# RESISTANCE TO FENITROTHION IN HOUSEFLY STRAINS OF DIFFERENT ORIGIN

جامعة عين شمس
كلية العلوم
الدراسات العليا

**A THESIS**

Submitted in Partial Fulfilment of the Requirement for the Award of the Degree of MASTER OF SCIENCE

By

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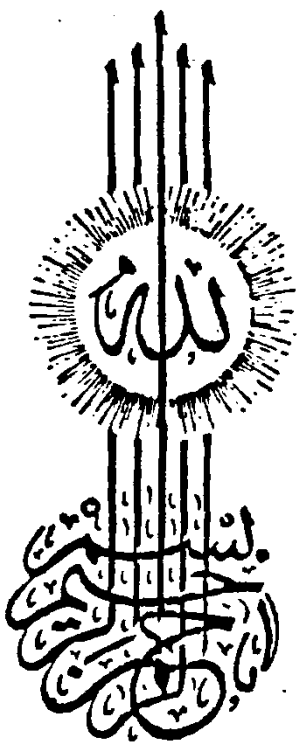


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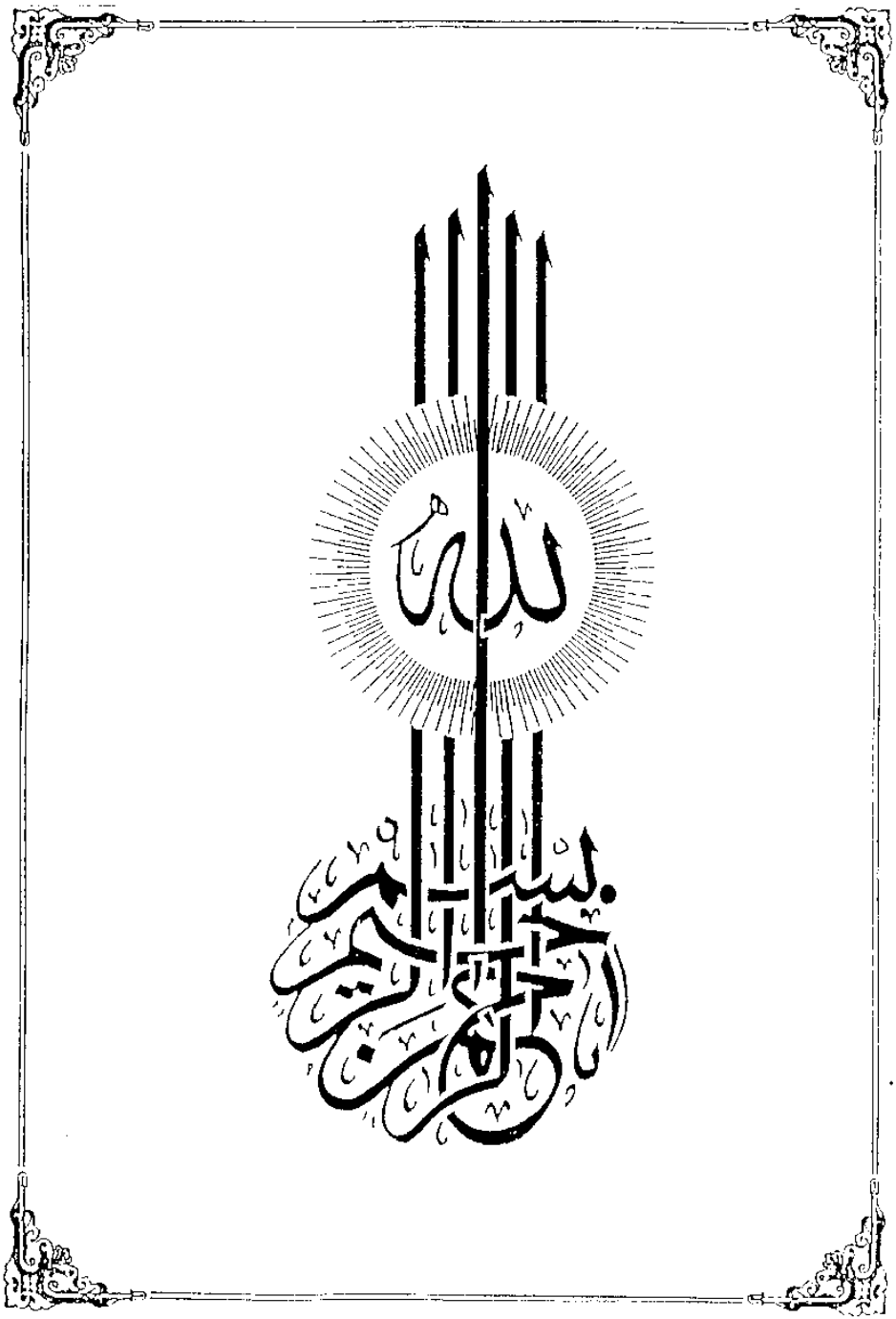


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2. Population dynamics and insect problem .
3. Pollution .
4. Microbiology .
5. Radiobiology .
6. Hormones and Phermones .
7. Chemistry of insecticides .
8. Taxonomy .
9. Research subject .

Examination passed on : February, 1983 .

**Statistical Course** : Biostatistics .

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# INTRODUCTION

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# I. INTRODUCTION

The wide usage of organic insecticides has resulted in the appearance of resistance in many insects of medical importance including cockroaches, houseflies, mosquitoes, lice, ticks, and others . The appearance of insecticide resistance is one of the most serious problems in applied entomology .

The enormous practical importance of the problems of insecticide resistance from agricultural and public health stand-points has stimulated a large volume of useful research on the mode of action of insecticides, and insects resistant to pesticides have become valuable research implements for such investigation .

Insects respond differentially to toxicants . Much of this variation is genetically determined and is undoubtedly of considerable adaptive significance as it enables insect populations to respond more flexibly to variations in environmental conditions . Many of the mechanisms responsible for this variation involve enzymes which metabolize synthetic insecticides introduced by man in the insect environment .

There is today considerable awareness of the genetics of resistance, hence, biochemical diversity in insect populations with their response to chemicals . This awareness has placed the studies of resistance in proper perspective and has been largely responsible for the advances achieved in recent years . Therefore, a knowledge of the type of

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inheritance of resistance to a certain insecticide may offer valuable information in the search of the physiological basis of resistance mechanism . Furthermore, predication or interpretation of rates of development or reversion of resistance are untenable without an understanding of the mode of inheritance of the resistance characters . From a more practical standpoint, knowledge of the phenotypes response of the various genotypes to a certain insecticide permits a quantitative analysis of the relative frequency of the genes for resistance prior to or during the course of control operations.

The housefly, Musca domestica, is the most extensively reported species shown as being able to develop resistance to chemicals of different groups . Agricultural control operations, the sprays for malaria control and sporadic use of insecticides contributed to the fast development of resistance to insecticides in this insect .

Many hundreds of organic phosphorus compounds have been synthesized which possess insecticidal properties . Yet it is generally considered that despite their very considerable diversity of structure, they all possess a common mode of action;i.e., the inactivation of cholinesterase and other hydrolytic enzymes .

The present work is an attempt to study the mode of inheritance of resistance in this insect to the organophosphate, fenitrothion . The activities of cholinesterases and ali-esterases in OP-resistant and susceptible strains of

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the housefly, Musca domestica, and in hybrids and different genotypes derived from the different genetic crosses between them were assayed, in an attempt to find out whether the factor for resistance to organophosphates and low ali-esterases are related .

Attempts were also carried out to study the pattern of resistance spectrum to various insecticides in OP-resistant houseflies .

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