EFFECT OF SOME CHEMICAL INSECTICIDES USED IN THE CONTROL OF THE HOUSE-FLY *Musca domestica*, ON THE ASSOCIATED BACTERIA

A THESIS

Submitted in Partial Fulfilment of the Requirements

For the Award of the Degree of

MASTER OF SCIENCE

By

Iham Abdel Aleem Hafez

B. Sc.

Department of Entomology

Faculty of Science

Ain Shams University

Cairo

1978

Da

Da

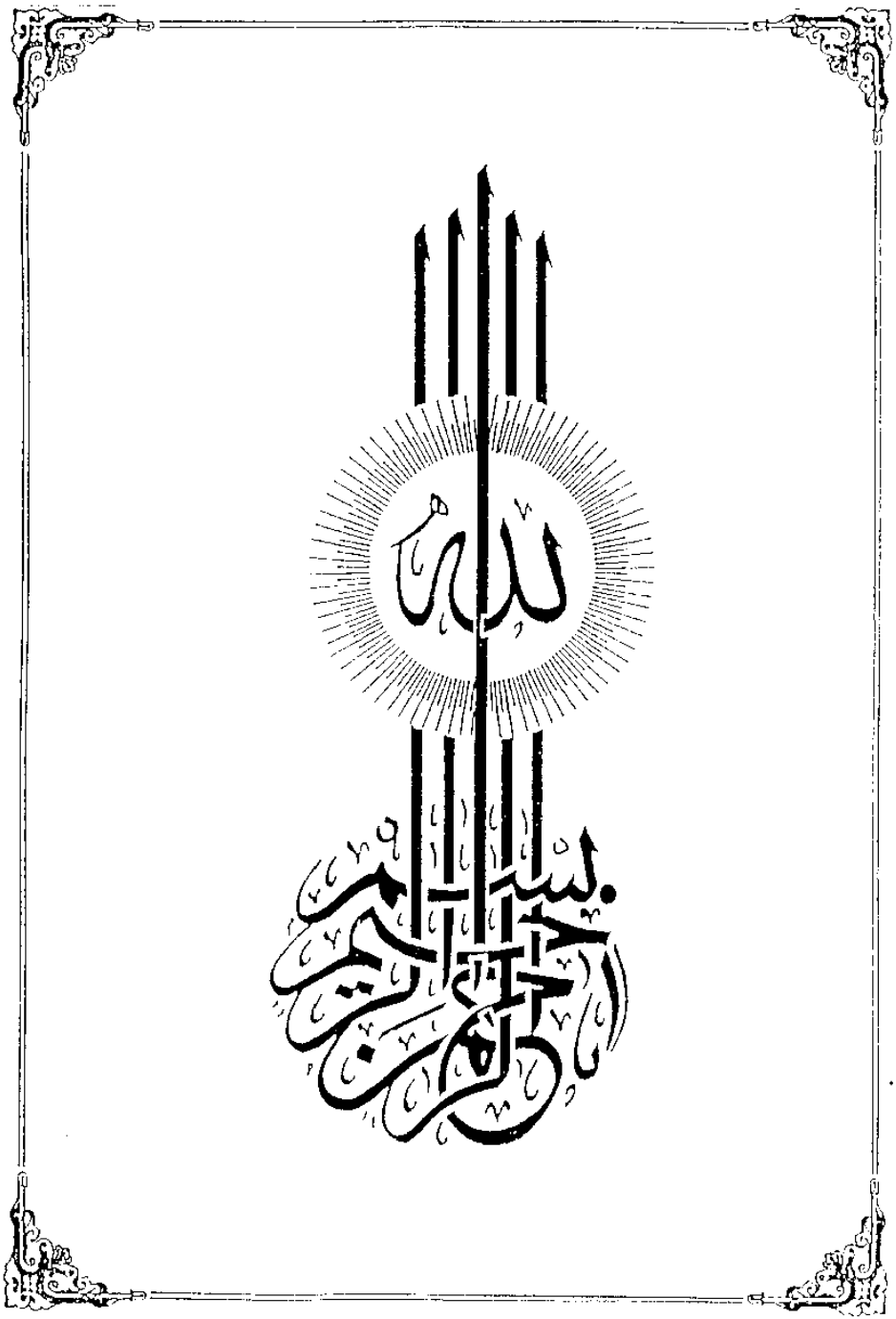
De

Gr

Oc

THESIS EXAMINATION COMMITTEE

	NAME	TITLE	SIGNATURE
	. . . . .	. . . . .	. . . . .
Da			
Da	. . . . .	. . . . .	. . . . .
M.			
	. . . . .	. . . . .	. . . . .



COURSES STUDIED BY THE CANDIDATE IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE

(M. Sc.) DEGREE

Language : (German, M. Sc. Course)
Examination passed on: June, 1975

Entomology Courses :

1- New Approaches to Insect Control.
2- Advanced Taxonomy and Anatomy.
3- Implication of Problems in Suppression and control of Insects.
4- General Entomology.
5- Research Subject.

Examination passed on: September, 1975.

Statistics Course:

