INDUCED THE C22H19CL2NO3 CYPERMETHREIEN PESTICIDES ON HISTOLOGICAL ALTERNAITION FOR THE LIVER OF ALBINO MICE (MUS MUSCULUS)

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ABSTRACT

Purpose: The aim of the study is to clarify the dangerous of Pyrethriod chemical pesticides, cypermethyreien, as it had clear effects on the liver cells of albino mice, so it use in homes to kill insects and in garden may cause harm to humans, so mice were a vital indicator of its impact on human health

Method: Preparation of hepatic sections the liver is removed, the liver is washed to remove the blood for several times then it is passed with a series of 70% ethyl alcohol. And complete the method of tissue sections.

Result: All sections were examined under microscope, where they indicated alternation in low and high doses. Included hepatic sinus, necrosis, enlargement of hepatocyte, dilation of the central vein and venous congestion. The hepatic portal and show vacuolar degeneration, which means that the changes are sever and an indication of the toxicity of pesticide, and this differences appears to be significant compared with control.

Conclusion: The study showed the effect of the toxicity of pesticide on the hepatocyte. The effects were significant in damages according to the

Key word: Albino mice, histological changes, pesticide, toxicity, C22H19Cl2NO3

I. INTRODUCTION:

The term pesticides is used for chemical compounds that control agricultural pests, which agricultural groups are exposed to during their infection with various types of insects, worms, and fungi and control them, as the use of pesticides increase the efficiency of the soil, increase the agricultural yield and meet the growing needs of the population (1). Therefore, agricultural technology is working on the Optimal use of these pesticides, as the main targets for them is the targeted pests, but it goes beyond that to other types of non-target species such as fish and birds that drink polluted water, as pesticides leak from field and forms into riverbed, affecting the fish and their environment in which the live, in addition to that they contribute to the elimination of mice and rats or using a method spraying the pesticides on the leaves of plant on which mice and rats live and feed as a result, these pesticides accumulate on the surface of leaves (2). The concept of pesticides toxicity is called the ability of the pesticides toxicity can cause damage. The toxicity of pyrethriod pesticides that are considered harmful compounds to human and animals, as cypermethreyien is used increasing controlling household garden pests, the toxicity of cypermethreien is transmitted through the food chain through the biological transmission (3), and this what happens to rats, so it is distinguished by its ability to accumulate quickly, so the effectiveness of this accumulation is estimated to cause pathological damage to the tissues of the animal, thus the toxic changes of this pesticide cypermethreyien on albino mice have been studied as an indicator of the human health effects in short-term or long-term exposure, that extend its damage on various body system. Several authors have studies
many of the physiological changes to which albino mice are exposed to various types of pesticides, including the pesticide cypermethrin. The effect on blood values (4.5.6) was discussed. (7,8) indicated in his work the impact of pesticide on the immunity of mice, as shown by a study on the Biochemical values during exposure to mice to doses of pesticide (9) on the Reproductive system changes during exposure to mice to doses of pesticide Lufenuron (10.11). Several authors have indicated by many studies on Histopathological differences of organs of laboratory Albino mice exposed to different pesticides (12,13). So the current study aim to investigated the hazard of cypermethrin on pathohistologic alternations of liver organ of both sexes, males and females exposed to sub lethal doses, as many researches didn’t address to study the histological changes of both sexes to gather of its importance in comparing between them

II. METHOD

Tests animals:- samples from males and females of Albino mice were brought to animal house by buying them from the center of animal house in the department of biology. The experimental was carried out in the animal house of the department of community health Technologies of Southern Technical University, where the samples acclimazied under laboratory conditions at temperature (25±2) and 12h daylight cycle. They were adept for a period 2 weeks in special cages and feed with water was available libitum.

Experimental Test:- The samples of Albino mice were separated specialized cages with grouping each one containing (6) samples with (5) replicates (n=30) for both sexes. Samples were treated with sub lethal doses of cypermethrin C22H19Cl2NO3 insecticides (2.5 mg/kg and 4.5 mg/kg) for 5 weeks of exposure. The dose is given cardiac intraperitoneally injections 2-3 times per week, the control group was untreated with doses of pesticide, but these doses were given as distilled water.

Preparation of hepatic sections:- After the exposure period is over, the samples are anesthetized and in a dissection dish. During the autopsy, the liver is removed, the liver is washed to remove the blood for several times then it is passed with a series of 70% ethyl alcohol. And complete the method of tissue sections according to the method of (14).

Results The results of the microscopic examination of sections of the liver of mice of the control group showed that it consists of hexagonal lobules, and is centered in each lobule and a central vein, as of around which hepatocytes are Arranged in the form of strips in a radial system. These strips are separated from each other with small areas that represent the sinusoids and lined with a single non-continuous layer of epithelial cells. Kupffer cells were also diagnosed in the walls of the sinusoids (Figure 1).
Low dose group liver 2.5 mg / kg:
The results of the histological examination of the liver of mice treated with the low dose of Alpha-Cypermethyreien showed slight changes compared to the high dose group represented by the occurrence of vacuole degeneration in the cytoplasm of some hepatocytes Fig. (2) follicular congestion, and the occurrence of fibrosis (3 and 4). And the increase of Kupffer cells (Fig. 4), a lobule in the nuclei of some hepatocytes, the emergence of vacuoles in the cytoplasm of some hepatocytes (Fig. 5), enlargement of hepatocytes (Fig. 5 and 7), expansion of the central vein (Fig.Centr (Figure 7).Changes from vascular degeneration in the cytoplasm and hypertrophy in hepatocytes.

