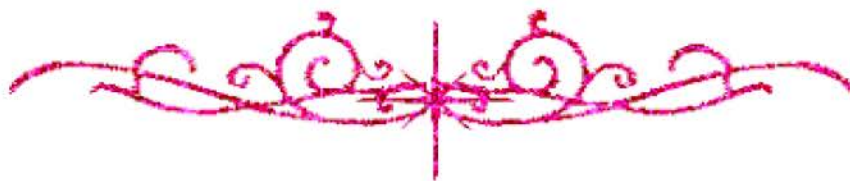


# بسم الله الرحمن الرحيم





# شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم





# جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

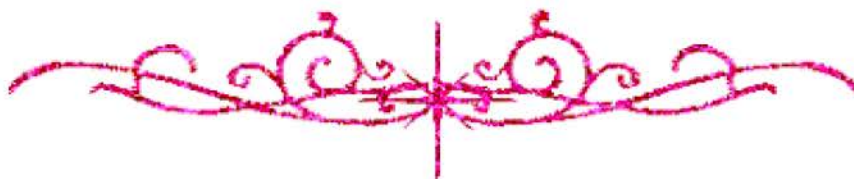
## قسم

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



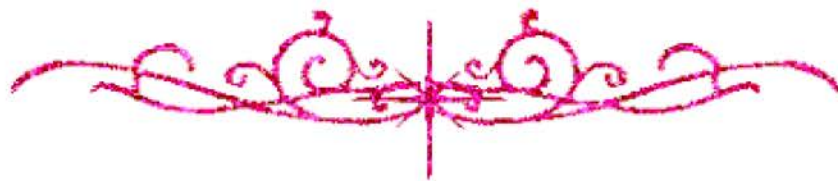
## يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار





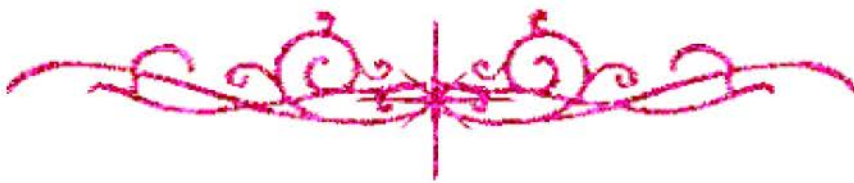
بالرسالة صفحات  
لم ترد بالأصل







# بعض الوثائق الأصلية تالفة



BUSAY

Transmission Pattern of Fasciola Infection in  
an Egyptian Village, Abo- Homos District,  
Beheira Governorate

**Thesis**

Submitted to the High Institute of Public Health in partial  
fulfillment of the degree of Master of Public Health Sciences  
(Parasitology and Medical Entomology)

**By**

**Goud Ismail El-Khwesky**

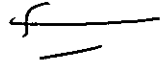
B.Sc. (Microbiology) Tanta University

High Institute of Public Health

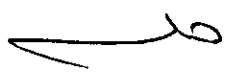
Alexandria University

2000

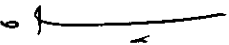
# **Supervisors**

**Prof. Dr. Rashida MR Barakat** • 

Professor of Medical Parasitology  
Department of Tropical Health  
High Institute of Public Health  
Alexandria University

 **Dr. Hala N El-Morshedy**

Assistant Professor of Parasitology  
and Medical Entomology  
Department of Tropical Health  
High Institute of Public Health  
Alexandria University

  
 **Dr. Ashry Gad**

Assistant Professor of Epidemiology  
Department of Epidemiology  
High Institute of Public Health  
Alexandria University



*Dedicate to my lovely young sister*



## ***Acknowledgment***

Thanks to Allah, greater of all, for giving me the courage and the patience to undertake and achieve this work.

I would like to express my deep appreciation and sincere thanks to **Prof. Dr. Rashida Barakat**, Professor of Medical Parasitology, Tropical Health Department, High Institute of Public Health, Alexandria University, for her valuable advice, guidance and consideration throughout the whole work. I am greatly indebted to her for the sincere criticism she afforded. I will be always grateful.

It is with great pleasure, deep satisfaction and gratitude, that I acknowledge the collaboration of my esteemed **Dr. Hala EL-Morshedy**, Assistant Professor of Parasitology and Medical Entomology, High Institute of Public Health, Alexandria University. She has been most diligent and talented in her efforts to accomplish this work. She gave generously of her precious time in designing this work, in continuous encouragement and in fruitful criticism. I will always remain grateful to her.

I am also very grateful to **Dr. Ashry Gad**, Assistant Professor of Epidemiology, High Institute of Public Health, Alexandria University, for his helpful advice, support and encouragement.

I wish to thank **Dr. Mona Hassan**, Assistant Professor of Biostatistics, High Institute of Public Health, Alexandria University, for her help in the analysis of data.

I will not miss to thank heartfully **Mrs. Salwa Fahmy**, Social Research Worker, Tropical Health Department, High Institute of Public

Health, Alexandria University, for her advice and participation in data analysis. I will always remain grateful.

It is a great pleasure to express my deepest gratitude and indebtedness to **Dr. Ahmed Samy**, Manager of Laboratory of Parasitology, Animal Health Research Institute, Ministry of Agriculture, for his guidance in the identification of parasites in animal specimens.

