# ANTIBIOTIC SUSCEPTIBILITY PATTERN OF SALMONELLA FROM BLOOD OF SUSPECTED ENTERIC FEVER PATIENTS ATTENDING PATAN HOSPITAL

**A**

**Dissertation**

**Submitted to the Central Department of Microbiology**

**Tribhuvan University**

**In Partial Fulfillment of the Requirements for the Award of the Degree of**

**Master of Science in Microbiology**

**By**

**Krishna Govinda Prajapati**

**Central Department of Microbiology**

**Tribhuvan University**

**Kirtipur, Kathmandu**

**Nepal**

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# RECOMMENDATION

This is to certify that **Mr. Krishna Govinda Prajapati** has completed this dissertation work entitled "**Antibiotic Susceptibility Pattern of *Salmonella* from Blood of Suspected Enteric Fever Patients Attending Patan Hospital**" as a partial fulfillment of M.Sc. degree in Microbiology. To the best of our knowledge, this is his original research work and has not been submitted for award of any other degree.

_____

**Dr. Dwij Raj Bhatta, Ph.D.**
Associate Professor
Central Department of Microbiology
Tribhuvan University
Kirtipur, Kathmandu

Date: .....

_____

**Dr. Sujan Vaidya**
Pathologist
Pathology Department
Patan Hospital

Date: .....

# CERTIFICATE OF APPROVAL

On the recommendation of Dr. Dwij Raj Bhatta, Associate Professor of Central Department of Microbiology, Tribhuvan University and Dr. Sujan Vaidya, Pathologist, Patan Hospital, the dissertation work of Mr. Krishna Govinda Prajapati entitled "**Antibiotic Susceptibility Pattern of *Salmonella* from Blood of Suspected Enteric Fever Patients Attending Patan Hospital**" has been approved for the examination and is submitted to Tribhuvan University in partial fulfillment of the requirements for Master's Degree of Science in Microbiology.

_____

**Dr. Dwij Raj Bhatta**
Head of the Department
Central Department of Microbiology
Tribhuvan University, Kirtipur
Kathmandu, Nepal

Date: .....

## BOARD OF EXAMINERS

Recommend by:

_____
Dr. Dwij Raj Bhatta, Ph.D.
Supervisor

_____
Dr. Sujan Vaidya
Supervisor

Approved by:

_____
Dr. Dwij Raj Bhatta
Head of the Department

Examined by:

_____
Mr. Keshab Parajuli
External Examiner

_____
Mr. Dev Raj Joshi
Internal Examiner

Date: .....

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**…….…….**
**Krishna Govinda Prajapati**

Date: **……**

# ABSTRACT

In the present study blood samples were collected from 25,470 suspected of enteric fever patients who visited Patan Hospital during January 2007 to December 2008. The blood samples were cultured to isolate *Salmonella* using selective enrichment technique. *Salmonella* isolates were serotyped and their antibiotic sensitivity test was studied using modified Kirby-Bauer method recommended by Clinical and Laboratory Standards Institute.

In all the 25,470 blood samples, 3,131(12.29%) patients were culture positive and among the culture positive 1,640 (52.38%) were *Salmonella* isolates. In all the *Salmonella* isolates, 1135 (69.20%) were *Salmonella* Typhi, 503 (30.67%) *Salmonella* paratyphi A, 1 (0.06%) *Salmonella* Paratyphi B and 1 (0.06%) *Salmonella* Paratyphi C. *Salmonella* Typhi were most prevalent causative organism of enteric fever. High prevalence of *Salmonella* was found during summer season.

*Salmonella* Typhi (N=1,135) were found to be sensitive to Cephotaxime 1,128 (99.38%), Gentamicin 1,121 (98.77%), Chloramphenicol 1,120 (98.68%), Ofloxacin 1,117 (98.41%), Amoxycillin 1,113 (98.06%), Cotrimoxazole 1,107 (97.53%), Ciprofloxacin 1,063(93.66%) and Nalidixic acid 359 (31.63%). In all the *Salmonella* Paratyphi A (N=503) was found sensitive to Gentamicin 501 (99.60%), Cephotaxime 499 (99.20%), Amoxycillin 497 (98.81%) and Cotrimoxazole 496 (98.61%) and resistant to Nalidixic acid 477 (94.83%) and Ciprofloxacin 38 (7.55%). *Salmonella* Paratyphi B was sensitive to Amoxycillin, Ciprofloxacin, Cotrimoxazole, Chloramphenicol, Gentamicin Cephotaxime, Nalidixic acid and Ofloxacin. *Salmonella* Paratyphi C was resistant to Gentamicin, Chloramphenicol and Cotrimoxazole and sensitive to Amoxycillin, Nalidixic acid, Cephotaxime and Ofloxacin. In all the Nalidixic acid resistant Salmonella isolates (N=1,251), 55(4.39%) isolates were resistant to Ciprofloxacin.



Key words: Enteric fever, *Salmonella*, antibiotic

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## LIST OF ABBREVIATIONS

| | | |
|---|---|---|
| ACCo | : | Ampicillin, Chloramphenicol and Cotrimoxazole |
| *ATCC* | : | American Type Culture Collection |
| BA | : | Blood Agar |
| BHI | : | Brain Heart Infusion |
| CFR | : | Case Fatality Rate |
| CFU | : | Colony Forming Unit |
| CLSI | : | Clinical and Laboratory Standard Institute |
| D/W | : | Distilled Water |
| ESBL | : | Extended Spectrum of Beta Lactamase |
| LPS | : | Lipopolysaccharide |
| MA | : | Mac-Conkey Agar |
| MDR | : | Multi-Drug Resistant |
| MDRST | : | Multi-Drug Resistant *Salmonella typhi* |
| MHA | : | Mueller Hinton Agar |
| MHB | : | Mueller Hinton Broth |
| MIC | : | Minimum Inhibitory Concentration |
| NA | : | Nutrient Agar |
| NARST | : | Nalidixic Acid Resistant *Salmonella typhi* |
| PMN | : | Polymrphonuclear Leucocytes |
| SPS | : | Sodium Plyanethol Sulphonate |
| TSI | : | Triple Sugar Iron |
| WHO | : | World Health Organization |

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