بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الإلكتروني 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

MONA MAGHRABY

Cairo University
Faculty of Veterinary Medicine
Department of Parasitology

Advanced studies on Fish-borne *Trematodes* with special reference to Family*: Clinostomatidae* in Egypt

Thesis

Presented by

Mai Anter Anwar Salem

B. V. Sc. (2013), M. V. Sc. (2017)

Assistant Lecturer of Parasitology

Faculty of Veterinary Medicine, Cairo University.

For the degree of Ph.D. in Veterinary Medical Science

(Parasitology)

Under the supervision of

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2021

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Department of Parasitology

Supervision sheet

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Approval sheet

The examining committee approved the thesis entitled

"Advanced studies on Fish-borne *Trematodes* with special reference to Family*: Clinostomatidae* in Egypt".

for the degree of PhD in Veterinary Medicine (Parasitology) from Cairo University

Thesis

Presented by

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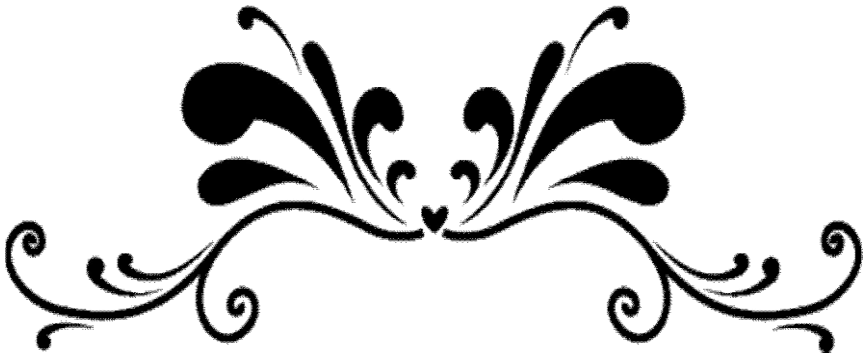

Dedication

To the immaculate soul of my father and my good brother "Anwar", my lovely Husband, my Daughter s "Mariam & Reem" and my family.

The reason of what today I became thanks for your great support and continuous care .

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Abstract

Fish-borne trematodes (FBT) are extremely important zoonotically and can infect humans via the consumption of poorly cooked fish containing active metacercariae. In this study, samples of wild-caught and farmed Nile tilapia (*Oreochromis niloticus*) collected from Giza and Fayoum, respectively were investigated for the occurrence of FBT. The investigated *O. niloticus* were found to be infected with different encysted metacercaria (EMC) that were morphologically categorized at the genus level to *Prohemistomum* species, *Haplorchis* species, *Clinostomum complanatum*, *C. phalacrocoracis* and *Euclinostomum heterostomum* respectively in Giza and to *Pygidiopsis* species only in Fayoum. The mean prevalence of EMC of *Prohemistomum* sp., *Haplorchis* sp., *Pygidiopsis* sp., *C. complanatum*, *C. phalacrocoracis* and *Euclinostomum heterostomum* in both Governorates in (mean ± SD) were 81.89 ± 6.48, 18.03 ± 2.69, 34.64 ± 3.42, 35.94 ± 2.24, 60.93 ± 6.70 and 15.90 ± 5.17 respectively. Also the study provide the first molecular differentiation between *Clinostomum* sp., (*C.complanatum* and *C.phalacrocoracis*) and *Euclinostomum* sp. (*E.heterostomum*) in Egypt by sequencing their rDNA ITS and mtDNA COI and deposited their sequences in the GenBank. The accession numbers of the sequences of mtDNA COI genes of *C.complanatum* and *C.phalacrocoracis* and *E.heterostomum* were MT140101.1, MT140102.1 and MW193532.1, respectively. Moreover, the accession numbers of rDNA ITS genes were MT133890.1 and MT158303.1 for *C.complanatum* and *C.phalacrocoracis*, respectively. Experimental infection of domestic pigeons (*Columba livia domestica*) as a definitive host with *Prohemistomum* sp., *Haplorchis* sp., and *Pygidiopsis* sp. EMC confirmed the successful development of three types of adult digenetic trematodes in their small intestine, which could be identified as *P. vivax*, *H. pumilio*, and *P. genata*. Furthermore, this study presents the first molecular characterization of adult *Heterophyidae*, namely, *P. genata* and *H. pumilio* in Egypt by sequencing of their rDNA-ITS2 genes and deposited in the GenBank under the accession numbers MT672308.1 and MT707975.1, respectively. In addition, subsequent phylogenetic analysis of *Clinostomum* sp., Euclinostomum EMC and the recovered *Heterophuidae* flukes and the comparison with other trematode genes in GenBank. In the future, the molecular and the bioinformatics aspects based on genetic variations will lead to explore the untouched areas of trematodes. The histological findings of the infected tissues with the obtained EMC were also reported.

Keywords: Fish borne zoonotic trematodes, experimental infection pigeon, Molecular Analysis, rDNA- COI mtDNA, rDNA-ITS2, Nile tilapia, Egypt.