**PREVALENCE OF *MYCOPLASMA SYNOVIAE* IN THE POULTRY BREEDER FARMS AT CHITTAGONG**

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**A THESIS**

**BY**

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SESSION: 2011 – 2012

**MASTER OF SCIENCE (MS)**

**IN**

**MICROBIOLOGY**

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**CHITTAGONG – 4225, BANGLADESH**

**DECEMBER 2013**

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Session: 2012 – 2013

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

**Master of Science (MS)**

**In**

**Microbiology**

**Department of Microbiology**

**Faculty of Veterinary Medicine**

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**TO MY**

**RESPECTED**

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**ACKNOWLEDGEMENT**

There are so many people I would like to thank for a huge variety of reasons. I owe my gratitude to all those people who have made this thesis possible. First and foremost I offer my sincerest gratitude to my supervisor, **Dr. Kazi M Kamaruddin,** Director, Poultry Research and Training Centre (PRTC), Chittagong Veterinary and Animal Sciences University (CVASU), who has supported me throughout my thesis with his patience and immense knowledge. His guidance helped me in all the time of research and writing of this thesis. I could not have imagined having a better advisor and mentor for my Masters Degree study. I would also grateful to him for managing to read the whole thesis so thoroughly and for insightful comments on the text. Without his intelligence, perceptiveness and encouragement I would never have finished this thesis. I would like to give special thanks to **Professor Dr. Paritosh Kumar Biswas,** Dean,Food Science and Technology and **Professor Dr. Abdul Ahad,** Head, Dept. of Microbiology for giving me valuable advice and cooperation. I would like to thank **DR. Md. Inkeyas Uddin,** Scientific Officer, Poultry Research and Training Centre, for helping me in various laboratory works specifically for sample collection. I would like to give thanks all the office staffs of the Department of Microbiology, CVASU and PRTC for their technical assistance during the research work. I would like to express my deep sense of gratitude and thanks to **Dr. A. S. Mahfuzul Bari,** the **Vice Chancellor,** Chittagong Veterinary and Animal Sciences University.

The research work was financed by **NATP: Phase 1; BARC** project, through the poultry Research and Training Centre, CVASU. I thank all of them of PRTC and other necessary additional logistic supports from the said applied research project.

Besides the above mentioned name help and co-operation have been received from many persons during the tenure of this piece of work. The author is immensely grateful to all of them, although it is not possible to mention every one by name.

Last but not the least, I would like to thank my beloved **parents** for their blessings, inspiration, sacrifice and moral support which opened the gate and paved the way to my higher studies and also for providing me with the best of everything in my life.

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**STATEMENT OF CANDIDATE**

I, Md. Harisul Abid, declare that this thesis is submitted in fulfillment of the requirements for the Degree of Master of Science (MS) in Microbiology, Department of Microbiology, Faculty of Veterinary Medicine, Chittagong Veterinary and Animal Sciences University. It is wholly my own work unless otherwise referenced or acknowledged. The document has not been submitted for qualifications at any other academic institution.

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**LIST OF ABBREVIATIONS AND SYMBOLS**

AGP Agar gel precipitation test

ATP Adenosine triphosphate

bp Base pair

DNA Deoxyribonucleic acid

dNTP Deoxyribonucleotide triphosphate

ELISA Enzyme linked immunosorbent assay

G- C Guanine and cytocine

et al. and others

HI Haemagglutination inhibition

I.F Immnuoflourescent technique Ig A Immunoglobulin A

Ig G Immunoglobulin G Ig M Immunoglobulin M

IL Interleukin

kb Kilobase

kDa Kilo Dalton

MG *Mycoplasma gallisepticum*

MS *Mycoplasma synoviae*

MSPA Mycoplasma surface protein A

MSPB Mycoplasma surface protein B

NAD Nicotinamide adenine dinucleotide

ND Newcastle Disease

NK Natural killer

O.I.E Office international des epizootics

ORF Open reading frame

PCR Polymerase chain reaction

pH Hydrogen ion concentration

PPLO Pleuro pneumonia like organism

RBC Red blood cells

rRNA Ribosomal ribonucleic acid

SPA Serum plate agglutination

TAE Tris- Acetate EDTA

TNF Tumour necrotizing factor

% Percentage

> Greater than

< Less than

µl Microlitre

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**SUMMARY**

Throughout the world *Mycoplasma synoviae* (MS) is an important pathogen of poultry especially for chicken and turkey. It causes respiratory tract infection and infectious sinusitis. The study was conducted to determine the seroprevalence of *Mycoplasma synoviae* (MS) infection with associated risk factors and identification of MS organism in unvaccinated flocks of commercial breeder farms of Chittagong district from January 2012 to December 2012. The risk factors were selected as farm, flock size, age and season. Blood samples were aseptically collected from the wing vein using (3-ml) sterile disposable syringes. A total of 365 serum samples were collected and tested for MS using serum plate agglutination (SPA) test for determination of *Mycoplasma synoviae* seroprevalence. On the other hand tracheal swabs were collected from each sero-positive flocks for Polymerase Chain Reaction (PCR) to determine the presence of *Mycoplasma synoviae* (MS) organism. For statistical analysis (Chi square test and Pearson correlation) was used. Among the farms the highest prevalence was found to be 69.23% and the lowest was 28.57% with the average 60%. The seroprevalence of MS infection in the breeder farms was highest 70.53% with the flock size >10000 birds whereas it was lowest 53.79% in the flocks ranging from 4000- 7000. According to age group the prevalence was found highest 69% in >60 weeks age group of birds and lowest 42.25% in 10-19 weeks group. The seroprevalence of MS in winter season was found as highest as 64.37% whereas it was found lowest 57.52% in summer season. There was significant difference (p<0.05) among the seroprevalence of MS in different breeder farms, flock size and age groups but there was statistically no significant (p>0.05) difference in seroprevalence of MS among the winter, summer and rainy season. The results showed that occurrence of MS have a significant relationship with the age, flock size and farm condition. To confirm the presence of MS in the samples PCR test was applied using specific published primers to amplify a 214 bp region of the 16S rRNA gene of the organism. The DNAs of MS were extracted using boiling method. In PCR all sero–positive flocks showed positive result for MS. As it was possible to identify MS using PCR from samples taken directly from tracheal swabs avoiding time consuming and laborious conventional culture method, it may be suggested that the PCR method could be used as an alternate of culturing method for identification of the organism.

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