Biological Statistics.
Examination passed on : September, 1975.

Supervisors :

Professor Dr. Soad A. Soliman

Assistant Prof. Dr. Zenab Afify

Lecturer : S. Hamed

Prof. Dr. Soad A. Soliman
Head of Department

ACKNOWLEDGEMENTS

The author wishes to express her gratitude to Dr. Soad A. El- Sayed (Soliman) Prof. and head of Entomology Department Faculty of Science, Ain Shams university, for her valuable advice and kind encouragement and for reading and correcting the manuscript.

Special thanks are due to Dr. A.I. Merdan, Assistant Prof. in the same Department, for suggesting the problem and for his direct supervision of this work.

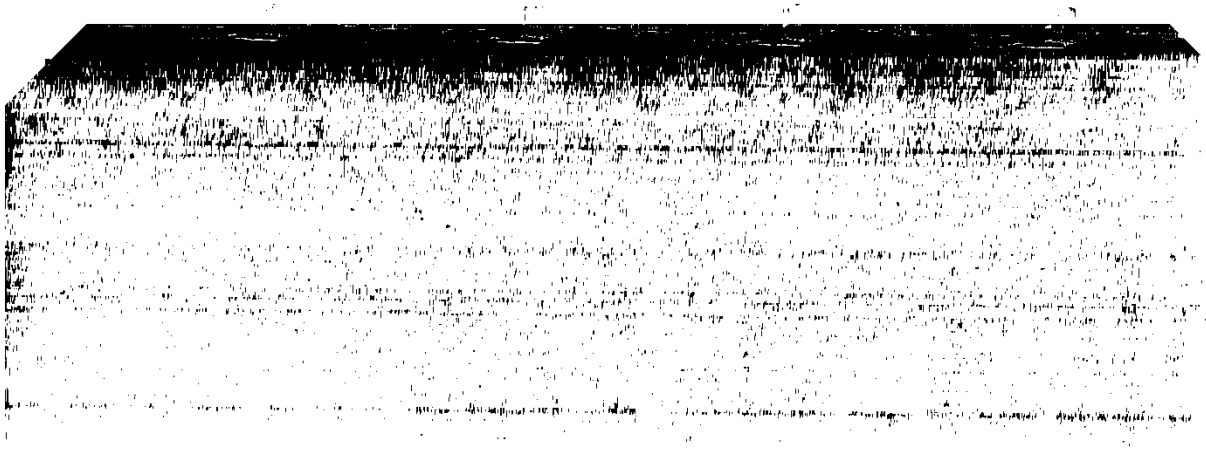
The author is grateful to Dr. Zenab Afify, Assistant Prof. in the Entomology Department, for her various help throughout the period of study and for her assisting in preparing the manuscript.

Thanks are also to Dr. S. Hamed, lecturer in the Entomology Department for supplying the susceptible house-fly strain used during this work.

