شبكة المعلومات الجامعية

بسم اللّه الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم باللّه العظيم أن المادة التي تم توثيقها وتسجيلها علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

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بعض الوثائق الأصلية تالفة

شبكة المعلومات الجامعية

بالرسالة صفحات لم ترد بالأصل

MONITORING OF PESTICIDE RESIDUES AND HEAVY METALS IN FOOD AND THEIR TOXIC EFFECT ON ALBINO RAT

By

MOHAMED REDA ABDEL-AZIZ ESHMAWY
B.Sc. Agric. Sci. (Plant Protection), Fac. Agric., Cairo Univ., 2013

THESIS
Submitted in Partial Fulfilment of the Requirements for the Degree of

MASTER OF SCIENCE

In

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(Pesticides)

Department of Economic Entomology and Pesticides
Faculty of Agriculture
Cairo University
EGYPT

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APPROVAL SHEET

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Date: 3 / 6 / 2020

SUPERVISION SHEET

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Title of Thesis: Monitoring of Pesticide Residues and Heavy Metals in Food and their Toxic Effect on Albino rat
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ABSTRACT

The occurrence of pesticide residues and heavy metals in commonly produced horticultural products in Egypt raises health concerns for consumers. Thus, the objectives of this study were to determine pesticide residues and heavy metal levels in the most consumed and exported fruits and vegetables namely orange, pomegranate, potatoes, green beans, molokhia, strawberry and tomato collected from local markets in Giza, Egypt and to assess the potential human health risks. Samples were analyzed using QuEChERS method followed by Gas chromatography mass spectrometry and Liquid chromatography - mass spectrometry for pesticide residue analysis and by using Inductively Coupled Plasma – Optical Emission Spectrometry for determination of heavy metals. Data showed that out of total 70 analyzed samples, 11.4% were free from pesticide residues, 88.6% were contaminated and 33% of the contaminated samples exceeded the maximum residue limits (MRL's). The most frequently detected pesticides were chlorpyrifos and lambda cyhalothrin. Data on heavy metals showed that out of total 70 analyzed samples, 100% of samples were contaminated and 51.4% of the contaminated samples exceeded the maximum limits (ML's). The most contaminated metals were Fe, Mn and Zn. Risk assessment was performed for only violated pesticide residues and also the daily intakes of essential metals. Data showed that no apparent potential human risk to consumers was observed. Chlorpyrifos was the most frequent and violated pesticide, cadmium and lead were the most toxic detected metals, so subchronic toxicity was performed to assess the effect of these contaminants alone and in mixtures. Data showed that all treatments reduced body weight gain and organs ratio but this reduction was not significant except kidney ratio weights. All tested enzymes of liver and kidney functions showed significant increase, but, Acetylcholinestrase activity was affected due to the treatments. Total soluble protein decreased significantly in all treatments especially in mixture treatments, Histopathological studies were performed on liver and kidney for all treatments and data showed that cellular difference in the organs were observed.
Key words: Chlorpyrifos, Albino rat, MRL, Heavy metals, Pesticides residues.

DEDICATION

I dedicate this work to ALLAH who give me the power and health, The spirit of my father, My mother Allah save her, My Sister for all the lovely support they offered during my studies, and whatever I said about them will be little in their right to, also I want to thank all my friends for their support. Finally I will not forget the role of my god father Prof. Dr. Mohamed Kandil for his role in my personal and scientific life.