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EFFECT OF SOME ORGANOPHOSPHORUS INSETICIDES ON THE PERCENTAGE OF TOTAL LIPID CONTENTS IN THE OVERY AND GONADS OF *Cyprinus Carpio*

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Abstract

The effect of some types of organophosphorous insecticides upon the percentage of total lipid content of the gonads in *C.carpio* after a periods of exposing to a concentrations of 2, 4, and 6 ppm, for a periods of 7 days to each of Nogos, Malathion and Diazinon. Elevation was found in the values of total lipid content for all concentration in comparison with control. A decrease in the lipid content was found in ovary and gonad tissues, and it is found that ovary were more sensitive than gonads under the effect of all used insecticides, and the effect of Nogos is found more toxic than Malathion and Diazinon as recorded mean of decrease was high than recording decrease with other insecticides.

Introduction

The problem of pollution is considered as important aspects in ecology system progress with accompanying advance and increase the technology and civilization for the human in always. Pollution depended on the types of pollutants which were released into water or air or soil. Insecticides employ to control the pests, insects, parasites which caused many diseases to human, plant and animals. In view of increase using the organophosophorous insecticides in houses and farms in high concentrations companying with disorder uses lead to contamination at along time .Organophosophate insecticides, such as malathion ,dimethoate , diazinon, fenithrothion and dichlorophs are of great significant in pest control and increasingly used instead of organochlorine insecticides . These compounds are much less persistent in the environment, but are toxic to non–target creatures such as aquatic organisms, birds and some beneficial insects (Moore and Waring, 1996).

In the last years there is increasing concern over the agricultural use of Organophosophate insecticides and their subsequent fate within the aquatic environment. Particular concerns of organophosphate insecticides are the effects warning upon the biota of inland waters and the potential effects upon fish populations and the fisheries dependent upon them. Organophosophate insecticides are inhibitors of acetylcholinestrase (ACHE) the enzyme that the hydrolyses the neurotransmitter acetylcholin.

The effect on fish population may either be acute, resulting in death or chronic were the effects may be longer and more difficult to quantify. Subleathal effects of Organophosophate insecticides on fish have been shown to include vertebral malformation (Johnson and Finley, 1980) altrations of blood constituents (Aness,1978; Al Ali,2001; Abdul- Ahad *et al*., 1999) Dutta *et al*.,1992; Hattingh 1977; Campana, *et al*., 1999), impaired reproduction, inhibition of ACHE activity (Keizer *et al*., 1991; Beauvais *et al*., 2001), reduced larval and adult growth of fish (Seiki, 1992; Chatterjee and Konar, 1984), reduction of liver DNA, RNA and protein content (Ansari and Kumar, 1978; Richmond's and Dutta, 1992; Pan and Dutta, 2000; Das and Mukherjee, 2000), impaired swimming and changes in pigment levels (Alam and Mughan, 1992; Saglio *et al*., 1998), and structural changes to gills (Dutta *et al*., 1993).

Materials and methods

1.Test animals

Carp (*Cyprinus carpio*) of the both sexes, weighing 10 to 15 grams and measuring of 10 to13 cm in length were collected from the fish farm of Marine Science Centre. They were brought to the laboratory in plastic jars. Fishes were allowed to accumlatize to the laboratory conditions for seven days. Two sexes kept in air – saturated, water pH (7.0- 7.3) at (20±3°C), mean of oxygen content was (9.3 ±0.2) and salinity (1.3±0.5) %**o.** Fishes were fed once a day with commercial fish food (powder of dried fish muscle and dried algae).

2-Test system

The fish were divided into groups (15) fish in each of three glass aquaria (60x30x30) cm filled with the test medium as three replicates in addition of separate control groups. Different concentrations (2, 4 and 6) ppm of each of Nogos, Malathion and Diazinon insecticide for 7 days exposure during Spring 2004 were used, the stock solution was prepared according to EC % active ingredient, and concentrations in water were prepared by adding suitable aliquots of the stock solution. Tissues samples of ovary and gonads removed from the body of fish and homogenized to estimate the percentage of total lipid content according to the method (AOAC), 1984.

3-Statistical analysis.

Analysis conducting by using Completely Randomized Design (CRD) and use RLSD test to indicate statistical differences ($p<0.05$) between treatments and control by using SPSS programme (Sancho, *et al,* 1998a).

Results and discussion

The alterations of the total lipid content in ovary and gonads of *C.carpio* after 7 days exposure to lethal concentrations (2, 4, and 6) ppm of Nogos, Malathinon and Diazinon which showed reduction in this biochemical factor with increasing concentration. Moreover, gonads organ were more sensitive than ovary, as shown in figures 1 and 2. For the concentration 6 ppm of Nogos**,** value of total lipid content recorded was 14% compared with 71% for control, while diazinon recorded the highly value (27%) compared with 75% for control. This pattern present the difference in the toxicity of pesticides. On the other hand Nogos at (6 ppm) recorded (16%) in ovary compared with (73%) of control. Values of total lipid content recorded were (26% and 36%) after exposure to malathion and diazinon respectively compared with control values of (78% and 76%) respectively.

