ENDOSULPHAN IS A BROAD SPECTRUM. NON-SYSTEMIC ORGANOCHLORINE COMPOUND OF CYCLODIENE GROUP, EXTENSIVELY USED IN PLACE OF ENDRIN, TO CONTROL A VARIETY OF PESTS. IT IS THE MIXTURE OF TWO STEROISOMERS, ALPHA AND BETA AND LATER IS HIGHLY SOLUBLE IN SOIL AND OTHER MEDIA. THE CHEMICAL NATURE AND SOLUBILITY OF THE METABOLITE, MAKES ENDOSULPHAN MORE POTENTIALLY TOXIC TO FISH AND OTHER AQUATIC ORGANISMS. THE TOXICITY ENDOSULPHAN TO AQUATIC INVERTEBRATES HAS BEEN REPORTED. ITS EFFECT ON OXYGEN CONSUMPTION PHOSPHOMONOESTERASES BLOOD GLUCOSE AND OTHER CONSTITUENTS HAS BEEN REPORTED. IT IS KNOWN THAT INSECTICIDES CAUSE VIOLENT PHYSIOLOGICAL ACTION UPON NERVOUS, DIGESTIVE AND REPRODUCTIVE FUNCTIONS OF THE ANIMALS. UNCONTROLLED RELEASE OF NEUROHORMONES AFTER INSEC-TICIDAL TREATMENT WAS OBSERVED IN RHODINUS PROLUXUS. MAD-DRELL AND CACIDA (1971); MADDRELL AND REYNOLD (1972) AND IN PERIPLANETA AMERICANA, GARNETT AND LEELING (1972). HISTOPATHOLOGICAL CHANGES IN THE NEUROSECRETORY CELL AFTER INSECTICIDAL TREATMENT WERE REPORTED IN INDONARIA CAERULEUS AKARTE ET AL. (1982) IN LAMELLIIDENS MARGINALIS AND L. CORRIANUS MULEY (1988 AND) IN RAPREYSSA CEROTTAE (1990). LC50 VALUES FOR ADULT PRawn MARACRUMMUS KISTNESS WERE CALCULATED AFTER EXPOSURE TO ORGANOCHLORINE INSECTICIDES ENDOSULPHAN. THE NEUROSECRETORY ACTIVITIES OF A TYPES OF CELLS. THEY ARE DIFFERENTIATION A1,A2,A3,A4 WAS OBSERVED TO BE INCREASED AT THE CORRESPONDING CONCENTRATION FOR EXPOSURE PERIOD 24,48 AND 96 HOURS THE CELL SIZES ARE INCREASED AND 72 HOURS THE CELL SIZES ARE DECREASED. THE CYTOLICAL PICTURE WAS ALTERED BY FORMATION OF VACUOLES, UNDULATION AND DISTORTION OF THE CELL WALL IN THE A CELLS TYPES. THE NEUROSECRETORY ACTIVITY IN B CELL SHOWED THE SYNTHETIC ACTIVITY BY 24, 48,72 AND 96 HOURS; IT DECREASED CELL SIZE THE CYTOARCHITECTURE WAS DISTURBED WHICH INCLUDE CLUMPING OF CHROMATIN, UNDULATION OF CELL ENVELOP AND DAMAGE OF NEUROPHILE. THE NEUROSECRETORY ACTIVITY IN C CELLS (C1 AND C2) SHOWED INCREASED SYNTHETIC ACTIVITY IN 24, 48, 48, 96 HOURS, IT DECREASED CELL SIZE THE CYTOARCHITECTURE WAS DISTURBED WHICH INCLUDE CLUMPING OF CHROMATIN, UNDULATION OF CELL ENVELOP AND DAMAGE OF NEUROPHILE. THE NEUROSECRETORY ACTIVITY IN C CELLS (C1 AND C2) SHOWED INCREASED SYNTHETIC ACTIVITY IN 24, 48, 96 HOURS AND IN 72 HOURS DECREASED SYNTHETIC ACTIVITY, THIS MAY BE AN INITIAL RESPONSE IN THE EMERGENCY TO PESTICIDAL TOXICITY.

**ABSTRACT**

LC50 values for the adult millipede Anoplodesmus tanjoricus were calculated (0.025 ppm concentration up to 96 hours) after exposure to an organochlorine insecticides endosulphan. The neurosecretory activities of A types of cells. They are differentiation A1,A2,A3,A4 was observed to be increased at the corresponding concentration for exposure period 24, 48, and 96 hours the cell sizes are increased and 72 hours the cell sizes are decreased. The cytological picture was altered by formation of vacuoles, undulation and distortion of the cell wall in the A cells types. The neurosecretory activity in B cell showed the synthetic activity by 24, 48,72 and 96 hours; it decreased cell size the cytoarchitecture was disturbed which include clumping of chromatin, undulation of cell envelop and damage of neurophile. The neurosecretory activity in c cells (C1 and C2) showed increased synthetic activity in the 24, 48, and 96 hours and in 72 hours decreased synthetic activity, this may be an initial response in the emergency to pesticidal toxicity.
material, undulation of cell envelope and loss in damage of neuropile. The C/N ratio decreased and it is inversely proportional to rate of synthesis.

In the B cell the chromatin material was affected and was not intact but pesticide caused clumping of chromatin material in B cell. During long term exposure, formation of vacuole as well as undulation and distortion of cell wall was observed. The C/N ratio increased and it is inversely proportional to rate of synthesis.

