Indian J.L.Sci.3(2) : 87-89, 2014

ISSN : 2277-1743 (Print)
ISSN : 2278-7879 (Online)

EFFECT OF CYPERMETHERIN ON THE OVARY OF FRESHWATER FISH *Channa striatus*

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ABSTRACT

Now day's enormous use of pesticides is the issue of increasing in pollution which affects the non targeted organisms. Animal living in the water are exposed to the pesticides are used in the agriculture field. The present study was carried to measure the impact of pesticide cypermethrin on the gonad that is ovary of freshwater fish *Channa striatus*. Alteration of ovary showed the structural, physiological and morphological changes in freshwater fish *Channa striatus*. Oocyte showed shrinkage and interfollicular oedema, as well as yolk of the oocyte cells showed damage and rupture membrane of the oocyte showed stromal hemorrahage was observed.

KEYWORDS : *Channa striatus*, ovary, cypermetherin, stromal hemorrahage

Pollution is the impairment of the quantity of some part of the environment of quality and by addition of harmful impurities. The increased use of insecticides in agriculture has contributed to the improvement of agriculture production. However many adverse effects have been recognized. The mode of action of these compounds has been subjected to intensive study. Like that pollutants the domestic sewage is also biggest harmful substances this sewage accumulates day by day and it is hazardous to environment not only in rural areas pollution it posed a threat for the survival of fish and other aquatic organisms in the estuarine ecosystem but also in urban area. The sewage is mixed with water sources and caused the, water quantity and even anesthetic quantity

Use of different pesticides in agriculture to prevent the crop from pest has increased especially in developing countries Santhakumar and Balaji, 2000. These pesticides, even when applied is restricted areas are washed and carried away by rains and flood to large water bodies like ponds and river and alter the physiochemical properties of water which are proved to be highly toxic, not only to fishes but also to other organisms, Madhav Prasad et al., 2002. The well documentary effect of pesticides on the physiology of fish includes its effect on reproductive organs. Cypermrthrin is a synthetic pyrethroid used widely to control a variety of insect pest, Crossdland, 1982 state that low concentration of cypermethrin is toxic to many species of aquatic organism. Increase use of pesticides not only helped in controlling insects and pests but also threaten to environmental contamination specially hazardous to aquatic fauna.

MATERIALS AND METHODS

The experimental fish of *Channa striatus* were collected from the local Wadali lake around Amravati region. They were washed with $KMnO_4$ solution to avoid dermal infection the fish were acclimatized to the laboratory condition for 15 days. During this period fish were fed on commercially available food .For experimental purpose the pesticide mixture was prepared by dissolving sufficient amount of pesticides in 1000 ml of water. A calculated quantity of stock solution was added to the water in the experimental aquarium. All fishes of average size that is (10-13cm) and weight (13-25gm) were used. After acclimatization of 10-15 days fishes has become divided into two groups:

GROUP I - Control fishes

GROUP II Experimental treated fishes

Group I fishes was kept in the cypermethrin free water and served as control and Group II freshwater fishes *Channa striatus* were treated to sub lethal concentration of synthetic parathyroid a cypermethrin. The LC_{50} values were calculated 0.00078 µl/lit at 96 hrs exposure period.

Then after the interval of 24, 48, 72, 96 hours from each group fish was taken out for the dissection and dissected out ovary of both controlled and treated fishes of different time interval. For observed the effect of cypermethrin an ovary of *Channa striatus*, after dissection proceed for the histological slide preparation and slides observed under the microscope.

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Plate 1 : Ovary of control *Channa striatus*

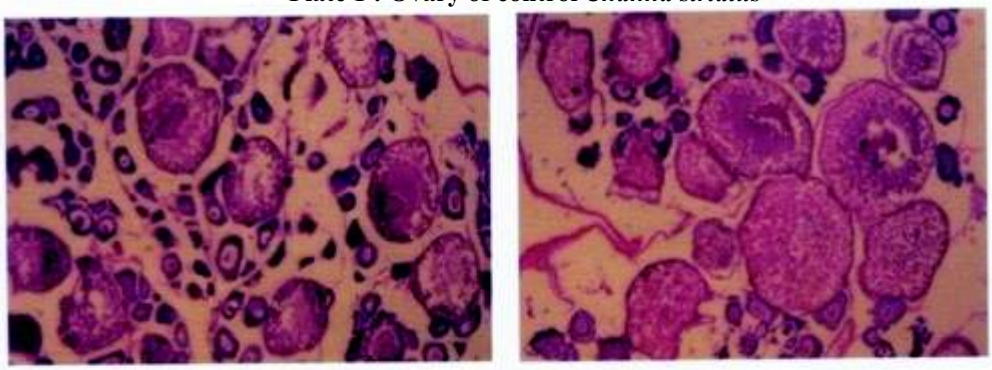
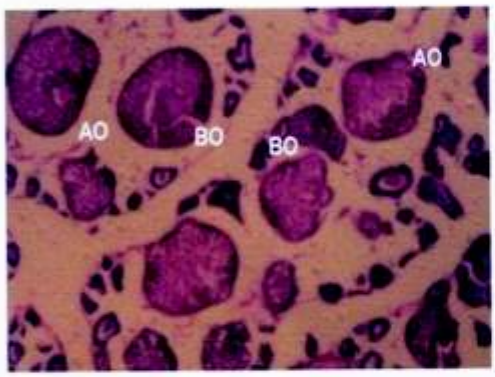
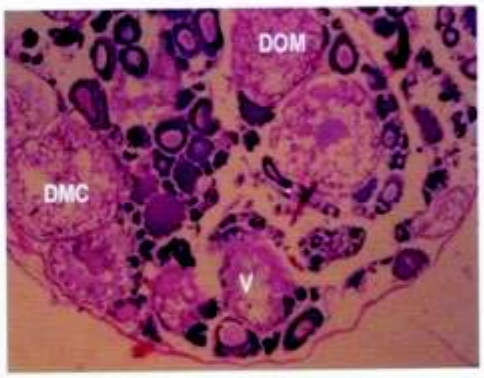


