

بسم الله الرحمن الرحيم



-C-02-50-2-





شبكة المعلومات الجامعية التوثيق الالكتروني والميكرونيلم





جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

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



يجب أن

تحفظ هذه الأقراص المدمجة يعيدا عن الغيار













بالرسالة صفحات لم ترد بالأصل



B 1 1 C 7.

Cairo University
Faculty of Veterinary Medicine
Department of Zoonoses

PREVALENCE OF FASCIOLIASIS IN FARM ANIMALS AND MAN, WITH SPECIAL REFERENCE TO PLANTS INVOLVED IN THE TRANSMISSION CYCLE

Thesis

Presented By

Ibrahim Gouda Hafez Radwan

(B.V.Sc.) Cairo University 1992 (M.V.Sc.) Cairo University 1996

For the degree of Ph.D (Zoonoses)

Under the Supervision of

Prof. Dr. Maher A. Siam

Professor of Zoonoses
Faculty of Veterinary Medicine
Cairo University

Prof. Dr. Osman M. Hamed

Professor of Zoonoses
Faculty of Veterinary Medicine
Cairo University

Dr. Amira R. Iskander

Professor of Parasitology Animal Health Research Institute Agricultural Research Center Dokki, Giza

Faculty of Veterinary Medicine Cairo University 2001 الله المحالية

ACKNOWLEDGMENT

I would like to express my deepest gratitude to *Prof. Dr. M.A.*Siam, Professor of Zoonoses, Faculty of Veterinary Medicine, Cairo University, for his valuable guidance and stimulating suggestion, keen interest and under whose guidance and supervision the present work was carried out.

I am also indebted to *Prof. Dr. O.M. Hamed*, Professor of Zoonoses, Faculty of Veterinary Medicine, Cairo University, for his kindness, encouragement and supervision of this work.

I am also indebted to *Prof. Dr. Amira R. Iskander*, Professor of Parasitology, Animal Health Research Institute, Dokki, for her valuable guidance and help in carrying out this work.

Grateful sincerest thanks are due to *Prof. Dr. M.M. El Bahy*, Professor of Parasitology, Faculty of Veterinary Medicine, Cairo University, for valuable help, guidance and valuable advises during the study.

I am grateful to *Dr. Waheed Mohamed Aly Mousa*, Assistant Professor of Parasitology, Faculty of Veterinary Medicine, Cairo University, for valuable help and guidance during the study.

My thanks should be extended to *Dr. G.H. Salem*, Chief Researcher in Biotechnology Department, Animal Health Research Institute, Dokki, for his valuable guidance.

I would like also to acknowledge the friendly acceptance of all staff members of Department of Zoonoses, Faculty of Veterinary Medicine, Cairo University as well as the constructive cooperation of my colleagues in the Parasitology Department, Animal Health Research Institute, Dokki.

CONTENTS

	Page
INTRODUCTION	1
REVIEW OF LITERATURE	3
A. Fascioliasis in animals and humans	3
A.1. Life cycle of Fasciola gigantica	3
A.2. Prevalence of fascioliasis	4
A.2.1. In cattle, buffaloes, sheep and goats	4
A.2.2. Fascioliasis in equines	14
A.2.3. Fascioliasis in human	19
B. Lymnaea species act as an intermediate host for fascioliasis	24
B.1. Role of lymnaea species snails in the epidemiology of	
fascioliasis	24
B.2. Role of snails immunity against invasive miracidia	30
C. Plants as a source of infection for fascioliasis	33
D. ELISA in diagnosis of fascioliasis	40
MATERIALS AND METHODS	52
Materials	52
A. Copro-serological examination	52
A.1. Samples from human beings	52
A. 2. Samples from animals	52
B. Plants examination	53
C. Laboratory experiment	54
Methods	55
A. Copro-serological examination	55
A 1 Coprological examination	55

