

# 





ثبكة المعلومات الجامعية





# جامعة عين شمس

التوثيق الالكتروني والميكروفيلم



نقسم بللله العظيم أن المادة التي تم توثيقها وتسجيلها علي هذه الأفلام قد اعدت دون آية تغيرات



يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15-20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of 15-25c and relative humidity 20-40 %



ثبكة المعلومات الجامعية







# Biochemical studies on some Plant extracts as pesticides

BY

# OLFAT ABD EL.LATIF SAYED MOHAMED RADWAN

B.S.C. AGRIC. BIOCHEMISTRY - CAIRO UNIV, 1992 M.S.C. AGRIC. BIOCHEMISTRY - CAIRO UNIV, 1996

#### THESIS

Submitted in partial fulfilment of the requirements for the degree

Of

Doctor of philosophy

In

AGRICULTURE BIOCHEMISTRY

BIOCHEMISTRY DEPARTMENT

FACULTY OF AGRICULTURE

CAIRO UNIVERSITY

2001

1-0V1



وَ اللَّهُ الل

الآية (17) سورة البقرة

Name of Candidate: Olfat Abd El Abd El Latif Sayed Radwan. Degree: Ph. D.

Title of Thesis: Biochemical Studies on Some plant extracts as pesticides.

Supervisor: Prof. Dr. Abd El Kader Moursi Abd El Samaad.

Prof. Dr. Mohamed Abd Allah Ali Saleh

Department: Biochemistry

Branch: Giza – Cairo University Approval: 15/8/2001

#### **ABSTRACT**

This work was carried out to study the pesticidal activity of some plant extracts such as lemon grass and rhubrab the extracts (ethanol, ethylacetate and hexane) were tested against plant pathogenic fungi such as Fusarium oxysporium and Rhizoctonia solani. The inhibition achieved 100% at 10% citral (the main componant of lema grass oil) and essential oil concentrate. On the other hand the ethanol extract in both lemon grass and rhubarb was highly effect than the other solvent extracts but hexane extract from lemon grass and ethanol extract from rhubarb has more effect on P. solaneacum bacteria than other solvent extract either lemon grass or rhubarb. The inhibition achieved 75% compared with control treated with stryptomycin. The organic solvent extracts from both lemon grass and rhubarb did not effect on the snails Biomphalaria alexandrina at > 1000 ppm, but essential oil have  $LC_{50}$  42 ppm and  $LC_{90}$  51.8 ppm. The essential oil and its major components citral and myrecene also effect on the mortality of  $2^{nd}$  instar larvae Agrotis ipiston achieved 60.42 and 77.08% at 1.25 and 1.5% concentration respectively.

The ethanol leaf and roots extracts from lemon grass and rhubarb have more effect than ethyl acetate extracts but hexane extracts have no effect of all concentration with two plant extract.

The active components of different extracts were studied by IR, NMR, MS and GC/MC.

Biochemical studies of azadirachtin as the main active ingredient in neem tree and its formulation (nemix) 4.5% daily stomach administration and dermal application of male albino rats. This studies obtained increases in cholesterol, total lipids and decreases in total protein, albumin, triglycerides, and bilirubin with increases of GOT, GPT and AP activities in animals were treated compared with control.

The accumulation of azadirachtin in the different organs in the order liver > heart > testis, spleen > lung > brain. After 12 weeks histophathological study clarified that greatly changes in liver, kidney and testis compared with control.

Jul Zull

# \*ACKNOWLEDGMENT

The author is deeply indebted to Dr. Abd El. Kader Morsy Abd El. Samad Prof. of Biochemistry, Department of Biochemistry, Agriculture. Fac. Of Agriculture, Cairo University for suggesting the problems and advice through out the course of the present investigation.

I own very much to him for guiding me to look for the good in the worst.

I would like to express my sincere gratitude for the inspiring suggestions and precious help extended.

- The author wishes to express her sincere appreciation to *Prof. Dr. Mohamed Abd Allah Saleh* Prof. of pesticide chemistry, Central Pesticide Lab for suggesting and supervising this valuable investigation, encouragement, sincere criticism, and for his useful help during study.
- \* Sincere thanks are extended to Dr. Elhoseny El. Khateb, Central Pesticides Lab for his valuable advice.
- Heartily credit is extended to *Prof. Dr. Mohamed Mahmoud Abo Zeid*, Prof. of Animal Science Dept, Fac. of Science, Al.AZHER University for his valuable advice.

