

# EFFECT OF ORGANIC PESTICIDES (ENDOSULPHAN AND THIMET) ON HISTOLOGICAL AND HISTOPATHOLOGICAL PROFILE OF OVARY OF FRESH WATER CRAB: *BARTYLPHUSA CUNICULARIS*.

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**Abstract**— Changes induced in ovary after exposure of fresh water crab *Barytelphusa cunicularis* to 0.14ppm of endosulphan and 2.45 ppm of thimet 10G were studied. The ovary shows the thin capsule of fibrous connective tissue enclosing the ovary has damaged. The outer thin epithelium and inner germinative epithelial layers were also damaged. The thin membrane covering the oocytes was also destructed and the follicle cells were atrophied. Vacuolation and fragmentation in the ooplasm were observed. Nutritive cells of oocytes were damaged. Endosulphan was found more toxic than thimet.

**Index Terms**—Organic pesticides, Histopathology, Ovary, Crab

## I. INTRODUCTION

Pesticides are the chemical products used for plant protection. They include Insecticides, Fungicides, and Herbicides And plant growth regulators. Residues of pesticides may remain in treated products and get into human food chain. There is no doubt that pollution of water has the direct effect on human activities. Indiscriminant discharges of different hazardous chemical into the water bodies, without pretreatments, are a major reason for water pollution.

According to Goksor and Lars (1992) the word aquatic pollution can be used for qualitative quantitative study of adverse or toxic effects of chemicals and other anthropogenic materials on the water quality and dwelling aquatic animals. The toxic effects of pesticides pollutant as vary species to species and organisms to organisms.

Pesticides are toxic chemicals used for pest control in agriculture, water, food storage, protection of wood and disease causing vectors to human beings. Once pesticides enter into the aquatic system, they either degrade to simpler compounds, as remain there as in original form, as mock back into the atmosphere by volatilization pesticides exist in a variety of chemical and biological forms including organochlorine, organophosphate pesticides. Pesticidal contamination arising out of field, chemical industries and

industrial effluents enter into ecosystem through aquatic reservoirs.

However there are very few reports on effects of pollutants on histopathology of crustacean gonads (Bodhke, 1983). Histopathological effects of various pollutants on crustacean reproduction has been studied by few workers (Gyananath et al., 1987, Rao et al. 1987). Pesticides, because of their potential toxicity and indiscriminate usage are known to produce morphological, anatomical and physiological changes in the vital organs such as reproductive, nervous, respiration and osmoregulatory etc. of different non-target animals (Fingerman, 1982).

## II. MATERIAL AND METHOD

The fresh water dam near small village Daulatabad situated 15 km. North-east of Aurangabad. Fresh water crab *Barytelphusa cunicularis* were selected for the present study. The crabs were acclimatized to the laboratory condition for two days in plastic trough. Healthy crabs having approximately equal size carapaces width 35mm and body weight 30-50 grams were used for experiments.

To study the histopathological lesions in the ovary, crabs were exposed to 0.14ppm of endosulphan 35 EC and 2.45 ppm of thimet 10G for 24hr (LC.50 For 24h).

## III. HISTOLOGY AND MORPHOLOGY OF OVARY

The histological structure of ovary of crab *Barytelphusa cunicularis* showed that entire ovary is enclosed by a thin capsule of fibrous connective tissue and associated cells. The capsule defines the intragonadal hemocoelomic space and separated ovary from the general hemocoel. Fibrous connective tissue separate the lobes of the mature ovaries. There are two types of cells in the ovarian lobes, the developing oocytes and the follicles cells. The color of ovary also shows variation during the course of development stages (Fig-1A-1B).

1. Immature stages -I: ovary is thin, white pale yellow in color.
2. Maturing stages-II: Dark yellow in color.
3. Viteiogenic-I. stage-III: Deep Dark yellow in colour, ovarian lobes are large.
4. Viteiogenic-II. stage-IV: Ovary is fully matured. Dark yellow in color.

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5. Spent resorptive stages-V: Ovary has aged mature oocytes.

## IV. HISTOPATHOLOGICAL CHANGES

EFFECT OF ENDOSULPHAN ON OVARY: The crab exposed to 0.14 ppm for 24hr showed that the thin capsule of fibrous connective tissue enclosing the ovary was destructed; the outer thin epithelium and inner germinative epithelial layer were damaged. The oocytes covering thin membrane was also damaged, and the follicle cells were destructed. Vacuolation and fragmentation in the ooplasm were observed pycnosis of nutritive cells and nucleus of oocytes (Fig-2)

## V. EFFECT OF THIMET ON OVARY

The crab exposed to 2.45 ppm for 24hr showed that the thin capsule of fibrous connective tissue enclosing the ovary was destructed; the outer thin epithelium and inner germinative epithelial layer were damaged. The oocytes covering thin membrane was also damaged, and the follicle cells were destructed. Vacuolation and fragmentation in the ooplasm were observed pycnosis of nutritive cells and nucleus of oocytes (Fig-3).

## DISCUSSION

Various types of pesticides are prove to be harmful to the crabs in freshwater, either directly or indirectly. Changes in the histological and histopathological structure are mainly directed to study the effect of organic pesticides (Endosulphan and Thimet) on the structural components of cell. The potentially toxic pollutants induce morphological, behavioural and physiological changes in the vital organ such as respiratory, nervous, osmoregulatory and reproductive etc. (Fingerman, 1982). Several investigations have examined in the histopathological effects of pesticides endosulphan and thimet on different organs of crabs.

Generally, the organochlorinated pesticides (Endosulphan) are more toxic than the organophosphate (Thimet) pesticides for fresh water crab *Barytelphusa cunicularis* in present study.

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