

**ISOLATION AND CHARACTERIZATION OF
SALMONELLA SEROVARS FROM ENTERIC FEVER
SUSPECTED PATIENTS ATTENDING BIR HOSPITAL**

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MICROBIOLOGY
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RECOMMENDATION

This is to certify that **Miss Subha Dahal** has completed this dissertation work entitled **“ISOLATION AND CHARACTERIZATION OF *SALMONELLA* SEROVARS FROM ENTERIC FEVER SUSPECTED PATIENTS ATTENDING BIR HOSPITAL”** as a partial fulfillment of the requirements of **M.Sc. degree in Microbiology (Medical)** under our supervision. To our knowledge, this work has not been submitted for any other degree.

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ABSTRACT

Enteric fever is a multi-systemic illness caused primarily by *Salmonella* Typhi. A similar but less severe disease is caused by *S. Paratyphi* A, and less commonly by *S. Paratyphi* B and *S. Paratyphi* C. A study was conducted at Microbiology Unit, Bir Hospital, Kathmandu from June 2011 to September 2011 with the objective to isolate and characterize *Salmonella* serovars from enteric fever suspected patients. During the study period, 1542 blood samples were collected from patients suspected of enteric fever of which 126 (8.17%) showed positive culture result and among the culture positive, 87 (69.05%) were *Salmonella* isolates and remaining were other bacterial species. The other bacterial species isolated were *Acinetobacter* spp. (15.87%), *Enterobacter* spp. (3.97%), *Staphylococcus aureus* (3.97%), *Pseudomonas aeruginosa* (3.17%), *Escherichia coli* (2.38%) and *Klebsiella* spp. (1.59%).

Among *Salmonella* isolates, 48 (38.10%) isolates were *Salmonella* Typhi and 39 (30.95%) isolates were *Salmonella* Paratyphi A. Typhoid fever was more prevalent causative organism of enteric fever than paratyphoid fever. Prevalence of enteric fever was seen higher in male patients (58/87; 66.67%) than in female patients (29/87; 33.33%) and it was statistically insignificant ($\chi^2=0.2517$, $P>0.05$).

Salmonella Typhi was found to be 100% sensitive to Ofloxacin and Ceftriaxone, followed by Ciprofloxacin (95.83%), Chloramphenicol (95.83%), Amoxicillin (93.75%) and Cotrimoxazole (91.67%). Similarly, *S. Paratyphi* A was found to be 100% sensitive to Ofloxacin, Ceftriaxone and Chloramphenicol, followed by Ciprofloxacin (94.87%), Cotrimoxazole (94.87%) and Amoxicillin (92.31%). Out of 48 *S. Typhi* isolates, two (4.17%) were found to be Multi Drug Resistant (MDR). No MDR strains of *S. Paratyphi* A were isolated. Out of 36 Nalidixic acid resistant *Salmonella* Typhi two isolates were intermediately sensitive to Ciprofloxacin and out of 29 Nalidixic acid resistant *Salmonella* Paratyphi A two isolates were intermediately sensitive to Ciprofloxacin.

Keywords: Enteric fever, *Salmonella* serovars, Multidrug resistant (MDR), Nalidixic acid resistant

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LIST OF ABBREVIATIONS

ATCC	:	American Type Culture Collection
BA	:	Blood Agar
BACTEC	:	Becton Dickinson Microbiology Systems, Md.
CDC	:	Centre for Disease Control
CFU	:	Colony Forming Unit
CLSI	:	Clinical and Laboratory Standards Institute
DNA	:	Deoxyribo Nucleic Acid
EC	:	European Commission
ESBL	:	Extended Spectrum Beta Lactamase
ICDDRDB	:	International Centre for Diarrhoeal Disease Research Bangladesh
LPS	:	Lipopolysaccharide
MA	:	MacConkey Agar
MBC	:	Minimum Bactericidal Concentration
MDR	:	Multi Drug Resistant
MHA	:	Mueller Hinton Agar
MIC	:	Minimum Inhibitory Concentration
Mp	:	Macrophages
NARST	:	Nalidixic Acid Resistant <i>Salmonella</i> Typhi
NPHL	:	National Public Health Laboratory
PMNs	:	Polymorphoneuclear Leucocytes
SIM	:	Sulphide Indole Motility
SPS	:	Sodium Polyanethol Sulphonate
TMP-SMZ	:	Trimethoprim-sulphamethoxazole
TPD	:	Tetramethyl <i>p</i> -phenylene diamine dihydrochloride
TSI	:	Triple Sugar Iron Agar
TUTH	:	Tribhuvan University Teaching Hospital
WHO	:	World Health Organization