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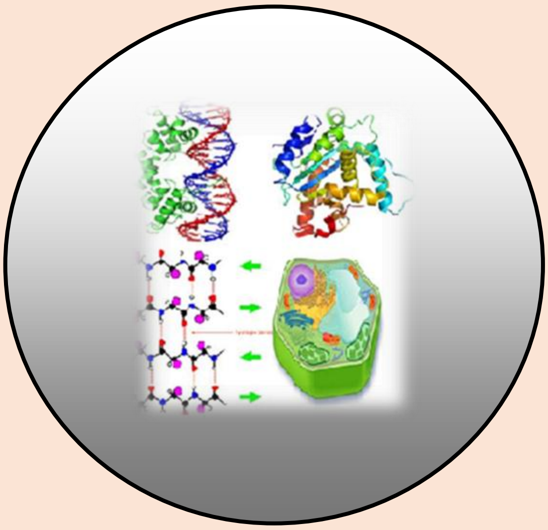

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RESEARCH PAPER

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Evaluation of Toxicity of Pesticide on Planktons

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ABSTRACT
In many water bodies, such as seas, lakes, streams, and swamps, significant biological production is carried out by plankton. Since planktons are profoundly sensitive to natural change they are best markers of water quality and particularly lake conditions. Pesticides are important pollutants in almost all types of water bodies. Konar and Mullick (1993) reported the toxicity of petroleum products, detergents, heavy metals and pesticides to protect aquatic life which is depicted in. Here it is found relevant to study the toxic behaviour of Pesticide on Cylops viridis and Diaptomus forbesi. Shows the toxicity of pesticide (organophosphate) organisms.
The experiments were also conducted to evaluate the dose and duration dependent response of planktons.
Key Word: Plankton, Zooplankton, Cylops viridis and Diaptomus forbesi, Pollutants Pesticide and organophosphate.

INTRODUCTION
In most freshwater ecosystems, zooplanktons are present, ranging from small temporary ponds to large permanent lakes. They exist in remote habitats, such as Antarctic lakes (Bayly, 1995) and near Mount Everest (Mancaeral, 1994), as well as in groundwater (Galassi, 2001). Many freshwater zooplankton species are small and relatively trans-parent (less than 1 mm long). The larval stages of fish (see later discus- Sion), some jellyfish that may reach a diameter of 2-3 cm (Dumont 1994) and some Australian Daphnia that may reach a diameter of 5-6 mm in the absence of predatory fish are exceptions. Owing to photo-protective pigments, some alpine zooplankton can have bright red or other colours (Hessen and Sorensen 1990. We are changing our environment at an unprecedented rate, which is faster than any natural adaptation mechanism and evolutionary process. However, we do not know much about what kinds of changes and how much of them can be tolerated without running the risk of local or even global collapse of natural ecosystem (Levin *et al.* 1989; Karr, 1991).

Most of the impact of the use of microcosms / mesocosms on the population system in ecotoxicology must be estimated due to the need for experimental monitoring that is not attainable in the field or practical necessity due to the extremely dangerous existence of certain pollutants. For many forms of toxicants, the response of taxonomic wealth as the endpoint of microcosm toxicity was relatively sensitive (Nederlehner et al. 1994, Yalavarth et al. 2002).

Many human activities are responsible for polluting the marine ecosystem, improving environmental conditions and thereby changing aquatic ecosystems (Mihaljevic et al. 2001, Koteswari et al. 2004).

Many human activities cause the environment to be contaminated, environmental factors to be altered, and therefore changes in the aquatic communities (Mihaljevic et al. 1998). Water contaminants may derive from point sources or non-point sources. Point sources of contamination, such as industrial discharges, spillage and municipal sewage treatment plants, are those that can be detected at one location (Awah, 2008, Anyinkeng et al. 2016). Pollution is one of the main specific threats to biodiversity (Little et al. 2001). The impact of human activities on the physical and biological environmental are a major part of the "human dimensions of global change". Human activities are changing the biophysical world locally, regionally and globally (Vitousek et al. 1997, Ayensu et al. 1999).

