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EFFECT OF ORGANOPHOSNORUS PESTICIDE, EKALUX (EC 25) ON TRANSAMINASES ACTIVITY 0F *CLARIUS BATRACHUS*

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Abstract:
Sublethal dose (0,525 ppm) of an organophosphorus Pesticide, ekalux increases the activity of Canine amino-transferase (ALAT) and aspartate aminotransferase (AAT) in liver, kidney, gills and muscle of a *Clarius batrachus* gradually. The maximum increase in activity was observed after 30 daysof exposures; Increase in the activities suggests catabolism of amino acid which further leads into gluconeogenesis
Keywords: pesticide, aquatic pollution, teleost, aminotransferase.

Introduction

The use of pesticides has introduced a new hazard to fishes. major group of pesticides Constitute organophosphoruscompounds. The organophosphorus pesticide (OP) has relatively shorter persistence, hence they are being extensively used inpest control operations, it can be dangerous when mishandled or wrongly used. The different Physiological changes are produced by the OP in the freshwater teleost, *Sarotherodon mossumbicus* and *Channa striatus* when exposed to lethal concentration (1 and 2). In the recent years study of different pesticides on aquatic fauna particularly fish has received the attention of number of investigators, the present study is carried out to understand the toxic effect of the organophosphorus pesticide, ekalux on intermediary enzymes of protein metabolism in a fresh water . The intermediary enzymes of protein metabolism like alanine aminotransferase (ALAT) and aspartate aminotransferase (AAT)activity in liver, kidney, gills and muscle of the fish are considered in this study.

Materials And Methods

Adult and healthy fishes *Channa gachua* (total length15—18 cm and weight 20—30 g) were procured from 'Vainganga River Pavani Dist. Bhandara, The fishes were acclimatized in glass aquaria to the sheltered conditions of laboratory environment for 7 days. Fishes in three batches of 10 each were exposed 0. 525 ppm ofekalux (Sublethal concentration) for 10, 20 and 30 days. Simultaneously, ten fishes maintained in tap water served as the control,4 Fishes were fed with live earthworms at an interval of three days to avoid the effect of starvation on enzyme activity. On completion of ekalux exposure, each group of fish were stunned to death and liver, kidney gills and muscles were isolated For the assay of ALAT and AAT, thetissues were homogenised in 0. 25 M sucrose solution and centrifuged at 3000 rpm for 15 minutes to remove cell debris. The ALAT and AAT were estimated by the colorimetric method of Reithman and Frankel (1957) as described by Bergmeyer (3). The soluble protein was estimated using Biuret reagent (4)

Data were analysed for statistical difference by student't' test.

Results

The aspartate aminotransferase (AAT) activity exhibited an increasing trend following sublethal exposure to ekalux. The increase in AAT activity in liver, kidney, gills and muscle is in significant (Fig. 1) after the exposure for 10 days, whereas after 20 and 30 days of exposure, increase in the activity in the tissue was found to be significant (Figs. 2and 3). The maximum increase was observed after 30 days ofexposure. The AAT activity increased by 26,878 % in liver,28. 098 % in kidney, 34. 891 % in gills and 35,137 S in muscle (Fig. 3).

The alanine aminotransferase (ALAT) activity also showedan increasing trend after exposure to ekalux. The maximum increase was observed in liver (21,488 5; P∠ 0. 01) followed by that in muscles (19,735 5; P ∠0. 01), kidney (19. 158 5; P ∠0. 01) and gills (14,113 5; P∠ 0, 01) after 30 daysexposure.

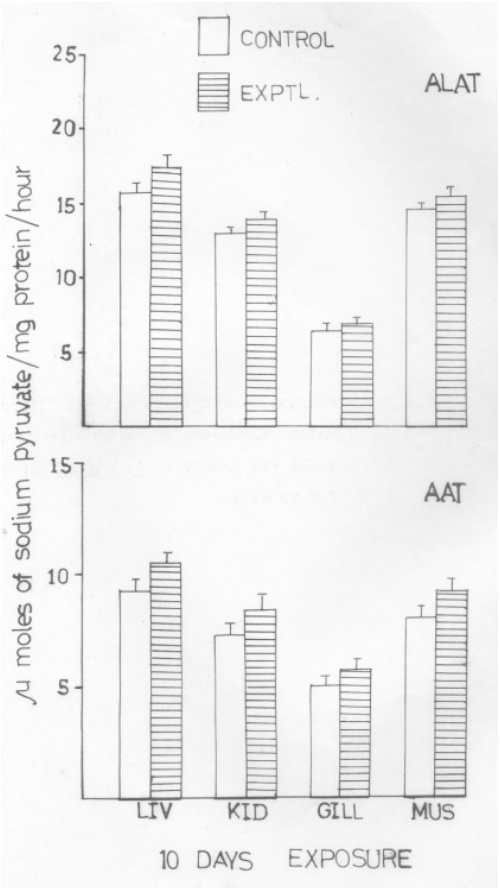

Figure 1. Alanine aminotransferase (ALAT) and aspartate aminotransferase activities in liver, kidney, gills and muscle of *C. batrachus* exposed to ekalux for 10 days.

