

Occurrence of enteric parasites in household and free range ducks at Hakaluki and Tanguar haor of Sylhet division, Bangladesh



Md. Sarwar Uddin

Roll No: 0117/01

Registration No: 363

**A thesis submitted for partial fulfillment of the requirements for the degree of
Master of Science in Parasitology**

**Department of Pathology and Parasitology
Faculty of Veterinary Medicine
Chittagong Veterinary and Animal Sciences University
Chittagong-4225, Bangladesh**

JUNE 2018

Authorization

I hereby declare that I am the sole author of the thesis. I authorize the Chittagong Veterinary and Animal Sciences University (CVASU) to lend this thesis to other institutions or individuals for the purpose of scholarly research. I further authorize the CVASU to reproduce the thesis by photocopying or by other means, in total or in part, at the request of others institutions or individuals for the purpose of scholarly research.

I undersigned, and author of this work, declare that the electronic copy of this thesis provided to the CVASU Library, is an accurate copy of the print thesis submitted, within the limit of technology available.

Md. Sarwar Uddin

**Occurrence of enteric parasites in household and free range
ducks at Hakaluki and Tanguar haor of Sylhet division,
Bangladesh**

.....
Md. Sarwar Uddin

Roll No:0117/01

Registration No. 363

This is to certify that we have examined the above MS thesis and have found that is complete and satisfactory in all respects, and that all revisions required by the thesis examination committee have been made

.....
(Prof. Dr. Mohammad Alamgir Hossain)

Supervisor

Professor and Head

Department of Pathology and Parasitology,
Chittagong Veterinary and Animal Sciences University

.....
(DR. Tofazzal Md. Rakib)

Co- Supervisor

Lecturer

Department of Pathology and Parasitology,
Chittagong Veterinary and Animal Sciences University

.....
(Prof. Dr. Mohammad Alamgir Hossain)

Chairman of the Examination Committee

Department of Pathology and Parasitology

Faculty of Veterinary Medicine

**Chittagong Veterinary and Animal Sciences University
Chittagong-4225, Bangladesh**

June 2018

Acknowledgements

All praises are for the Almighty Allah, the giver of bountiful blessings for providing me with strength and sound health to finish this work successfully. I am grateful to many other people who has inspired and supported me to accomplish this exciting work.

I am very grateful to my Hon'ble supervisor, **Professor Dr. Mohammad Alamgir Hossain** for his excellent guidance, cordial support and constant encouragement to complete this interesting work successfully.

I am also grateful to my Co-Supervisor, **DR. Tofazzal Md. Rakib**, Lecturer, Department of Pathology and Parasitology, CVASU, for his encouragement, cooperation and full technical support in this research.

I like to express my sincere thanks to **Professor Dr. Md. Masuduzzaman**, of the Department of Pathology and Parasitology, CVASU and Principal Investigator, PIU-BARC, NATP-Phase-II, CRG No.: 448 for funding the research work.

Sincere thanks to the University higher education authority and HEQEP project (CPSF-2180).

Special thanks to **Professor Dr. AMAM Zonaed Siddiki**, **Professor Dr. Tania Ferdushy**, **Professor Dr. Krisna Roy**, **Professor Dr. Sharmin Chowdhury**, **Associate Professor Dr. Abdul Alim**, **Associate Professor Dr. Shubhagata Das** and **DR. Shafiqul Islam** for their assistance to complete my thesis work.

This work would not have been possible without the kind co-operation of all the MS fellow and staffs of the Department of Pathology and Parasitology, CVASU.

I am also grateful to all the members of my beloved family for their love, affection and motivation that inspired me to work more.