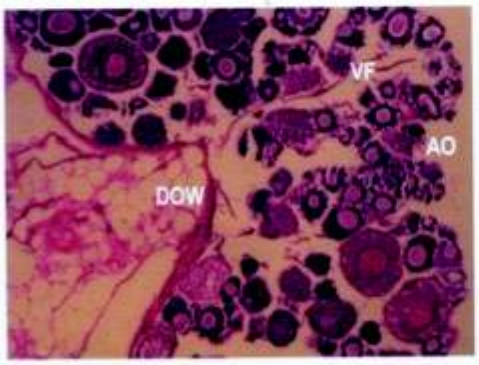
Plate 2 : Effect of sublethal concentration of Cypermethrin exposed to fresh water fish Channa striatus at different hours



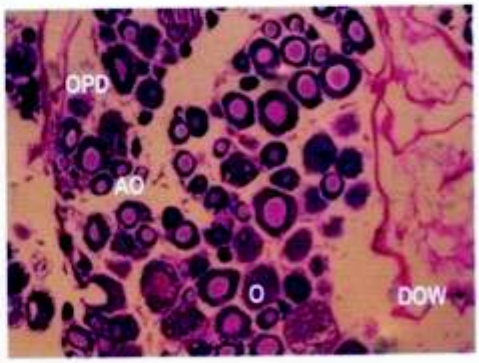
24 Hours



48 Hours



72 Hours



96 Hours

BO - Breakage Oocyte
YFO - Yolk Floats Outside
OPD - Ooplasam Disrupt
DMC - Disrupt of Matured Follicle
V - Vacuolation

AO- Atretic Oocyte
DOM - Disorganised Membrane
VF - Vacuole Formation
DOW - Disorganised Ovrianl Wall
O - Odema

OBSERVATIONS AND RESULTS

In the present study freshwater fish *Channa striatus* exposed to sub lethal concentration of cypermethrin showed the structural, physiological and morphological changes. The treated fish observed flabbyed and degenerative ovarian follicle. It showed degeneration and nacrosis in oocytic cells. Also showed shrinkage and interfollicular oedema in oocyte. The yolk of the oocyte cells showed damage and rupture membrane of the oocyte. Stromal hemorrahage were observed as compared to normal fish ovary. Treated fish ovary showed atretic oocyte, irregular shaped of oocyte. Also showed floating of contents due to rupture of cell membrane, so vacuole formed at the center of the oocyte. The Ovarian follicle rupture, ooplasm of the ovarian cells was disorganized. The stromal hemorrhage clearly observed .In this present investigation the ovary of fresh water fish *Channa striatus* exposed to cyermethrin were found to the disrupt, rupture and degenerate. Primary and secondary growth of oocyte was highly affected due to pesticide. Accumulated and forms vacuole. Atretic oocyte membranes of degenerated oocyte were observed prominently (Plate 1 and 2).

DISCUSSION

In the present study synthetic pyrethroid a cypermethrin was treated with fresh water fish *Channa straitus*. The Oocyte cell showed histological and morphological changes. Similar finding were observed by Dutta (1996) showed low concentration of fenetrothion and carbaryl arrested the vitallogenic growth of oocytes in *Channa punctatus*. Also observed in *G. giruris* exposed to sub lethal levels of malathion resulted in significant reduction in the ovarian weight and affected primary oocyte and impairment of vitellogenesis; Adityakumar et al., 2002, Chandra et al., 2004, Ghosh and Nath, 2005.

Similar findings by Khillare, 1992 observed oocyte maturation and arrest of oocyte development in tertiary yolk stage; Lee and Yang, 2002 observed at the dose of 100 ppm of sumithion, fragmented ova with abnormal shape and arrangement were observed in the experimental fish as compaired to normal. Jyothi and Narayan, 1999 reported the impact sub lethal concentration of carbaryl on the ovary of *Clarias batrachus* arrest of ovarian growth.

CONCLUSION

In the present study indicated that the pesticides cypermethrin exposed to fresh water fish *Channa straitus* at different time duration, Which affected the ovary of fishes, the disturb, rupture and degenerate ovary as compared to normal. So concluded that the very lower concentration of pesticides affect the physiology of fish , due to this it impact on yielding of the fishes.

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