

HISTOPATHOLOGICAL CHANGES IN THE OVARY OF FRESH WATER CRAB, (*BARYTELPHUSA CUNICULARIS*) EXPOSED TO ENDOSULPHAN.

Jadhav T. J. and Shaikh J.D.*

Department of Zoology, Shivaji Arts Commerce, And Science College Kannad Dist. Aurangabad.M.S., India

*Department of Zoology, Maulana Azad College, Aurangabad. M.S., India

(E-mail: tanajjjadhav55@gmail.com)

ABSTRACT

Histopathological effects of sub-lethal dose of endosulphan have been studied on the ovary of fresh water crab *B. cunicularis* (Kapdnis and Yadav, 2011) after 24hr exposure shows 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 oocyte covering thin membrane was also damaged and the follicle cells were destructed. Vacuolation and fragmentation in the ooplasm were observed. Nutritive cells of oocytes were damaged.

KEY WORDS: *Barytelphusa cunicularis*, Endosulphan, Ovary.

INTRODUCTION

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 osmoregulatory etc. of different non-target animals. (Fingerman, 1982; Atul and Kulkarni, 2011). Methyl parathion and phoalsone induced several abnormalities in the ovary of immature and maturing crabs, *Scylla serrate* (Sharma *et. al.*, 1990).

MATERIAL AND MATHODS

The fresh water crab, *Barytelphusa cunicularis* were collected from Daulatabad Lake. The crabs were acclimatized to the laboratory condition for two days in plastic trough; Healthy crabs having approximately equal size (carapace width 35-45mm) and body weight (30-50gm) were used for experiments. To study histopathological lesions in the ovary the crabs were exposed to 0.14ppm of endosulphan 35EC. At the end of exposure period the experimental crabs dissected and ovary were quickly excised and fixed in aqueous bouins fluid. After fixation for 24 h the tissues were passed through 30% and 100% alcohol grades for dehydration and cleared in xylo. They were embedded in paraffin wax (MP-58-60C) and serial sections were cut at 7-8 micrometer. The sections of ovaries were stained in Delafield's heamatoxyline and used eosin -y as a counter stain (Bancroft and stevens, 1982).

RESULTS

Control Ovary

The histological structure of ovary of crab, *Barytelphusa cunicularis* showed entire ovary is enclosed by a thin capsule of fibrous connective tissue and associated cells. Fibrous connective tissue separates the lobes of mature ovaries. There are two types of cells in the ovarian lobes, the developing oocytes and the follicle cells. The color of ovary also shows variation during the course of development.

- Immature (stage I) ovary is thin, white to pale yellow in color.
- Maturing (stage ii) ovary dark yellow in colour.
- Vitellogenic-I (stage iii) ovary is deep or dark yellow in colour. The ovarian lobes are large and extend on the abdominal regions.
- vitellogenic-II (stage IV) ovary is fully matured and appears dark yellow colour.
- Spent restorative stage (stage V) ovary has aged oocytes almost of the same size that of the vitellogenic oocytes. In ova vacuoles appear. Vaculization extends slowly into the interior of ova and the last stage whole ooplasm is vacuolated. Oviduct and spermatheca joined together to ovary (Figure 1a). The oocytes covered with follicles cells. The ovarian follicles are filled with different types of maturing oocytes. The thin membrane oocyte has large rounded nucleus. (Figure-1).

EXPERIMENTAL OVARY

The crabs exposed to 0.14ppm for 24h of endosulphan, 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 oocyte covering thin membrane was also damaged, and the follicle cells were destructed. Vacuolation and fragmentation in the ooplasm were observed psychosis of nutritive cells and nucleus of oocytes. Thin capsule of fibrous connective tissue enclosing the ovary destructed. Follicular membrane was damaged. Vacuolation in the ooplasm was prominent. (Figure 2).

DISCUSSION

Changes in the histological and histochemical structure are mainly directed to study the effect of organic pesticides on the structural components of cell. The present histopathological study on fresh water crab *Barytelphusa cunicularis*

exposed to endosulphan long term as 24h to 96h. Several investigations have examined the histopathological effects of organic pesticides like endosulphan, endrin and aldrin etc on different organs of fish and crab. (Machale et al. 1990). Various types of pesticides are proving to be harmful to the fresh water crab and other aquatic animals, either directly or indirectly. (Kharat et al., 2011). Studies indicate that organochlorine pesticides (Endosulphan) more toxic to aquatic crab.

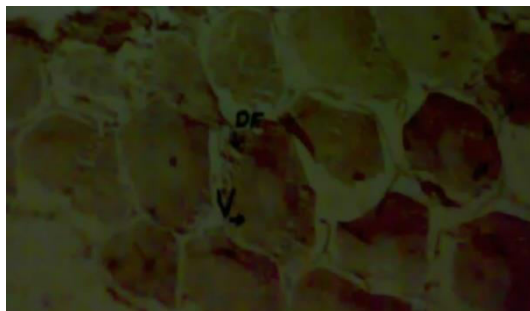


Figure 1. T.S. ovary of normal (control) crabs *B. cunicularis*. Stained with haematoxylin and eosin x100.
1) N-Nucleus. 2) O-Oocytes. 3) YG-Yolk-globule. 4) YR-Yolk-granules.
5) F.M-Follicular membrane.

Figure 1a. T.S. of spermathica normal (control) crab *B. cunicularis*. Stained with haematoxylin and eosin x100



Figure 2. T.S. of ovary of crab, *Barytelphusa cunicularis* showing the effect of 0.14ppm endosulphan for 24hr. Stained with haematoxylin and eosin x 100.



1) DF-Destructed fibrous. 2) V-Vacuole.

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