TOXIC EFFECT OF MALATHION ON *CLARIAS BATRACHUS*

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ABSTRACT

Toxic effect of malathion in *Clarias batrachus* was studied in a static renewal bioassay for 48 hrs, 96 hrs and 45 days. The LC50 value of malathion 48 hours was 0.28 ppm, 96 hours was 0.22 ppm and 45 days was 0.04 ppm. When different concentration of malathion exposure to *Clarias batrachus* at different period of time. Physical, morphological and behavioral changes clearly seen. The result obtained that fishes shows more sensitive to malathion and more toxic to *Clarias batrachus.*

Key words:- *Clarias batrachus*, Exposure, Malathion, Toxic Effect, LC50

INTRODUCTION

The pesticides are mostly used for the control of insects. Pesticide effect on different fishes in Mortality of fishes when lethal & sub lethal concentration may changes in behavior and reduces the rate of survival. Malathion is an insecticide in the chemical family known as organophosphates. Malathion has also been used in public health mosquito control and fruit fly eradication programs.

Pesticides malathion and carboryl both are useful to improvement of crops (15) but malathion is very much harmfull to aquatic life and those Human being which are depend on aquatic food as fishes (11). Malathion is widely used as organophosphate and used alternative to carbamate pesticide, carbaryl is commonly assevin (17). Organophosphate pesticides are found to be less toxic to mammals then organochlorines, yet very low doses of such pesticides malathion can cause apparent pathological changes in vital organs intestinal of non target organisms like fish(3). The pesticide toxicity has been highly influenced by the change between the pH and temperature in fishes under laboratory condition. This laboratory experiments are highly useful to correlate and explain the dynamics of pollutants in normal environment under the influence of pH and temperature (14). According to R.K. Gautam when to exposed the sub-lethal concentration of malathion in *Clarias batrachus* the glycogen and

total protein contain were decreases when exposure group were comparison to control group (8). The low concentration of malathion used for pest control in agriculture. Where fresh water has reserved in that surrounding which create significant hematological and behavioral changes (18). When the malathion pesticide was exposure of fresh water fish *Labeo rohita* for 4 days then highly degenerative changes in renal tubules and liver cells were polygonal in shape and large in size (16). Biochemical changes were observed in hematological parameters of *Channa striatus* exposure to endosulfan pesticide for acute toxicity. The hematological parameters of red blood corpuscles, hemoglobin were decreased while the white blood corpuscles and blood glucose were increased after exposure to 96 hrs (4). White rot fungus possesses complex and efficient lignolytic enzyme system. They have been successfully applied in treatment and decomposition of insecticide malathion on the laboratory level (7).

MATERIAL AND METHODS

The pesticide malathion was used for present investigation In India malathion pesticide was widely used for pest control. Malathion 50% EC (Suthion) used in the experiment was supplied by the ALBATA BIOTECH (I) Pvt. Ltd. In local shops malathion pesticide sell as the name of "MOR".

The bioassay method adopted in the present investigation were as that of (1, 5 & 6).

Fishes *Clarias batrachus* commonly called as Magur were collected from local fish market. They were examined for any injury then washed with one percent solution of potassium permagnate solution. Raised in fresh water and acclimatized to laboratory conditions in large aquaria and fed 4% of their body weight with commercial feed pellets (40% crude protein,4.22% fat, 5.88% crude fiber) daily once and the water was renewed every other day. The mortality throughout the period of acclimatization was less than 10%.

Fishes were selected uniformly size 20 to 25 cm and weight 150 to 155 gm for LC50 determination against malathion pesticides. The percentage of mortality in different concentration was taken to determine the LC50 by graphic method.

In which mortality was plotted against log concentration of pesticide (13). In the present investigation some morphological, physical and behavioral changes significant of exposure to

sub lethal and chronic concentration of different pesticides were studied with the Standard criteria of these selected writings (2, 9, 10 & 12).

Table No. 1 : Mortality of *Clarias batrachus* at different concentration of malathion for 48 hrs and 96 hrs exposure period.

Exposure of 48 hrs. Malathion

S.No.	Conc. Of Malathion in ppm	Log conc.	Fish exposed	Fish dead	% mortality
1	0.15	0.02510	10	0	0 %
2	0.20	0.03517	10	1	10 %
3	0.25	0.04115	10	3	30 %
4	0.30	0.05105	10	6	60 %
5	0.35	0.06140	10	10	100 %

Exposure of 96 hrs. Malathion

S.No.	Conc. Of Malathion in ppm	Log conc.	Fish exposed	Fish dead	% mortality
1	0.10	0.01220	10	0	0 %
2	0.15	0.02150	10	2	20 %
3	0.20	0.03810	10	3	30 %
4	0.25	0.04715	10	7	70 %
5	0.30	0.05510	10	10	100 %