In order to describe the cause of reduction in lipid content it is thought that more energy is needed to resist conditions. Palanichamy *et al.,* (1986) found that tissues of fish exposed to different concentrations of Malathion, Thiodon and Ekalux, showed a significant lipid decline in the studied tissues. Generally, more energy is needed to mitigate any stress conditions. This energy may be obtained from carbohydrate, protein and lipid. Decrease in the lipid content might be due to utilization of lipids for the energy demand associated with the situation of stress (Palanichamy *et al.,* (1986). The decrease in the levels of total lipid content was clear when exposure to nogos more than others in ovary and gonads tissues this agreed with study by Sancho, *et al.,* (1998b) which reported significant depletion of lipid content associated with tissue damage by toxicant results in decreased lipid content and Ackman and McLeod, (1988) found that the lipid content differs from one tissue to another among the same species.

This decrease of lipid content prolonging the decrease activity of synthesis of lipid induced by toxicant (Brauner, *et al*., 1994**;** Singh and Sharma, 1998; Sancho, *et al.,* 1997b, 1998b). Kaur and Dhawan, (1996) found decrease in total lipid in liver and gonads of freshwater telecast *Cirrinhus mrigala* exposed to Carbaryl pesticide The toxicity of pesticides my be accumulated in the reproduction tissue and caused disturbed the reproduction activity and then to decrease the fish population and lead to a decrease into economic fortune .

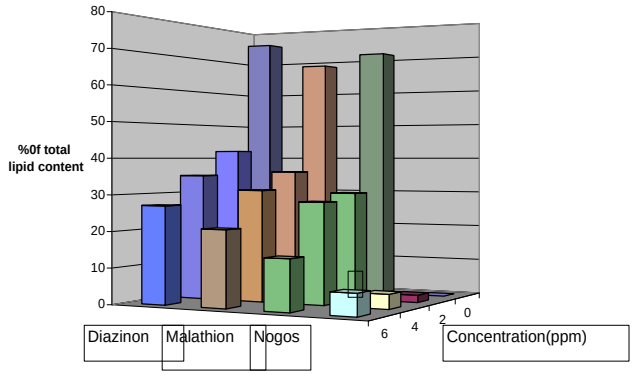

Fig-1-Changes in (%) of total lipid content in gonads tissues of C.carpio exposed to insecticides after 7daysof exposure

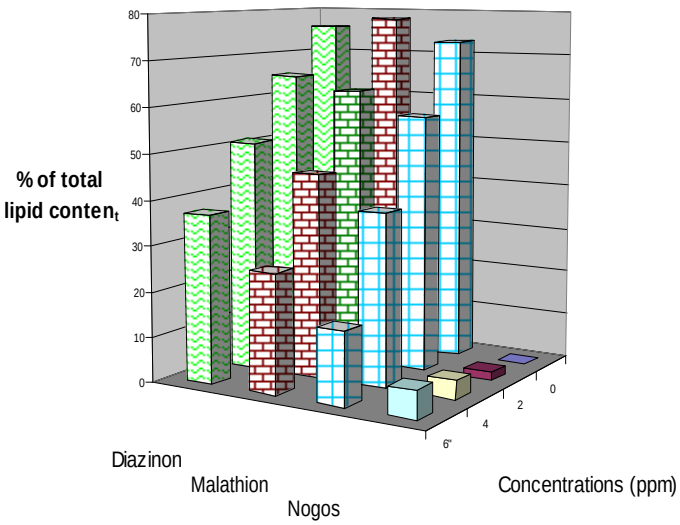

Fig-2-Change in(%) of total lipid content in ovary tissues of *C.carpio* exposure to insecticides after 7daysof exposure

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تأثير بعض المبيدات الفسفورية العضوية على النسب المئوية للمحتوى الكلي للدهون في الأعضاء الجنسية لسمكة الكارب الاعتيادي

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الخلاصة

تم اختبار سمية بعض الأنواع من المبدات الفسفورية العضوية على النسب المئوية للمحتوى الكلي للدهون في مناسل سمكة الكارب الاعتيادي (المبايض والخصى) بعد تعريضها للتراكيز ٢ و ٤ و ٦ جزء بالمليون ولفترة ٧ أيام. وجد إن هناك تحول في القيم الطبيعية للمحتوى الكلي للدهون في أنسجة المناسل ولجميع التراكيز على الترتيب بالمقارنة مع معامل السيطرة. فقد وجد انخفاض في المحتوى الدهني في أنسجة المبايض والخصى وشوهد إن المبايض قد أظهرت أكثر انخفاضا" وتحسسا" من الخصى، كما اظهر مبيد النوكوز سمية أعلى من المبيدين الملاثيون والديازينون وذلك بتسجيله معدلات انخفاض عالية جدا".