Ain Shams University
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TOXICOLOGICAL AND BIOCHEMICAL CHANGES INDUCED BY SOME WASTE PRODUCTS AS INSECTICIDAL AGENTS AGAINST THE COTTON LEAF WORM, *SPUDOPTERA LITTORALIS* (BIOSD)

THESIS
SUBMITTED TO THE FACULTY OF SCIENCE- AIN SHAMS UNIVERSITY FOR AWARD OF PH.D. DEGREE (IN ENTOMOLOGY)

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ACKNOWLEDGMENTS

First of all, ultimate thanks to **ALLAH** for the support in every step and for enabling me to overcome all the problems that faced me throughout the work.

I owe more than what can be expressed to **Dr. Reda Fadeel Ali Bakr**, Professor of Entomology, Faculty of Science, Ain Shams University, for suggesting the plan of this work and for his unlimited help; he generously did his best to help me, solving the problem by providing the valuable facilities, throughout the period of this study and for reading and revising the manuscript.

I would like to express my deep gratitude to **Dr. Galal Abd El-mouen Nouar**, Professor of organic chemistry, Head of Industrial Chemistry Division, National Research Center, for the fruitful supervision, useful advice, for reading and correcting the manuscript and great help offered during this study.

I wish to express my appreciation to **Dr. Heba Abd-Elwahab Hassan**, Assistant professor of Entomology, Plant Protection Research Institute, for her useful suggestions, for reading and correcting the manuscript and for the great help offered throughout the investigation period.

I wish also to express my sincere appreciation to **Dr. Marah Mohammad Abd El-Bar**, Lecturer of Entomology, Faculty of Science, Ain Shams University, for reading and correcting the manuscript.

I would like, as well, to thank all staff members in the Department of Entomology, Faculty of Science, Ain Shams University and special thanks to **Dr. Nadia Abu Gabal**,professor of Entomology and Head of Entomology Department.

Many great appreciations are due to **Mr. Mohsen Ameen** for his great effort, encouragement and authentic help throughout this study.

Finally, I am grateful to all members who have helped me or have contributed with me in one way of or another throughout the period of this work.

Dedication

There are always great people in our life who give love, support, success and progress, I dedicate this work,

To the spirit of my father

To the greatest woman in my life, my mother

To my Husband

To my children, Ahmed and Sarah

To my lovely sisters and my brother

ABSTRACT

This study was conducted under laboratory conditions to evaluate the insecticidal activity of three newly compounds extracted from wastes from natural origin, Cyano acetyl urea (CAU), Benzimidazolyl acetyl urea (BAU) from urea and Cyano acetyl hydrolyzate (CAH) from rice straw, on ٢nd and ٤th instar larvae of *Spodoptera littoralis*. For example, LC٥٠ ranged from ٠,٤٤٧ to ٠,٥٩٤%, from ٠,٥٨٣ to ٠.٧٥٢% and ranged from ٠,٠٨٣ to ٠.١٢% for ٤th instar larvae treated with CAU, BAU and CAH, respectively. Hence, the present data declared that (CAH) was the most efficient extract followed by (CAH), and then (BAU). Results demonstrated that the percentage of larval mortality was increased with increasing the concentrations of all tested compounds. It also showed that the three tested compounds caused reduction in percentage of pupation and in pupal weigh and an increase in pupal duration compared with control. Treatment with these compounds also affected the adult emergence , fecundity and fertility of both sexes. Morphogenic abnormalities were also recorded and many aberrations have been induced in larvae, pupae and adults. Changes in the total haemocytes and differential haemocytes counts were observed as a result of CAU, BAU, and CAH treatments of ٤th instar larvae.

Biochemical studies showed distinguishable patterns between treated samples and the control by the appearance and disappearance of certain protein fractions and differences in the activities of tested enzymes.

The other objective of this study was to evaluate the potential of the random amplified polymorphic DNA (RAPD) assay for the detection of genetic polymorphism between control and treated *S. littoralis* larvae, which have been exposed to the tested compounds at both $LC_{٢٥}$ and $LC_{٧٥}$. Five primers namely: OP-٠١, OP-٠٢, OP-٠٣, OP-٠٤, and OP-٠٥ were used in this study. These primers generated a maximum of ٢٦, ٢٤, ٢٠, ١٣ and ٢٣ bands, respectively. RAPD profiles generated by these primers revealed differences between control and treated samples with visible changes in number and size of amplified DNA fragments. Polymorphism ranged from ٤٤,٤ to ١٠٠٪ as screened by the five primers among all samples. Based on $LC_{٧٥}$, the highest polymorphism (٨٦,٤٪) was observed in those treated with CAH comparing those either treated with CAU (٧٧,٨٪) or with BAU (٨٤,٤٪). Definitely, RAPD data confirmed the susceptibility test as well as the morphological study, and suggest that DNA damage and the possible occurred mutations may be appeared as the main factor influencing the evident polymorphism between control and treated larvae.

Key words: *Spodoptera littoralis*- urea derivatives - rice straw- insecticidal activity – haemocytes- isozymes- protein electrophoresis- RAPD (PCR).

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