of indo sulpham on the rate of oxygen consumption of fresh water gastropod lymnea luteola from Kalwan at Nashik district .

The rate of oxygen consumption on the  $LC_1$  and  $LC_{50}$  exposed groups were fluctuated from  $0.167 + 0.014$  to  $0.426 + 0.030$  mg/ gm/ l / h, In  $LC_1$  group it is fluctuated from  $0.2991 + 0.482$  to  $0.426 + 0.030$  mg/ gm/ l / h. The oxygen consumption was decreased to its max  $LC_{50}$  exposed group after 96 hrs of exposure period (58.63%) P (0.01).

## Discussion

Many chemical pesticides like organophosphate pesticides have been used in agriculture fields since long time such carless use of dangerous chemicals has laid to environment and occupation hazards which has been well established through recent researches with the increase in industrialization and urbanization the utilization of pesticides accumulation in different body parts of the aquatic animals obviously effect different physiological activity of consumer. The pesticide must be used in minimum quantities .

Many pesticide are considered hazardous because of their ability to keep and immobilized in the bodies of aquatic organisms in low concentration (Eisler 1961) the different toxicity of pesticides to aquatic organism (verma etc.1979) Warner (1967) in the review of bioassay using behavioral changes suggested that region of such test provide the most sensitive indicator yet develop.

In experimental group the content of excreta and mucus decreases. In the present study the  $LC_{50}$  value for the indo sulpham EC are 0.0126 ppm for 24,48,72,96hrs respectively.

## Reference

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**Table No.1**

Physico – Chemical parameters of riverine and tap water used for experimentation .

Sr. No.	Parameters	Content
1	Temperature	20.0-22.1 c
2	PH	71.1 -7.5
3	Dissolved	8.82 – 9.0 mg/l
4	Total Corbonate	11.3 -11.5gm

**Table No.2**

Sr. No.	Period of Exposure	Calculated LC1 ppm	Calculated LC50 ppm	Regression Equation
1	24hrs	0.0034	0.0142	Y= 0.266 + 0.1736
2	48hrs	0.0027	0.0125	Y= 0.2812 – 1.3043
3	72hrs	0.0017	0.0059	Y= 0.2185 – 3203
4	96hrs	0.0020	0.0021	Y= 0. 5264 - 2.2940