The Author

June 2018

Dedication

To my ever loving parents

Md. Abdul Sabur
and
Ms. Shemul Akter

Table of contents

Contents	Page no.
Authorization	ii
Signature page	iii
Acknowledgements	iv
Dedication	v
Table of contents	vi-vii
List of tables	viii
List of figures	ix
List of abbreviation	x
Abstract	xi
Chapter I: Introduction	1-2
1.1 Objectives	2
Chapter II: Review of Literature	3-15
2.1 Enteric Parasites of duck	3
2.1.1 <i>Amidostomum anseris</i>	3
2.1.2 <i>Heterakis</i> spp.	4
2.1.3 <i>Ascaridia galli</i>	5
2.1.4 <i>Capillaria</i> spp.	7
2.1.5 <i>Tetrameres</i> spp.	8
2.1.6 <i>Hymenolepis</i> spp.	8
2.1.7 <i>Echinostoma revolutum</i>	9

2.1.8 <i>Prosthogonimus</i> spp.	9
2.2 Prevalence of the enteric parasites:	10
Chapter III: Materials and methods	16-26
3.1 Study area and duration of study	16
3.2 Sampling strategy	18
3.3 Collection of sample	20
3.4 Qualitative techniques for fecal examinations	20
3.4.1 Direct smear technique	20
3.4.2 Test tube flotation technique	21
3.4.3 Sedimentation technique	23
3.5 Statistical analysis	25
Chapter IV: Results	27-31
4.1 Occurrence of enteric parasites	27
Chapter V: Discussion	32-33
Chapter VI: Conclusion	34
Chapter VII: Recommendation	35
Chapter VIII: References	36-40
Annex I	41-44

List of tables

Table no.	Topic	Page no.
Table 1	Prevalence of enteric parasites in winter, summer and monsoon seasons	27
Table 2	Relationship between the breed of duck and season of helminth infections	28
Table 3	Relationship between the breed of duck and the helminth species	28
Table 4	Prevalence of parasites in relation to the age of ducks	29
Table 5	Invariable logistic regression analysis to evaluate the association between explanatory variables with <i>Capillaria</i> spp.	30

List of figures

Figure	Topic	Page no.
Figure 1	Study area of Hakaluki and Tanguar Haor	16
Figure 2	Sampling sites of Hakaluki haor	17
Figure 3	Sampling sites of Tanguar haor	17
Figure 4	Sample selection strategy from village of sampling area	19
Figure 5	Sampling strategy of duck from sampling area	19
Figure 6	Direct smear technique	20
Figure 7	Flotation technique	22
Figure 8	Sedimentation technique	24
Figure 9	Duck of haor areas, Sylhet division	26
Figure 10	Egg of <i>Prosthogonimus</i> spp.	31
Figure 11	Egg of <i>Capillaria</i> spp.	31
Figure 12	Egg of <i>Ascaridia galli</i>	31
Figure 13	Egg of <i>Amidostomum</i> spp.	31

List of Abbreviations

Abbreviation	Elaboration
KK	Khaki Campbell
DPD	Deshi Pati Duck
<	Less than
>	Greater than
M	male
F	female
%	percent
spp.	species
DLS	Department of Livestock Services
GDP	Gross Domestic Product

ABSTRACT

Bangladesh has the third largest duck population in the world with the stocks of 52.24 million. Duck rearing has potential to give maximum return with minimum investments. This study of enteric parasites of ducks was undertaken to estimate the prevalence and relationships between prevalence and the age, breed of ducks at Hakaluki and Tanguar haor of Sylhet division, Bangladesh. A total of 600 fecal samples of ducks of different ages and breeds were collected and examined using standard examination techniques includes flotation, sedimentation and direct smear under microscopy. The prevalence of helminths was found to be 48.33% (290) from which the prevalence of nematode, cestode, and trematode infections were 39.67% (238), 3.33% (20) and 9.33% (56) respectively. The nematodes identified include *Capillaria* spp., *Ascaridia galli*, and *Amidostomum anseris* and *Tetrameres* spp. The reported trematode and cestode were *Prosthogonimus* spp. and *Hymenolepis* spp. respectively. The helminths infections were recorded in Muscovy 77.78% (7), Deshi Pati Duck 52.15% (182) and Khaki Campbell 41.74% (101) were more in the age group of more than 6 to 24 months. The seasonal variation of helminths infection were observed and recorded in three different seasons. The highest rate of infection was observed in monsoon season 52.5% (105) followed by summer 50% (100) and winter season 42.5% (85). The present study suggests that age, breed of ducks and seasons of the year influence the enteric parasitic infection to a greater extend in the duck in Hakaluki and Tanguar haor of Sylhet division, Bangladesh.

Key words: Prevalence, enteric parasites, duck, haor