In C1 and C2 cells, there was a significant increase in cell as well nuclear diameter. The C/N ratio decreased and it is inversely proportional to rate of synthesis. The neurosecretory activity which includes synthesis as well as transport of neurosecretory material was thus accelerated under the influence of endosulphan. The chromatin material inside the nucleus was intact but the cell wall and neuropile region was slightly distorted and vacuoles were visible.

DISCUSSION

In the present investigation the effect the endosulphan on the oval, pyriform, spherical cells from cerebral, visceral, suboesophageal, ventral ganglion were studied in relation to pesticide. Number of worker (Nanda, 1974; Nagabhushanan et al., 1992) have observed various histopathological changes like vacuolization in the perikarya, undulation of the cell boundaries, clumping of the chromatin material, altered compactness of neurosecretory cells, alteration of nuclear and cytoplasmic area, staining properties and neurosecretory activity of NSCs.

The identification of the histological section of the NSCs found in the brain Visceral, suboesophageal and ventral ganglion reveals some interesting features. In arthropods it is a well established fact that neurosecretory products function as neurohormones which synchronize various physiological activities. This is further strengthened by the facts that one or more types NSCs may be responsible for the increase in the size of the reproductive and associated structures.

In the present investigation it was observed that pesticidal stress altered C/N ratio drastically. Study of C/N ratio NSCs is the best parameter to know the responses of the cells to the pesticidal stress. It was also observed that in the initial stage of poisoning the C/N ratio was decreased, indicating increase in synthetic activity. An enhanced synthetic activity may be correlated to extent of pollution stress and to maintenance of homeostasis in the internal environment. However, as exposure period was increased, the C/N ratio was increased over the control NSCs. This indicates that long duration of pesticidal stress hampared the synthetic activity of neurosecretory cells. The functional status of neurosecretory element is linked with changes in the size of the nucleus and nucleolus and may be considered as the index of cell activity (Ortman, 1960 and Ghosh et al., 1968). In the present investigation it was noted that the areas of nucleus and nucleolus is altered. The chromatin material in the nuclei of neurosecretory cells treated with pesticides, become so immobilized after clumping that it was unable to act with other cellular constituents.
After endosulphan exposure in Anoplodesmus tanjoricus the cell and nuclear size in A and C cells was increased at initial stage followed by decrease in middle stage and again increase at the final stage. The chromatin material of these cells was intact and almost unaffected it was interesting to note that reverse changes were noticed in Anoplodesmus tanjoricus in B cell, after endosulphan exposure cell and nuclear size was decreased . The chromatin material of B cell was significant as there was formation of big vacuoles as compared to A and C cells. The alteration noticed in the neurosecretory cells of Anoplodesmus tanjoricus during present study are almost similar to that reported in Prawn, Macrobranchium kistnesis, Mirajkar and Sarojini (1985).

**REFERENCE**

Akarte, S.R.; D.V. Muley; V.V. Hiwale and U.H. Mane (1982): Effect of Commercial and technical grade malathion on a fresh water bivalve, Indonia caeruleus (Pallas, 1918) from Godavari river at Paithan. Proc. of the all India sym. held at Aurangabad. 9-11 Dec (1982)Pp. 117-123. | Gomori,G., (1941): Observation with different stains on human lizards of langerhans. Amer. J. Pathol. 17: 395-406. | Ghosh, J.J.; Ghosh, S.; Chanda, S.; Sikdar, K. and Bhaduri, S. (1968): Science and Culture, 34-62. | Garnett, J. and Leeling, N.L. (1972): Ann. Entomol. Soc. Amer. 65, 299-302. | Gomori,G., (1941): Observation with different stains on human lizards of langerhans. Amer. J. Pathol. 17: 395-406. | Maddrell, S.H.P. and Cacida, J.E. (1971): Natural London, 231: 55-56. | Maddrell, S.H.P. and Reynolds, S.E. (1972): Release of hormones in insects after poisoning with insecticides. Nature London, 236: 404-406. | Mirajkar, S.S. and Sarojini, R. (1985): Role of Endosulphan in the release of neurosecretory hormones from the cerebral ganglia of the prawn Macrobranchium kistnesis. Proc. Ist Symp. Comp. Endoc. Invert., 8-12. | Muley, S.D. (1988): Reproductive physiology of lamellibranch molluscan Maharashtra state. Ph.D. Thesis Marathwada University, Aurangabad. | Nagabhushnam, R.; Hanumante, M.M.; Mirajkar, M.S. and Kulkarni, G.K. (1979): Hydrobiology 62 (3): 268. | Nanda, D.K. (1974): Impact of insecticide of the brain neuroganglular element of Periplaneta americana. Wissenschften D.C. Nature 61 (10): 451-452. | Nagabhushanan, R.T.; Reddy, S.N. and Sarojini, R. (1982): Impact of organophosphates on neurosecretory cells in the cerebral ganglia of fresh water prawn, Caridina Webb. Proc. of the all India Sym. Held at Aurangabad. 134-138. | Ottman, R.C. (1962): American Physiol. Soc. Washington D.C. (2): 1039-1061. | Sarojini, R. and Mirajkar, S.S. (1982): Effect of organophosphorous insecticide dimicron on the neuroprofile (Brain) of fresh water prawn, Macrobranchium kistnesis. Proc. of the all India Sym. Held at Aurangabad, pp 124-132. | Thorat, D.H., (1990): Reproductive Physiology of the fresh water Bivalve, Pararaysia corrugata. Ph.D. Thesis, Marathwada University, Aurangabad.