High dose group liver of 4.75 mg / kg:
Histological sections of the livers of animals treated with the high dose showed pathological changes compared to the control group, and these changes were represented by the occurrence of congestion of blood congestion (Fig. 8). Cases of vacuolation were diagnosed in the cytoplasm of hepatocytes (Figures 9, 10, 11 and 12), and these hepatocytes suffered from large areas of necrosis (shapes), as necrosis of some hepatocytes was observed spreading between the portal area with degenerative cells and the hepatocytes passed Those who suffer necrosis with a set of changes at the level of the nucleus and cytoplasm ending with the death of cells and it seems that these changes begin with vacuolation in the cytoplasm of the cell (figure), while in others it has been observed that the shape of the nuclei changes and appears irregular in shape shape (Figures 13 and 14) or looks like a lobule (Fig. 15) Then the cytoplasm has completely dissolved and the nucleus appears to swim in the middle of the cell or one of its sides, and during that the nuclear material of the nucleus decays from the middle towards the nuclear envelope, then part of the membrane disintegrates .plasma necrosis events ended with the complete dissolution of the cell leaving in place the remnants of dead cells , severe hemorrhage in the portal space (figure), the appearance of vacuoles in the cytoplasm of hepatocytes, enlargement of some of them (form), loss of the normal shape of some hepatocytes and the emergence of other cells loving the acid pigment with degeneration And pronounced necrosis (form).

Figure (3) livers of mice in the low dose group showing congestion of the follicles and the fibrous septum (arrows) (H&E)) 400X
Figure (4) rat liver of the low dose group shows congestion of the follicles (arrows) and the collection of fluid in the central vein (H&E)) 400X
Figure (5) rat liver of the low dose group shows vacuole degeneration in the cytoplasm of some cytoplasmic vaculation, hypertrophy of some hepatocytes and micronucleus lobes of some cells (arrow) H&E. 400X.

Figure (6), rat livers of low dose group, showing the central vein dilatation and infiltration of inflammatory cells (arrow) (H&E)) 400X.

Figure (7), rat liver of the low dose group, shows hypertrophy and central vein congestion (arrows) H&E 400X.

Figure (8) Mouse livers of high dose group showing congestion and loss of the lost normal shape (H&E)) 400x.
Figure (9) mice liver of the high dose group shows vacuole degeneration in the cytoplasm of some cytoplasmic vacuolation and swelling of some swollen hepatocytes (H&E).

Figure (10) mice livers of the high dose group illustrate eosinophilia hepatocytes with acidophilic hepatocytes and necrosis and loss of the normal arrangement of hepatocytes. Lost the normal str. hepatocytes (H&E) 400X.

Figure (11) section in the liver of mice of high dose group showing hepatic portal vein congestion (asterisk) and vacuole degeneration of hepatocytes around the portal space (arrows) and necrosis of some hepatocytes (arrowheads) (H&E)) 400X.

Figure (12) mice livers of high dose group showing hepatic portal vein congestion, acute hemorrhage (asterisk) and basal stain-loving cells (H&E)) 400X.
III. CONCLUSION

The study showed the effect of the toxicity of pesticide on the hepatocyte. The effects were significant in damages according to the dose. It also showed changes in cells haps, abnormalities in their nuclei, and the appearance of cytoplasmic vacuoles.

IV. DISCUSSION

Cypermethrin (CP) is a Pyrethriod insecticide used as an insecticide in large-scale commercial agricultural applications as well as. Cypermethrin is highly toxic to human. It has harmful effects on human health, causing itching of the skin and eye irritation. In addition to its effect on animals, including laboratory mice, which were used to show the effects of the pesticide as a biomarker on its effects on humans. They have observed its effects on the reproductive system, births, the nervous system and tissue changes, and this is what is indicated(15,16).

One study also showed that cypermethrin works to cut the communication gap between cells, which has an active role in the process of tissues growth.(17) and its effects on the nervous system, animals, fish, bees,
Pesticides have clear effects on the damage they cause to the tissues structure of the liver organs in albino mice exposed to low and high doses for cypermethrin pesticide for a period 5 weeks. The tissue sections of control not treated with pesticide appears in a natural structure that did not show any changes (Fig1). These changes included in the liver of 2.5mg/kg dose group , represented by congestion in the hepatic sinuses, infiltration of hepatocytes is an increase Kupffer and accumulation in the vitreous fluid in the hepatocyte cells in female and male of albino mice as shown (Figures 2,3) .(18). The present study showed that the hazards caused by toxicity of pesticide are different .In its effect according to the dose to which animal is exposed is similar with finding by

1. References


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biochemical studies on the liver of albino rats after exposure to glyphosate