Ecology has taken a secondary role in the analysis of Eco toxicological problems in the past. It has largely been used to give context to studies of fundamental toxicology or to aid interpretation of data collected in the field. Where ecological insights have been applied; Guettinger (1993) evaluated Ecotoxicity of chemicals. He observed that if a species can apparently tolerate the abiotic condition at that place Guettinger (1993) pleaded not only to measure biological and abiotic factors at the same time and place but also to compile them in a databases and to make use of them to find generally applicable principles.

MATERIAL AND METHODS

Enumeration and sample collection procedure, test design

Glass tank size 35.5 x 15 x 10cm containing 4-liter filter water. The substance forms a hook in bottom of container at the center of each tank room temperature, under light and dark photo period condition. The substance obtaining from sample location after 14 days of colonization as the source. Each tank was randomly chosen for sampling as follows- 3, 7, 14, 21, 28 and 35 days of collection. Estimated pH, temperature, hardness, phosphate, nitrate and alkalinity. The 4% formalin fixed for sample collection of plankton for further analysis.

RESULTS AND DISCUSSION

Workers are the field of toxicology have reported the toxic behaviour of some pollutants on some Zooplankton organisms like *Cyclops viridis* and *Diaptomus forbesi.* Sarkar (1981), Mukhopadhyay (1983), Chattopadhyay (1987), Panigrahi (1988), Pal (1988) and Mullixk (1991) have reported toxicity of individual pollutants to the Zooplankton organisms *Cyclops viridis* and *Diaptomus forbesi.* A summary of these results are given in Table as reported by Konar and Mullick (1993) Heavy metals are important pollutants in almost all types of water bodies. Konar and Mullick (1993) reported the toxicity of petroleum products, detergents, heavy metals and pesticides to protect aquatic life which is depicted in.

Table 1. Toxicity of individual pollutants of Zooplankton on organisms in laboratory tests for 48hrs (After Konar and Mullick, 1993).

Pollutant	Test	Lethal concentration (mg/1)			Reference
	Organism	LC_5	LC_{50}	LC_{95}	
Zinc	*Cyclops viridis*	1.818	6.534	11.250	Mukhopadhyay (1983)
Copper	*Cyclops viridis*	0.200	0.990	1.640	Mukhopadhyay (1983)
Iron	*Cyclops viridis*	____a	86.5	279.000	Mullick and Konar (1991)
Lead	*Diaptomus forbesi*	____a	54.5	207.0	Mullick and Konar (1991)
Parnol-J	*Diaptomus forbesi*	0.005	0.278	0.574	Chattopadhyay (1987)
n-hexane	*Diaptomus forbesi*	5.00	732.500	1503.75	Panigrahi (1988)
Endosulfan	*Diaptomus forbesi*	____a	0.005	3.25	Mullick and Konar (1991)
DDVP	*Diaptomus forbesi*	0.024	0.074	0.123	Pal (1988)
Urea	*Cyclops viridis*	300.00	327.00	6230.00	Sarkar (1981)
SSP	*Cyclops viridis*	93.00	2550.00	4160.00	Sarkar (1981)

a Normally LC_5 value could not be estimated by graphical extrapolation.

Here it is found relevant to study the toxic behaviour of Pesticide on *Cylops viridis* and *Diaptomus forbesi*. Shows the toxicity of pesticide (organophosphate) organisms.

Table 2. Effect of pesticide on *Cyclops viridis* and *Diaptomus forbesi* for 48 hrs.

Organism	Lethal concentration mg/1		
	LC_5	LC_{50}	LC_{95}
Cyclops viridis	5.4	64.6	79.6
Diaptomus forbesi	4.6	60.2	70.2

The above findings were very much important and relevant in toxicity experiments. It was dose and duration dependent it is well established that planktons are natural bio-indicators of toxicity in water bodies. Planktons are further eaten by the fishes. Planktons and fishes play an important role in food chain.

CONCLUSION

Planktons play an important role in the ecosystem of our planet. Productivity including photosynthesis is highly important. Planktons are the indicators of toxicity so its study becomes important. Experimental design was made accordingly.

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