was one of them. The present study also suggested that nematode density was not strictly related to root diameter but was probably time-dependent *i.e.* the duration for which the root was subjected to infestation.

Earlier, it was found[5] that at Kariavattom *H. multicinctus* was the most predominant nematode affecting *Musa paradisiaca*. The present study showed that *R. similis* was the most abundant nematode in the necrosed roots of banana followed by *H. multicinctus*. Thus in the course of about five years *R. similis* attained a more dominant status as the root parasite of the banana plant, compared to *H. multicinctus*, in the same locality.

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EFFECT OF DIMETHOATE ON CHOLINESTERASE ACTIVITY IN THE ORGANS OF A TELEOST *H. FOSSILIS*

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COMPARED to the investigations on bioassay tests to assess the mortality rate and histopathological lesions, very little attention has been paid to study the effect of insecticides on the biochemical changes in the vital organs of the animals. Inhibition on acetylcholine sterase enzyme in the brain and serum has been reported in the fish exposed to organophosphorus compounds[1,2] which are widely used to protect the crops from the pests. The present study reports the changes in ChE activity on the liver, kidney and brain of a teleost *H. fossilis* exposed to sub-lethal concentration of dimethoate.

Maintenance and size range of the fish used in the experiment have been described earlier[3]. The fish were exposed to a sub-lethal concentration *i.e.* 10 ppm of dimethoate (30% E.C. Gujarat Agrochemical Industries, Ahmedabad) for 48 days. The 96 hr-TLm value had already been worked out[3]. The fish were sacrificed from the normal as well as treated tanks at eight-day intervals upto 48 days. ChE activity was estimated by using the method of Huerga *et al*[4].

Table 1 shows the ChE activity in the liver, kidney and brain of the normal as well as treated fish. During the first 16 days of treatment with 10 ppm of dimethoate, the ChE activity of all the tissues showed a decline. Thereafter the tendency was for recovery showing normal activity with minor fluctuations in the liver and the brain by the end of 24th day. The activity again declined in the tissues of treated fish.

TABLE 1

Effect of dimethoate (10.0 ppm) on the ChE activity in the organs of H. fossilis

Exposure period (days)	Liver	Kidney	Brain
Normal	0.33 ± 0.04	0.38 ± 0.04	0.55 ± 0.04
8	0.32 ± 0.02	0.33 ± 0.00	0.33 ± 0.04
16	0.31 ± 0.04	0.23 ± 0.03	0.24 ± 0.02
24	0.33 ± 0.00	0.26 ± 0.00	0.52 ± 0.04
32	0.20 ± 0.03	0.17 ± 0.00	0.45 ± 0.02
40	0.25 ± 0.03	0.21 ± 0.03	0.49 ± 0.02
48	0.21 ± 0.04	0.22 ± 0.04	0.50 ± 0.01

Activity of enzyme is expressed as μ mole/100 mg/hr values expressed are mean ± S.D. of 6 individuals.

The organophosphorus compounds are known to inhibit ChE activity[5,6]. These compounds which act as inhibitors combine with cholinesterase through the electrophilic *p* atom to form an irreversible enzyme inhibitor complex and the cholinesterase becomes unhydrolysed[7,8]. During the present work the activity of ChE however became normal in the liver and brain

during the third week even when the fish were maintained in the polluted medium. Such recovery in ChE activity has also been observed earlier[9,10] in the vertibrates including the fish.

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OCCURRENCE OF EURYDENDROID CELLS IN THE METENCEPHALON OF *NOTOPTERUS CHITALA* (HAM)

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THE metencephalon comprises two parts, the corpus cerebelli and valvula cerebelli. Each consists of the usual three layers, *viz.*, molecular, Purkinje and granular (figure 1). In *N. chitala*, besides the Purkinje cells, a few giant cells are also present in both corpus and valvula cerebelli. The Purkinje layer could thus be termed ganglionic layer.

The giant cells are large and few in number as compared to the Purkinje cells. They are mainly pear-shaped, some rounded, and are scattered among the Purkinje cells. These giant cells referred to as eurydendroid cells.

Each eurydendroid cell comprises a large axon and several short dendrites. The faintly visible axon enters the granular layer where it synapsis with the dendrites of the granular layer neurons. The dendrites of the eurydendroid cell synapse with those of the Purkinje cell and also with the axons of the neurons of molecular layer (figure 1).

