**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**

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**DEPARTMENT OF MICROBIOLOGY**

**FACULTY OF VETERINARY MEDICINE**

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**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.*

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*Dr. Sabiha Yeasmin Tania*

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**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

**CONTENTS**

|  |  |  |
| --- | --- | --- |
| **Chapter** | **Topics** | **Page No.** |
|  | Acknowledgement Statement of CandidateContentsList of Tables List of Figures | vvivii-viiiixx |
|  | List of Acronyms/ Abbreviations | xi |
|  | Summary | xii |
| I | **Introduction** | **1 - 4** |
| II | **Reviews of Literatures**2.1Systems of poultry production and raising village  chickens in Bangladesh2.2 An overview on history of *Salmonella* 2.3 *Salmonella* nomenclature and classification2.4 Host specificity2.5 Distributions of motile serovars of *Salmonella* in  poultry worldwide2.6 *Salmonella* serovars in commercial and backyard  chickens in Bangladesh2.7 Poultry product borne *Salmonella* zoonoses2.8 Non-typhoidal salmonellosis in humans caused  by *S*. Java2.9 Antimicrobials resistance in *S*. Java2.10 Carriage and shedding patterns of motile  *Salmonella* serovars from poultry2.11 Pathogenicity of *S*. Java in chickens2.12 Survivability of *S*. Java in poultry faeces | **5 – 17**5-77791112121314151617 |

|  |  |  |
| --- | --- | --- |
| **Chapter** | **Topics** | **Page No.** |
| III | **Materials and Methods**3.1 *S*. Paratyphi B var. Java isolate 3.2 Descriptions of the experimental chickens3.3 Management of the chickens3.4 Screening chickens for presence of any  *Salmonella*3.5 Description of experimental and control groups  and their managements3.6 Preparation of inoculum for experimental  infection3.7 Giving infection and screening the persistency  of *S*. Java3.8 Clinico-pathological examinations of the  infected chickens3.9 Process of histopathology 3.9.1 Histopathological image documentation 3.10 Statistical analysis | **18 – 22**1818181919192020202122 |
| IV | **Result** | **23 - 31** |
| V | **Discussion** | **32 - 34** |
| VI | **Conclusion** | **35** |
| VII | **References** | **36 - 43** |
|  | **Appendix**  | **44 - 46** |

**LIST OF TABLES**

|  |  |  |
| --- | --- | --- |
| **No. of Table** | **Name of Table** | **Page No.** |
| 1 | A brief overview of the backyard chickens used in the *S.* Javainfection study | 25 |
| 2 | Duration and nature of *S*. Java persistency in feces and colonization in the internal organs of the infected chickens | 26 |
| 3 | Clinico-pathological findings in the backyard chickens infected with *S.* Java | 28 |

**LIST OF FIGURES**

|  |  |  |
| --- | --- | --- |
| **Figure No.** | **Figure** | **Page No.** |
| 1 | Typical growth of *S.* Paratyphi B var. Java on novobiocin-added MSRV medium  | 23 |
| 2 | Pure growth of *S*. Paratyphi B var. Java onto BGA  | 24 |
| 3 | Shedding probability of *S.* Java in faeces of the infected backyard chickens | 27 |
| 4 | Survivability of the backyard chickens infected with *S*. Java | 27 |
| 5 | An *S.* Java infected chicken’s lungs showing small diffused granulomatous nodules  | 29 |
| 6 | A thoracic air sac of an *S*. Java infected chicken showing diffused small granulomatous nodules | 29 |
| 7 | Histopathological changes stained with Periodic Acid-Schiff (PAS) | 30 |
| 8 | Giving oral infection to Chickens  | 44 |
| 9 | Giving passage to MSRV agar | 44 |
| 10 | Collection of cloacal swab from the experimentally infected chickens | 45 |
| 11 | Birds were identified by using leg bands | 45 |
| 12 | An infected bird showing sign of closed eyes | 45 |
| 13 | Sequential steps of isolation procedure of *Salmonella* Java | 46 |

**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.