My deepest appreciation to **Prof. Dr. Mohamed EL-Bahy**, Professor of Parasitology, Faculty of Veterinary Medicine, Cairo University, for his support and encouragement

I will not miss to thank heartfully **Dr. Badria Zaki**, Manager of Health Administration in Abo-Homos District, Beheira Governorate and **Dr. Fawzia Hassan**, Manager of the Rural Health Unit in EL-Berka Village, Abo-Homos District, for their guidance in this work and their efforts for treatment of human schistosomiasis during the study period.

I wish to express my great thanks to my colleagues and all members of Parasitology Department and all members of the field and every one shared in this work for their kind collaboration and encouragement.

My endless and cordial gratitude to my lovely parents, and sisters for their encouragement and continuous support throughout the whole period of my study.

# ***Contents***

---

|       | <i><b>Chapter</b></i>                | <i><b>Page</b></i> |
|-------|--------------------------------------|--------------------|
| I.    | Introduction .....                   | 1                  |
| II.   | Aim of The Work .....                | 22                 |
| III.  | Material and Methods .....           | 23                 |
| IV.   | Results .....                        | 29                 |
| V.    | Discussion .....                     | 66                 |
| VI.   | Summary .....                        | 81                 |
| VII.  | Conclusion and Recommendations ..... | 86                 |
| VIII. | References .....                     | 88                 |
|       | Appendices                           |                    |
|       | Arabic Summary                       |                    |



# INTRODUCTION

# ***Introduction***

## **Public Health Importance of *Fasciola***

*Fasciola* is a well known parasite of herbivorous animals. It has a worldwide distribution in the animal reservoir host. A large variety of animals, such as sheep, goats, cattle, buffaloes, horses and rabbits, show infection rates that may reach up to 90% in some areas. Infection of human host was very sporadic until the last two decades when clinical cases and outbreaks were reported <sup>(1)</sup>.

The estimated number of infected people is 2.4 million in 61 countries. The number at risk is more than 180 million throughout the world. The largest numbers of infected people have been reported from Bolivia, Ecuador, Peru, China, Islamic Republic of Iran, Egypt, France and Portugal <sup>(2)</sup>.

In the Eastern Mediterranean region, only in the Libyan Arab Jamahiriya no confirmed cases of human infection have been reported, although animal fascioliasis is widespread and the potential for human infection exists. In Iraq, Lebanon, Morocco, Tunisia and Yemen, fewer than 100 cases have been documented. It is possible that the problem has not yet received enough attention in these countries <sup>(2)</sup>.

Since fascioliasis had been reported mainly as case reports rather than in community based studies, it is difficult to assess the extent of infection among areas where cases are reported. The frequency of infection is undoubtedly underreported. Investigation following

outbreaks had identified asymptomatic infections. Amongst those with severe symptoms misdiagnosis is common due to migratory phase <sup>(3,4)</sup>.

*Fasciola hepatica* is common in temperate and subtropical areas, especially in sheep raising countries. Human infections are relatively common in Europe especially France, Spain and Portugal, in the Middle East particularly Egypt, in Central and South America, as Cuba, Peru and in Africa <sup>(5,6)</sup>.

*Fasciola gigantica* occurs in South, South East Asia and Africa. Infection by both types of *Fasciola* coexists in some countries, where their differentiation is often difficult <sup>(7,8)</sup>.

Animal fascioliasis is of utmost economic importance, as it causes monetary losses through mortality, decrease in meat and wool production as well as growth rate and reduction in host fecundity <sup>(9)</sup>.

In most of animals infected with *F.gigantica*, pathological lesions are confined to the liver, which is enlarged and has widespread grayish deposits on its surface. In some buffaloes with a high fluke burden, the liver is three times the normal size. Close examination reveals multiple areas of hemorrhage and degeneration <sup>(10)</sup>.

## Epidemiology of *Fasciola*

The occurrence of human fascioliasis is determined by the presence of intermediate snail hosts, herbivorous animals, and dietary habits of man.

Important snail hosts for *F. hepatica* are *Lymnaea truncatula* in Great Britain and Europe and *Galloabulimoides* (Gb), *Techella* and others in the USA. In New-Zealand, *L. tomentosa* and *L. truncatula* have occurred without fascioliasis becoming a major disease but the introduction of *L. columella* has markedly increased the range and severity of the disease. *L. tomentosa* is the only snail host in Australia although *L. columella* has been reported to be present in non-farming areas <sup>(8)</sup>. The snail intermediate host in Peru was reported to be *L. viatrix* <sup>(11)</sup>. *L. cubensis* snails were found in the watercress farms of Puerto Rico <sup>(12)</sup>. In Argentina *L. viator* is the snail intermediate host of *F. hepatica* <sup>(13)</sup>.

The important snail hosts for *F. gigantica* are *Lymnaea cailliaudi* and *L. cailliaudi var alexandrina* in Egypt <sup>(14)</sup>. *Biomphalaria alexandrina* has been reported once to be naturally infected with *F. gigantica* in Egypt <sup>(15)</sup>. *L. auricularia* is the snail intermediate host of *F. gigantica* in India <sup>(16)</sup>. In Iraq, *L. gedrosiana* was found to be infected with *F. gigantica* <sup>(17)</sup>.

Climatic conditions are critical for the development of both *Lymnaea* snails and the flukes <sup>(1)</sup>. In Morocco in 1986, there were two major peaks of snail population, the first occurred in April at the onset of spring and the second in July. The second peak represented the daughter generation, and was associated with increased egg production in the