The Asian Journal of Animal Science (December, 2010), Vol. 5 Issue 2 : 225-227 | RESEARCH ARTICLE

Effects of Sublethal concentrations of Dimecron on Acid Phosphatase (ACP) and Alkaline Phosphatase (ALP) activities in hepatopancreas and foot of freshwater mussel, *Lamellidens marginalis* (Lamerck)

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ABSTRACT

Changes in acid phosphatase (ACP) and alkaline phosphatase (ALP) activities in hepatopancreas and foot of freshwater mussels; *Lamellidens marginalis* (Lamerck), when subjected to increasing sublethal concentrations of Dimecron and over a time period of exposure were observed. At the end of each exposure period, acid and alkaline phosphates activities observed and are discussed in relation to the concentrations of Dimecron insecticide in the test solution.

Key words : Dimecron, Acid phosphatase (ACP) and Alkaline phosphatase (ALP), *Lamellidens marginalis*.

The insecticides like carbamate, organophosphate and organochloride are regularly used in agricultural pest management for agricultural food production but through their excessive and indiscriminate use in agricultural pest management and public health operations to eradicate disease vectors are being translocated into these pesticides. More recently changes in enzyme concentrations are being employed in the evaluation of toxicological response. Within the past few years toxicologists have developed interest in studying the response of individual enzyme or groups of enzymes to toxic insult. Dimecron insecticide is widely used in controlling agricultural pests. These pesticides pose a critical stress on the non-target aquatic biota like certain crustaceans including crabs and prawns aquatic micro and macro-organisms, which are economically important using as a food for human being. These pesticides or compounds readily pass through cell membranes and alter the activities of several key enzymes Onikiano, 1964 and Gruzdev, 1983. Any chemical as pollutant in sublethal concentrations disturbs the biochemical pathways either by non-functioning of enzymes or by inhibition. More information on the effect of toxication ACP activity in fishes is comparatively meagre. Koch (1969) and Hinton *et al.* (1973) observed activities of several enzymes. Kshirsagar and Patwardhan (1959) observed inhibition of ACP and ALP activity after feeding stable strontium. Rajkumar *et al.* (2008) observed effect of fenvalerate on alkaline phosphatase activity on freshwater fish, *Channa punctatus*. Large number of enzymes play an important role in metabolisms. The synthesis and final concentration of enzyme are under genetic control and is greatly influenced by small molecules like toxicants. Hence, in the present investigation authors have recorded the effect of sublethal concentration of Dimecron on acid and alkaline phosphatase activities in freshwater shell fish, the bivalve, *Lamellidens marginalis* (Lamarck).

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MATERIALS AND METHODS

The freshwater mussels, *Lamellidens marginalis* were collected from local river with same size and weight. These were acclimatized in laboratory conditions for one week. After acclimatization, the freshwater mussels were then exposed to three sublethal concentrations of LC50 95hrs. *i.e.* 0.6×10^{-2}; 1.2×10^{-2}; 1.8×10^{-2} of Dimecron. A control group was maintained for each observation period. The observations were recorded after 24, 48, 72 and 96 hrs. The ACP and ALP activities of hepatopancreas and foot were estimated by employing the usual method

RESULTS AND DISCUSSION

The acid phosphatase (ACP) activity in hepatopancrease and foot level were significantly decreased with increase in sublethal concentrations of