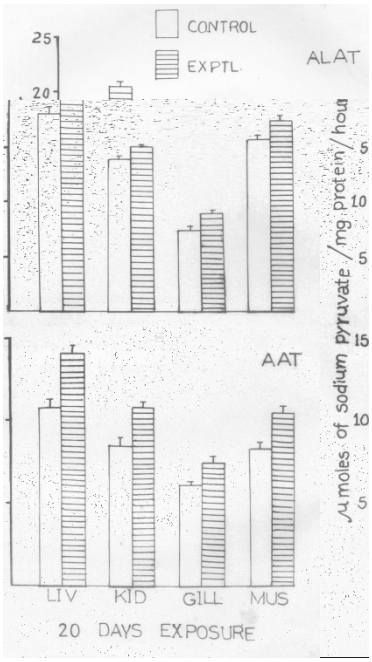

Figure 2. Alanine aminotransferase (ALAT) and aspartate aminotransferase activities in liver, kidney, gills and muscle of *C. batrchus* exposed to ekalux for 20 days.

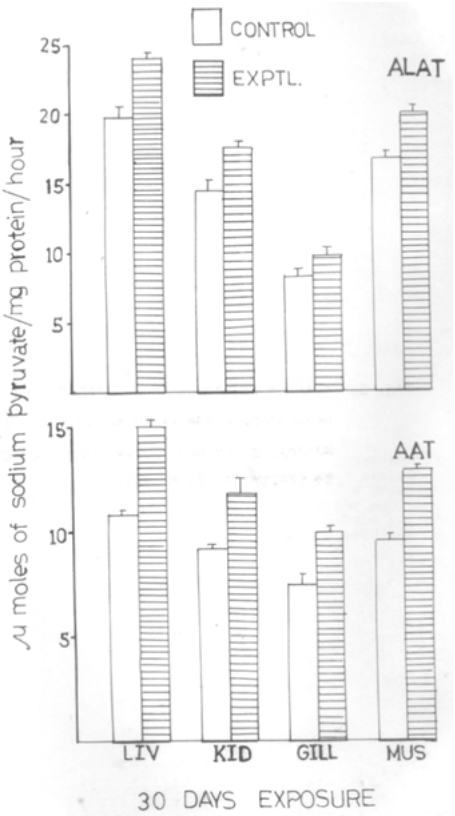

Figure 3. Alanine aminotransferase (ALAT) and aspartate aminotransferase activities in liver, kidney, gills and muscle of *C. batrchus* exposed to ekalux for 30 days.

Discussion

Transaminases activity takes part in transamination reactions in all living organisms. Transamination allows an interplay between carbohydrate, fat and protein metabolism,and can serve the changing demand of body (5). In the present study, the ALAT activity was more than the AAT activity in all tissues. The reason for this may be due to easy inducibility of ALAT. Easily inducible enzymes have shorter half life and ALAT has only few hours of life (6 and 7) The activity of AAT and ALAT have been Shown to be increase in crab, *Barytelphuse guerini* during mercuric chloride toxicosis (8),Similarly, increased transaminase activities Were also reported in the tissues of *Tilapia mossumbica* after exposure to Sumithion (9). ALAT and AATare present in both mitochondrial and cytosolic portions of the cells. There is a close relationship between the mitochondrial integrity and transaminase levels and any alteration in the organization of mitochondria is found to alter the levels of the associated enzymes (10).

In the present investigation, elevation of ALAT and AAT may be due to damage of tissue or due to the enhancement in the synthesis of aminotransferase (11). Total protein and free amino acid showed a decrease, while the activity

levels of alanine and aspartate aminotransferase showed an enhancement(12), In *Clarius batrchus*, total protein content was found to decrease after chronic exposure to ekalux (13) which induced Gluconeogenesis. Gluconeogenesis was slow for the first 10 daysand increased later after 20 and 30 days of exposure. After exposure to ekalux, *C. batrachus* showed an increase in the levels of ALAT and AAT suggesting the catabo1ism of amino acid, which lead indirectly into gluconeogenesis.

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