- Thanks are extended to *Prof. Dr. Ibrahim haredy* Prof. of Medicinal & Aromatic Plants Research Section, Hort. Res. Ist. (HRT), Agriculture Research Center, (A.R.C.) Ministry of Agriculture Egypt, for his valuable advice.
- Thanks are extended to *Prof. Dr. Arafa Abd El Gliel Hilal*, Plant Pathology Institute, A.R.C, for his valuable advice.
- \* I wish to express my deepest thanks, gratitude and appreciation to: Dr. Gomaa Anter El Morsy and Dr. Samy El-Morsy, Plant Pathology Institute, A.R.C, for their advice and valuable criticism as well.
- \* Thanks are extended to Dr. Mohamed Ibrahim Rady Dr. of Animal Science Dept., Fac. of Science, Al-Azher University, for his advice.
- \* Thanks are extended to  $\mathcal{D}r$ . Soad Osman, Filed crop pests plant production institute for her valuable advice.
- Sincere thanks are extended to Dr. Ahmed El-Sisi Ghazy, Central Pesticides Lab for his valuable advice.
- \* Thanks are extended to Dr. Saied Ghabr Dr. of Medicinal & Aromatic Plants Research Section, Hort.

Res. Ist. (HRT), Agriculture Research Center, (A.R.C.) Ministry of Agriculture Egypt, for his valuable advice.

\* Sincere thanks are extended to *Dr. Mohamed Kamal,* Dr. of Organic Chemistry Dept., Fac., of Science, Cairo University, for his advice.

\* Thanks are extended to *Dr. Ahmed El-Ghourab*, Dr. of Chromatography Analysis Dept., National Research Center, for his criticism as well.

# ABBREVIATIONS

A.i

Active ingredient

**ALAT** 

Alanine Amino Transferase

AP

Alkaline Phosphatase

**ASAT** 

Aspertate Amino Transferase

Az.

Azadirachtin

b.wt

Body weight

E.C

Emulsifable Concentrate

**GOT** 

Glutamic Oxaloacetate transaminase

**GPT** 

Glutamic Pyruvate transaminase

Hb

Haemoglobin

**HBCO** 

Haemoglobin + Carbon di Oxide

Hct

Haematocrite

HICN	Combination	between Haemoglobin
	and Cyanida	<u> </u>

and Cyanide

Hplc High performance liquid chromatography

LC90 concentration required to kill 90% of test animals

LC50 concentration required to kill 50% of test animals

**LD50** Dose required to kill 50% of test animals

PCV Package cell volum

**ppm** Part Per million

**RBC'S** Red Blood Cells

SHB Sulfer compined with Haemoglobin

WBC'S White Blood Cells

## APPROVAL SHEET

TITLE: Biochemical Studies on Some Plant Extracts as Pesticides

NAME: Olfat Abd El. Latif Sayed Mohamed Radwan

THESTS HAS BEEN APPROVED BY:

PROF DR:

عبلنه مريخيب

PROF DR:

مرع في عارى

PROF DR:

T tolk

COMMITTEE IN CHARGE

Date 15 /8 / 2001

### **CONTENTS**

	page	
1-INTRODUCTION	1	
2-REVIEW OF LITRATURE	2	
(2-1) Plant materials as pesticides(2-1-1) Fungicidal activity of naturally occurring plant	2	
extracts	2	
(2-1-2) Bactericidal activity of naturally accruing plant entracts	4	
(2-1-3) Plants having molluscical properties	4	
(2-1-4) Insecticidal activity of naturally occurring plant		
extracts	7	
(2-1-5) The essential oil composition of lemon grass		
and some other plants	8	
(2-1-6) Isolation and Identification of plant constituents	10	
(2-2) Effect of pesticides on body weight and organs b.wt ratio	2.2	
(2-3) Biochemical effects of pesticides on some blood	11	
parameters	12	
(2-3-1) Effect of pesticides on animals blood picture	12 12	
(2-3-2) Effect of pesticides on blood glucose level	13	
(2-3-3) Effect of pesticides on serum total protein of male	13	
albino rats	14	
(2-3-4) Effect of pesticides on serum total lipids, cholesterol,	1.71	
and Triglycerides of male albino rats	15	
(2-3-5) Effect of pesticides on serum bilirubin	15	
(2-4) Effect of pesticides on Seurm transaminase and alkaline		
phosphatase (SGot, SGpt, and A.P.)	16	
(2-5) Pesticides residue in animal organs	17	
(2-6) Histopathological changes by pesticides	18	
(2-6-1) Effect of pesticides on liver organs	18	
(2-6-2) Effect of pesticides on kidney organs	19	
(2-6-3) Effect of pesticides on testis	20	
Matariala C Mather I	22	
Materials & Methods		
3- Materials	22	
(3-1) Plant materials as pesticides	22	