A.2. Serological examination	55	
A.2.I. Serum preparation	55	
A.2.II. Preparation of crude worm antigens	56	
A.2.III. Preparation of Fasciola gigantica excretory-		
secretory antigen (ES antigen)	56	
A.2.IV. Enzyme linked immunosorbent assay		
(ELISA)	57	
B. Examination of vegetables	59	
C. Laboratory experiment	60	
C.1. Role of different snails in transmission of Fasciola		
gigantica infection	60	
C.1.a. Collection of snails	60	
C.1.b. Maintaining of snails in the laboratory	60	
C.1.c. Production of laboratory breeding snails	61	
C.1.d. Experimental infection of laboratory bred		
snails	61	
C.1.e. Infection of laboratory bred snails	62	
C.1.f. Examination of the infected snails	63	
C.1.g. Histological section of snail	63	
C.2. Infection of rabbits	64	
RESULTS	66	
DISCUSSION	87	
CONCLUSION	101	
SUMMARY	103	
REFERENCES	106	
ARABIC SUMMARY		

LIST OF TABLES

Table		Page
1	Checker board titration of ELISA (positive control sera)	67
2	The sensitivity of crude and E/S F. gigantica antigens for	
	serodiagnosis of naturally infected hosts with F . $gigantica \dots$	68
3	The coprological and P/M examination of the farm animals	
	and man	69
4	Optical density (OD) positive readings using crude and E/S	
	Fasciola antigens in different farm animals and man	69
5	Prevalence rates of encysted metacercariae in the different	
	plants collected from Cairo, Giza and El-Fayoum	76

LIST OF FIGURES

Figu	ıre	Page
1	Evaluation of sensitivity of crude and E/S Fasciola	
	gigantica antigens for serodiagnosis of naturally infected	
	buffaloes	70
2	Evaluation of sensitivity of crude and E/S Fasciola	
	gigantica antigens for serodiagnosis of naturally infected	
	cattle	71
3	Evaluation of sensitivity of crude and E/S Fasciola	
	gigantica antigens for serodiagnosis of naturally infected	
	sheep	72
4	Evaluation of sensitivity of crude and E/S Fasciola	
	gigantica antigens for serodiagnosis of naturally infected	
	goats	73
5	Evaluation of sensitivity of crude and E/S Fasciola	
	gigantica antigens for serodiagnosis of naturally infected	
	equines	74
6	Evaluation of sensitivity of crude and E/S Fasciola	
	gigantica antigens for serodiagnosis of naturally infected	
	human	75
7	Watercress showing infection by encysted metacercariae	77
8	Lettuce leaf showing infection by encysted metacercariae	78
9	Fasciola egg of infected animals	79
10	Fasciola egg showing miracidium during hatching process	79
11	The miracidium stage	80

12	The redial stage	80
13	The cercarial stage of Fasciola	81
14	The encysted metacercariae of Fasciola	81
15	Rabbit liver showing degenerative changes	82
16	Inflammatory reaction of the tested snails against F. gigantia	
	miracidia after 2 hrs and 2 days post infection	83
17	Severe distribution in snails of L. cailliaudi hepatopancreas	
	as result of F. gigantica rediae at 4 weeks post infection and	
	another L. cailliaudi showing normal hepatopancreas	84
18	Tissue reaction in B. alexandrina snail foot after 2 weeks	
	post infection by miracidia of F. gigantica miracidia	85



INTRODUCTION

disorders of cirrhosis and primary carcinoma of the liver (*Perry et al.*, 1972). These observations, thus, make serological diagnosis an attractive alternative.

Fascioliasis is a saprometazoonosis where the parasite needs an invertebrate intermediate host to complete its epidemiologic cycle of transmission and the common source of infection was found to be green vegetables contaminated by encysted metacercariae (Sadykov, 1988).

In view of the aforementioned fact, the present study is an attempt to spot light on the copro-seroprevalence of fascioliasis in different animal species (cattle, buffaloes, sheep, goat and equine) and man as well as to compare and evaluate between two *Fasciola gigantica* antigens (crude and excretory / secretory antigens) in the diagnosis of fascioliasis by using ELISA, which is considered as the most sensitive test, allowing to early diagnosis and treatment before liver damage is too advanced. Also, the study was aimed to determining the percentage of infection of different plants by the encysted metacercariae which is the common source of infection for fascioliasis. The present study also investigated the role of *Lymnaea cailliaudi* in the epidemiological cycle of infection among other types of snails tested in this study.