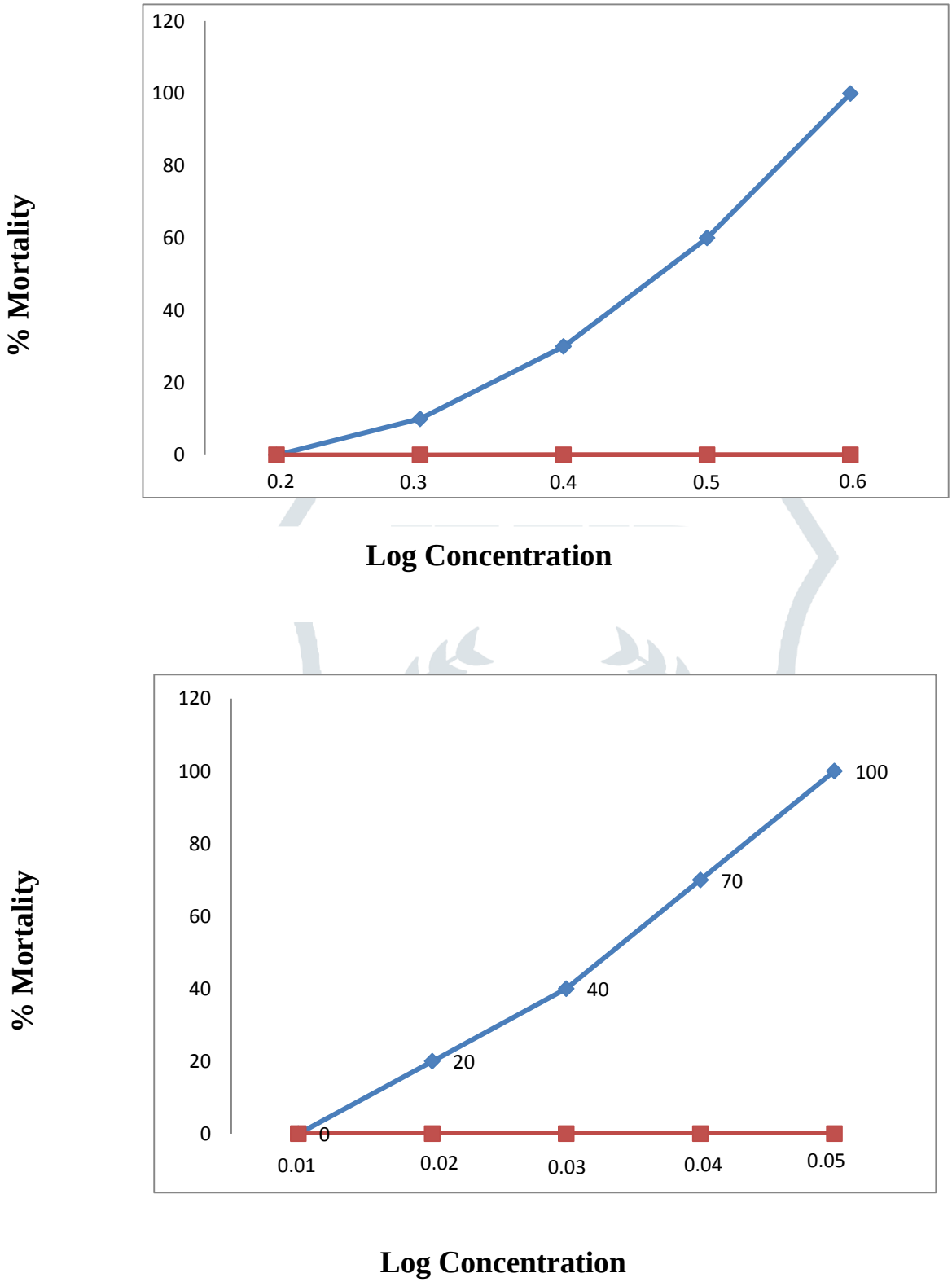
Table No. 2: Physical, Morphological and behavioural changes during exposure time for Malathion

Exposure period/ control con	Conc. In ppm	Colour change	Body weight decrease	Bottom to surface movement	Resting at bottom	Loss of equilibrium
48 hrs.	0.28	X	X	√	X	√
96 hrs.	0.22	√	X	√	X	X
45 days	0.04	√	√	X	√	X

Foot note : Change occur shown by " √ "

No change occur shown by "X"

Figure 1: LC50 values for malathion at different time intervals on *Clarias batrachus*.



RESULT & DISCUSSION

The LC50 values were determined with different concentration of pesticide for 10 fish's mortality for 48 hrs and 96 hrs (Table No-1). The LC50 values of malathion for 48 hrs was 0.28 ppm and 96 hrs was 0.22 ppm on the basis of experimental practices made in laboratory (Fig.1a and 1b). When different concentration of malathion doses given to fishes, it was clearly observed physical, morphological, and behavioral changes. Body weight decreases given to chronic dose of 45 days. Bottom to surface movement was seen 48 hrs and 96 hrs given to different doses. Color changes and resting in bottom both were clearly observed given to chronic doses of 45 days Shown in (Table No- 2). In this present study, it is indicated that malathion cause toxic effect on fish *Clarias batrachus* and show quick and lethal response to toxicant.

Malathion uses in agriculture should be strictly control by legislation and prevent its bioaccumulation in aquatic animals.

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