PRELIMINARY STUDY FOR DETECTION OF *CAPILLARIA PHILIPPINENSIS* COPRO-DNA IN DIARRHEIC PATIENTS

Thesis

Submitted for partial fulfillment of
M.D. degree in Medical Parasitology

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2014

Dedication

To everyone who has lent me his helping hand from my start till now.

With all my respect and appreciation.

Mona Ibrahim Ali

Acknowledgement

*First and foremost thanks are due to **Allah**, the most beneficent and merciful for helping me getting this work done.*

*I am so grateful to **Prof. Dr. Mona Mahmoud**, head of the Parasitology, Faculty of Medicine, Cairo University, for her help.*

*I would like to express my deep thanks to **Prof. Dr. Nadia Aly Eissa El-Dib,** Professor of Parasitology, Faculty of Medicine, Cairo University, for her valuable guidance, encouragement, help, advice, and overwhelming kindness. I wish to express to her my extreme gratitude.*

*My deepest appreciation goes to **Prof. Dr. Ayman** **Abdel-moamen Al-Badry,** Professor of Parasitology, Faculty of Medicine, Cairo University, for his help, extremely valuable guidance, advice, endless support, knowledge and valuable effort throughout the work. I consider an honor to work with him.*

*I feel great gratitude to **Dr. Marwa Ahmed Ghieth,** Lecturer of Parasitology, Faculty of Medicine, Beni suief University, for her cooperation, encouragement, and help.*

*I wish to express my extreme gratitude to **Prof. Dr. Jose Meguil Rubio Muňez,** Professor of Parasitology**,** Malaria & Emerging Parasites Diseases Lab., Parasitology Department, Microbiology Center, Instituto de Salud Carlos III, Madrid, Spain, for his part in designing the work, kind supervision, help, and cooperation.*

I would like also to express my thanks to the staff members of Internal, Tropical, and Clinical Pathology Medicine Departments of Faculty of

Medicine, Beni-Suief University for their help in detection and collection of the clinical data of cases.

I am really thankfull to all my Professors & colleagues in Medical Parasitology Department, Beni suef University and Cairo University for their ever encouragement to complete this work.

Finally, I would like to express my warm feelings to all my family members, So, I take this opportunity to thank them especially my parents, my daughters and my husband.

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List of abbreviations

Bp	Base pair
CI	Confidence interval
CT	Computerized tomography
C. aerophila	*Capillaria aerophila*.
C. boehmi	*Capillaria boehmi*
C. hepatica	*Capillaria hepatica*.
C.obsignata	*Capillaria obsignata*
C. philippinensis	*Capillaria philippinensis.*
C. putorii	*Capillaria putorii*
*cox*1	cytochrome *c* oxidase subunit 1
DNA	Deoxyribonucleic acid
dNTPs	Deoxynucleotide triphosphates
ddH_2O	Distilled water
ELISA	Enzyme linked immunosorbent assay.
Hb	Hemoglobin.
IHA	Indirect hemagglutination
Ig	Immunoglobulin
Lao PDR	Lao People's Democratic Republic.
mtDNA	Mitochondrial DNA
nPCR	Nested polymerase chain reaction
NPV	Negative predictive value
OR	Odds ratio
PPV	Positive predictive value
RBCs	Red blood cells
Rx	Master mixture

SD	Standard deviation
TBE	Tris boric acid EDTA
T_m	Melting temperature
T. vulpis	*Trichuris vulpis*
18S rRNA	small subunit ribosomal RNA

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Abstract

(**Key words**: ***Capillaria philippinensis***, Intestinal capillariasis, Chronic diarrhea, Nested PCR, ***Capillaria*** Molecular diagnosis).

C. philippinensis is a parasite of the small intestine that causes a severe enteropathy and at times death in cases of delayed diagnosis or inappropriate treatment. Molecular-based approaches offer greater sensitivity and specificity over the existing diagnostic tests and it can help in the diagnosis of ***Capillaria*** infected cases. The aim of our study is to develop a molecular diagnostic method, by utilization of PCR-based assay for detection of ***C. philippinensis.*** This study was conducted over 250 patients attending the outpatient clinics of Beni-Suief University hospital. Stool samples were collected and subjected to copro-parasitological examination and copro- nested PCR (nPCR) assays. By microscopic examination, ***C. philippinensis*** was detected in stool samples of 36 (24%) individuals, all were complaining of chronic diarrhea. By nPCR assay, Copro-DNA was detected in the fecal samples of these 36 positive cases and in fecal samples of other seven individuals whose stool samples were negative for ***Capillaria*** by microscopic examination. ***C. philippinensis***-specific PCR method has been successfully used and evaluated in this study. It is a rapid specific and accurate test that identifies infection with this parasite avoiding the delay in management and possible complications

1. Introduction

Human intestinal capillariasis is a parasitic disease caused by ***Capillaria philippinensis***, a nematode parasite of fish-eating birds. Although man is accidentally infected by this parasitic disease, its outcome may be fatal if untreated in due time (Soukhathammavong *et al.*, 2008 and Attia *et al.*, 2012).

C. philippinensis, first documented in the Philippines in 1963 by Chitwood *et al.* (1964) Subsequently, it has been reported in the Philippines and Thailand, and sporadic cases of the disease were diagnosed in other areas (Austin *et al.,* 1999). In Egypt, Yousef et al., 1989, reported the first case.

Intestinal capillariasis is a life-threatening disease in humans that causes severe enteropathy (Cross, 1998). The most common pathological features are the thickening of the intestinal wall, the deepening of the crypts, and the atrophy of the villi leading to malabsorption of all nutrients (Sangcha *et al*., 2007). The infestation of the small bowel by this parasite leads to weight loss, chronic diarrhea, abdominal pain, borborygmi, muscle wasting, cachexia, weakness, edema, ascites and/or pleural effusion as a complication of hypo-albuminaemia. Death may