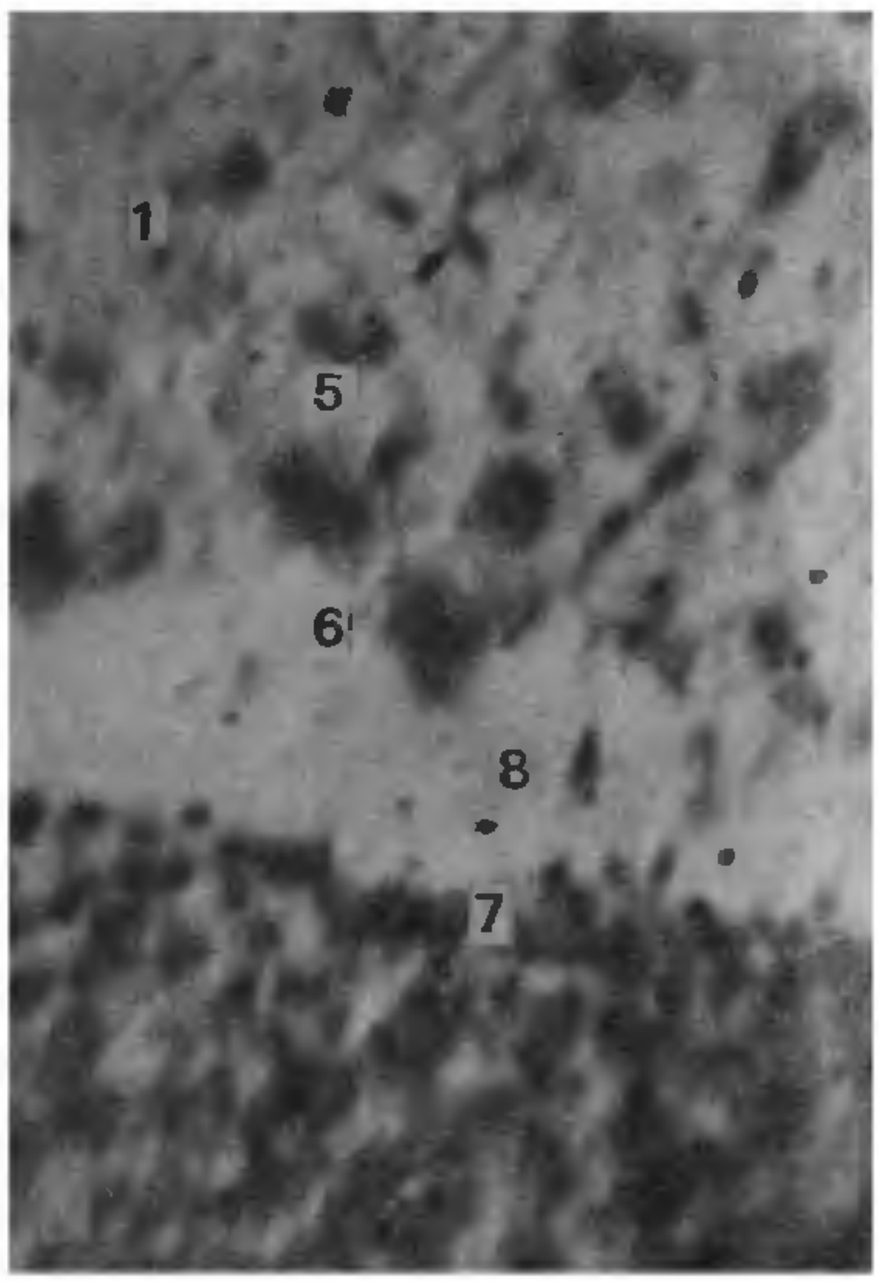

Figure 1. A part of valvula cerebelli of *N. Chitala* showing the synaptic formation in neurons × 1000 (1 = molecular layer, 5 = Purkinje cell, 6 = eurydendroid cell, 7 = neuron of the granular layer, 8 = synapse).

The axons of the granular neurons after traversing the ganglionic layer enter the molecular layer where they arrange as parallel fibres. Nieuwenhuys and others[1,2] reported that the axons of the granular neurons form T-shaped junctions in the molecular layer; these are absent in the present species. The molecular layer mainly comprises the fibres but a few scattered neurons are also present.

It is believed that the eurydendroid cells act as powerful transmitters whose axons and dendrites synapse with the Purkinje cells and the neurons of the granular and molecular layers. This forms the intercommunicating system for quick transmission of nerve impulses in the metencephalon.

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