The author is also indebted with thanks to the rest of the staff of the Entomology Department, Faculty of Science, Ain Shams University for their continuous help throughout the period of this study.

C O N T E N T S

Page



I- INTRODUCTION

I- INTRODUCTION

The common house fly, Musca domestica Linn. and its allied spp. in Egypt, had passed the stage of being a nuisance and became a dangerous menace to human health. It is a vector responsible for transmitting and disseminating some epidemic diseases. Since the cholera epidemic of 1947, many attempts were organised for antifly campaign. Many chemical insecticides were applied as an important means for controling this insect.

Although there are many scattered reports on the bacteria associated with the house - fly, Musca domestica, our knowledge concerning the bacterial flora of this insect in general is markedly scant.

During the years 1906-1937 considerable researches were directed towards an analysis of the bacterial flora of the house - flies, Musca spp. Results of such studies have incriminated this insect in transmitting various organisms pathogenic to many animals and plants. In the present study an attempt has been made to isolate and identify the bacterial

microorganisms associated with the house - flies collected from two different localities, reflecting two different sanitary conditions in Cairo through two successive years (1976 and 1977). Conditions to which bacteria are subjected within the fly during its life cycle were studied. The effect of insecticides representative to three main groups of chemicals used for the control of the house - fly, on the viability and virulence of the associated bacteria within the collected fly samples were determined.

AIM OF THE PRESENT WORK

The work outlined in this thesis was conducted mainly to evaluate the following:

1- Determination of the bacterial flora associated (both externally as well as internally) with the house - fly, Musca domestica collected in two environments with different sanitary conditions.

2- Isolation and identification of the isolated bacterial strains to spot the non-pathogenic types and the pathogenic ones which are taken as an indication to evaluate the capacity of this insect in the transmission and distribution of bacteria pathogenic to man, animals and plants.

3- Determination of the persistence of the bacterial microorganisms within the insect through the developmental stages and the influence that might be exerted on such bacteria by various factors prevailing within the insect body.

4- The antibacterial effect that might be caused by sublethal doses of the chemical insecticides commonly used in the control of this insect.

5- Effect of such sublethal doses of chemical insecticides on the viability of the bacteria associated with the insect.

II- LITERATURE REVIEW

II- LITERATURE REVIEW

1- Bacteria associated with the house-fly:-

Various species of bacteria have been recorded in association with insects by many authors. With regard to the bacterial association with house - fly, the following bacteria were reported.

Nicoll (1911), isolated Bacillus vesiculosis from the surface of house - flies. He also isolated Bacillus grunthal and Bacillus cloacae from the alimentary tract of the house - fly.

Cox, Lewis and glynn (1912), isolated Bacillus Lactis aerogenes from liverpool house - flies, 46 % of the colon organisms isolated belonging to this group. They also isolated various strains of Morgan's No. 1 Bacillus (Proteus morganii) from house - flies caught in infected and uninfected areas.

Torrey (1912) isolated Bacillus aerogenes from the intestinal contents of Musca domestica caught in New York city. He also isolated Salmonella paratyphi from the house - fly.

Tebbutt (1913), found that a non lactose fermenting bacillus (Bacillus A. Ledingham) isolated from the feces of children is normal to the house - fly and it was present on the ova and in the larvae and adults.

Honeij and Parker (1914), found acid - fast bacilli in Musca domestica .

Scott (1917), isolated Salmonella choleraesuis from house - flies caught in Washington.

Thomas M. Floyed and B.H. Cook (1953), revealed that the house - fly is the only means of spreading typhoid, paratyphoid and dysentery organisms. The fly carries these bacteria internally and externally and the actual multiplication of pathogenic organisms takes place in the fly intestine.

Decoursey J.D., Mc Guire, C.D., Otto, J.S., and Durant, R.C. (1956), determined the internal and external bacterial flora of pools of Musca domestica vicina and Musca sorbens collected from the faces of Egyptian children. They found no seasonal variation in total bacterial numbers. Enteric bacteria could be isolated