**AN INVESTIGATION ON PERSISTENCY OF *SALMONELLA* PARATYPHI B VARIANT JAVA IN EXPERIMENTALLY INFECTED BACKYARD CHICKEN**

**A THESIS**

**BY**

**SABIHA YEASMIN TANIA**

**ROLL NO.: 0211/06**

**REGISTRATION NO.: 110**

**SESSION: 2011-2012**

**SEMESTER: JULY-DECEMBER, 2012**

**MASTER OF SCIENCE (MS)**

**IN**

**MICROBIOLOGY**

****

**DEPARTMENT OF MICROBIOLOGY**

**FACULTY OF VETERINARY MEDICINE**

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**Submitted to the**

Department of Microbiology

Faculty of Veterinary Medicine

Chittagong Veterinary and Animal Sciences University, Chittagong

In partial fulfillment of the requirements of the degree of

MASTER OF SCIENCE (MS)

IN

MICROBIOLOGY

DEPARTMENT OF MICROBIOLOGY

FACULTY OF VETERINARY MEDICINE

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**Approved as to style and content by**

**DR. PARITOSH KUMAR BISWAS**

**Research Supervisor**

**Department Of Microbiology**

**Prof. Dr. Abdul Ahad**

**Chairman of the Examination Committee**

**&**

**Head**

**Department of Microbiology**

**CHITTAGONG VETERINARY AND ANIMAL SCIENCES UNIVERSITY**

**CHITTAGONG**

**FEBRUARY, 2013**

**DEDICATED TO MY**

**RESPECTED PARENTS,**

**YOUNGER BROTHER, SISTERS**

**AND**

**BELOVED**

**HUSBAND ACKNOWLEDGEMENTS**

*At first I would like to express my heartiest gratitude to my creator Allah, the most Benevolent, the most Merciful (All Praise worth be to Him).*

*It feels as if I have travelled and spend more time with my laptop than with my family; I would never have managed to pull this off without their support.*

*The strain of Salmonella* ParatyphiB *var.* Java *used in this study was provided from the International Centre of Diarrhoic Disease Research, Bangladesh (icddr,b).*

*I sincerely want to thank my supervisor Professor Dr. Paritosh Kumar Biswas (Head of the Department, Department of Microbiology, Chittagong Veterinary and Animal Sciences University) with whom I have worked for the last one & half years. It has been a long and interesting journey and P K Biswas has always given me opportunities to have an impact on my daily work and duties. I am also honoured that he and Dr. Himel Barua (Assistant Professor, Department of Microbiology, CVASU) had faith in me and offered me the chance to initiate experiment despite my lack of proper knowledge.*

*I would like to thank Dr. Shuvagata Das (Assistant Professor, Department of Pathology and Parasitology, CVASU) for assisting my duties. I would also like to thank all my mates (especially Dr. Shamima Najmin) and laboratory technicians in our group and especially Mr. Monju, Mr. Jamal and Mr. Shafiq for their outstanding technical assistance.*

*Dr. Sabiha Yeasmin Tania*

*The Author*

**STATEMENT OF CANDIDATE**

I, Sabiha Yeasmin Tania, declare that this thesis is submitted in fulfillment of the requirement for the Degree of Master of Science (MS) in Microbiology, Department of Microbiology, Faculty of Veterinary Medicine, Chittagong Veterinary and Animal Sciences University. The document has not been submitted for qualifications at any other academic institution.

The Author

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**LIST OF ACRONYMS USED**

BGA- Brilliant Green Agar

BPW – Buffered Peptone Water

CDC – Centers for Disease Control and Prevention

CFU- Colony Forming Unit

CI- Confidence Interval

DPI- Days post Infection

DPX- Digital Picture Exchange

HCL- Hydrochloric Acid

H & E – Haematoxylin and Eosin

ICDDR, B – International Centre for Diarrhoeal Disease Research, Bangladesh

LPS - Lipopolysaccharide

MLST - Multilocus Sequence Typing

MLVA – Multiple- Locus Variable number tandem repeat Analysis

MSRV- Modified Semisolid Rappaport Vassiliadis

NTS – Non Typhoidal *Salmonella*

PAS - Periodic Acid-Schiff

PCR – Polymerase Chain Reaction

PFGE – Pulse Field Gel Electrophoresis

WHO – World Health Organization

**SUMMARY**

*Salmonella* is by far the most widely distributed food-borne zoonotic pathogen. There are >2500serovars of *Salmonella enterica.* All motile serovars are zoonotic, and poultry harbors a good number of them including *Salmonella* Paratyphi B *variant* Java *(S.* Java*).* Recently, isolates belonging to this serovar have been isolated from human non-typhoidal clinical cases of gastroenteritis in Bangladesh. Their source of origin in Bangladesh was unknown, but poultry could be a putative source, because reports in literature indicate that poultry could be its reservoir. But information on its persistency in infected/colonized backyard chickens is absent and this information is important to know because rural people in Bangladesh are closely associated with backyard chickens. Most motile serovars are generally colonized in poultry without causing any clinical disease, but can be shed from them to the environment causing a public health hazard. To explore the persistency of *S.* Javaof human non-typhoidal case origin in backyard chickens and its potential to cause clinical disease 27 backyard chickens were infected orally at the rate of 1 ml per bird containingn106 CFU (Colony Forming Unit) and observed for 30 days post infection (DPI). The shedding of *S.* Javain faeces was screened using novobiocin-addedModified Semisolid Rappaport Vassiliadis (MSRV) medium and Brilliant Green Agar (BGA) by seeing spreading turbid growth on MSRV and bright red colonies on BGA. Persistency of the organism in different internal organs was investigated by taking inoculums of them from four sacrificed birds, and all dead birds.

Fecal samples from the infected chickens were collected by sterile swabs and then immediately immersed into test tubes containing peptone water and incubated for 24 hours at 37ºC. Following incubation, the broth cultures were inoculated onto MSRVP medium which was further incubated for 24 hours at 42ºC. Irrespective of shedding nature – continuous or intermittent, the last day at which fecal sample from a bird was diagnosed positive with S. Java, was considered its total period of shedding. *S*. Java shedding probability from the infected chickens was 67% (95%CI 44-82%) on DPI 2, 38% (95% CI 19-56%) on DPI 7, 17% (95% CI 5-34%) on DPI 16 and 4% (95% CI is 0.3-18%) on DPI 30. The survival probability of chickens was 82% (95% CI 61-92%) on DPI2; 63% (95% CI 42-78%) on DPI 8, 52% (95% CI 32-69%) on DPI 11 and 48% (95% CI 29-65%) on DPI 30. Of the infected chickens, 6 developed granulomatous lesions into lungs.

**Keywords**: *Salmonella* Paratyphi B variant Java, MSRVP, Backyard chickens, infection study.