International Journal of Research in Engineering, Science and Management
Volume 6, Issue 12, December 2023
https://www.ijresm.com | ISSN (Online): 2581-5792

Evaluation of Acute Toxicity of Malathion on Fingerligs of *Channa punctatus*

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***Abstract*: Malathion, an organophosphate insecticide is acetycholinesterase inhibitor that has potential to contaminate the ground water. The 96 hours LC50 value of malathion was determined in four-month-old Fingerlingss *Channa punctatus* with a body weight 1.52±0.40g and body length 6.29 ± 0.80 at 32±1°c temperature. LC50 value was determined using finney method. The LC 50 value was 2 ppm for 96 hours.**

Keywords*: Malathion, organophosphate, *Channa punctatus.

1. Introduction

Malathion is commonly used organophosphorous pesticide. While most of the malathion will stay in the areas where it is applied, some can move to areas away from where it was applied by rain, fog and wind Once malathion is introduced into the evironment, it may cause serious intimidation to aquatic organisms and is notorious to cause severe metabolic disturbances in non-target species like fish and fresh water mussels (USEPA, 2005).

Channa punctatus is common fresh water fish abundantly present in local river Godavari Dist. Nanded. It is one of the major sources of food of poor population in local area. The present study was designed to study impact of lethal concentration of malathion on Fingerlingss of fresh water fish *Channa punctatus* during exposure period of 24,48,72 and 96 hours.

2. Material and Methods

For present study, commercial grade malathion (50% manufactured by Coromandal fertilizer limited, Coromandal house, pesticide division, Ranipet, Veiare (TN), India) was procured from the local market. Healthy finger lings of *Channa punctatus* were collected from local river Godavari Dist. Nanded. *Channa punctatus* Fingerlingss with a body weight 1.52±0.40g and body length 6.29 ± 0.80 at 32±1°c temperature. were selected respectively. Fishes were treated with 0.1 % Km No_4 solution for 2 min. to avoid any dermal infection. The fish stock was then maintained in 100-liter glass aquaria for 14 days to acclimatize under laboratory condition. The fishes fingerlings were fed with pieces of live earth warm on alternate days. A stock solution was prepared in acetone and mixed in water to obtain required dilutions. The LC50 value for 96 hours of malathion was determined by procedure of Finney (1971).

3. Results

In the present investigation the LC 50 value of 24,48,72,96 hours was found to be 5,4,3,2 ppm respectively

4. Discussion

LC_{50} values of organophosphate pesticide have been determined for different fishes by earlier workers. Pickring *et al.*, (1966) studied toxicity of organophosphorous insecticide, malathion on different species of warm water fishes, fatheads, blue gills and gold fish for the period of 48 hours and showed that the LC_{50} values were 25 ppm, 0.11 ppm and 0.79 ppm respectively.

Arora *et al.*, (1971) studied and determined LC_{50} value of malation for 96 hours for *Labeo rohita* as5.05 ppm. Dubale *et al.*, (1979) studied effect of malathion on histopathology in liver of *Channa punctatus* and reported that the LC_{50} values was 2.5 mg/l for 96 hours.

Pankaj Kumar *et al.*, (2004) found that malathion is very toxic for the fish and Fingerlingss of air-breathing cat fish

Table 1
Toxicity evaluation of malathion for *Channa punctatus* fingerlings

Sr. No.	Concentration of Malathion in PPM	Log Of PPM	Total number of animals exposed	Probity Mortality Values			
				24 hrs	48 hrs	72 hrs	96 hrs
1	Control		10		-	-	-
2	1	0.0000	10		-	3.72	4.48
3	2	0.3010	10		4.16	4.16	5.00
4	3	0.4771	10	3.72	4.16	5.00	4.75
5	4	0.6021	10	3.72	5.00	4.75	4.16
6	5	0.6990	10	5.00	4.16	4.75	5.84
7	6	0.7782	10	4.48	4.75	5.84	6.28
8	7	0.8451	10	4.16	4.75	4.75	-
9	8	0.9031	10	3.72	4.16	-	-
10	9	0.9542	10	4.16	4.75	-	-

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Heteroneustes fossilis. They concluded LC_{50} value of malathion for period 24, 48, 72, 96 hours were found to be 19.0, 18.0, 17.5 and 17.0 ppm. similar results were observed in present investigation.

5. Conclusion

In the present investigation LC 50 of malathion for 24,48,72 and 96 hours on fingarlings of *Channa punctatus* was studied. As exposure hours increases LC50 value decreases.

Acknowledgement

The author is thankful to Principal Shri Datta A.C. & S. College Hadgaon for providing the laboratory facilities during this work.

References

[1] Arora, H. C., S. K. Srivastava and A. K. Seth (1971), Bioassay studies of some commercial organic insecticides part I, Studies with an exotic carp, *punctius Sophore. Indian J. Envir. Hlth.* 13:226-233.

[2] Dubale, M.S., Punita Shah (1979), Histopathological lesions induced by malathion in the *Channa puntatus Ind. J. Exp. Biol.* 17(7):693-697.

[3] Finney, D. J. (1971), 'Probit analysis' Third edition, Cambridge University, Press.

[4] Pickring, O. H. & Henderson, C. (1966), The acute toxicity of some pesticide to fish, *Ohio J. Sci.* 66:508-513.

[5] Panakaj Kumar, Sharma B. Mishra, A. P. (2004), Efficiency of malathion on mortality of fresh water air breathing cat fish, *Heteropneustes fossilis* (Bloch) during different development stage. *Ecol. Env. And Cons.* 10(1):47-52.

[6] USEPA (2005), United states environmental protection agency.