

**ANTIBIOTIC SUSCEPTIBILITY PATTERN OF URINARY ISOLATES  
WITH REFERENCE TO EXTENDED SPECTRUM  $\beta$ -LACTAMASE  
PRODUCING BACTERIA FROM ALKA HOSPITAL**

**A  
DISSERTATION  
SUBMITTED TO THE CENTRAL DEPARTMENT OF  
MICROBIOLOGY  
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**IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE  
AWARD OF DEGREE OF MASTER OF SCIENCE IN  
MICROBIOLOGY  
(Medical)**

**BY  
VIJAY TIWARI**

**CENTRAL DEPARTMENT OF MICROBIOLOGY  
TRIBHUVAN UNIVERSITY  
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## RECOMMENDATION

This is to certify that **Mr. VIJAY TIWARI** has completed this dissertation work entitled “**Antibiotic susceptibility pattern of urinary isolates with reference to extended spectrum -lactamase producing bacteria from Alka Hospital**” as a partial fulfillment for the requirements of M. Sc. Degree in Microbiology (medical) under our supervision. To our knowledge this is his original research work and has not been submitted for any other degree.

---

**Prof. Dr. Dwij Raj Bhatta, (MSc, PhD)**

Professor

Central Department of Microbiology

Tribhuvan University

Kathmandu, Nepal

---

**Dr. Vijay K. Sharma**

MD, M.Phil (Clinical Biochemistry)

T. Clinical pathologist

Alka Hospital Ltd.

Lalitpur, Nepal

Associate Professor

IOM, Maharajung

Kathmandu, Nepal

**Date:**

## **CERTIFICATE OF APPROVAL**

On the recommendation of **Prof. Dr. Dwij Raj Bhatta** and **Dr. Vijay K Sharma** the dissertation work of **Mr. Vijay Tiwari** is approved for the examination and is submitted to the Tribhuvan University in partial fulfillment of the requirements for M. Sc. Degree in Microbiology (Medical).

---

**Prof. Dr. Anjana Singh**

Head of Department  
Central Department of  
Microbiology  
Tribhuvan University  
Kathmandu, Nepal

Date:

**BOARD OF EXAMINERS**

**Recommended by:**

---

**Prof. Dr. Dwij Raj Bhatta**

Supervisor

---

**Dr. Vijay K. Sharma**

Supervisor

**Approved by:**

---

**Prof. Dr. Anjana Singh**

Head of Department

**Examined by:**

---

External Examiner

---

Internal Examiner

Date:

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Vijay Tiwari

Date:

## ABSTRACT

The emergence and spread of .Antibiotic resistance is now a global concern lactamases represent a - antimicrobial resistance due to the production of clinical threat because of theirbroad spectrum of activity . The present study was conducted at Alka Hospital from October 2011 to December 2012 with the objectives to study the emergence of extended spectrum -lactamase production in common bacterial isolates from urine sample. During this period, 1699 mid-stream urine samples collected were investigated to determine UTI by conventional culture technique and microscopy. Only 16% (n=271) out of 1699 samples showed significant bacterial growth. The maximum number of growth was observed in The .(%20.30) 40-30 ed by age group follow ,( %27.3) yrs 30-20 age group than in males (193=n) %17.9 high culture positivity was seen among female .(78=n) %12.4 Altogether nine different species of bacteria were isolated among which *Escherichia coli* 67.50% (n=183) were found the most predominant organisms followed by *Staphylococcus aureus* 10.70% (n=29), *Klebsiella pneumoniae* 7% (n=19). Multidrug resistance (MDR) was observed in 70.11% (n=190) of total bacterial isolates. Seventy seven (28.4%) isolates were confirmed for ESBL production. ESBL production was found highest in *E.coli* 31.6% (n=183) followed by *K. pneumoniae* 31.50% (n=19), *Pseudomonas aeruginosa* 27.30% (n=11), *Acinetobacter* spp. 26.70% (n=15).

**Key words:** bacteriuria, urinary tract infection, mid-stream urine, pyuria, multidrug-resistance

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## LIST OF ABBREVIATIONS

µg	:	Microgram
A/A	:	Acid/ Acid
Alk/A	:	Alkali/ Acid
AUC	:	Acute Uncomplicated Cystitis
BA	:	Blood Agar
CA-UTI	:	Community Acquired Urinary Tract Infection
CFU	:	Colony Forming Units
CoNS	:	Coagulase Negative Staphylococci
DNA	:	Deoxyribonucleic Acid
DoHS	:	Department of Health Services
EC	:	European Commission
ESBL	:	Extended spectrum beta-lactamases
GISA	:	Glycopeptide-intermediate <i>Staphylococcus aureus</i>
Gm	:	Gram
H <sub>2</sub> S	:	Hydrogen Sulphide
HPF	:	High power field
Hrs	:	Hours
LF	:	Lactose fermenting
MA	:	MacConkey agar
MBL	:	Metallo- -Lactamase
MDR	:	Multidrug Resistance
MHA	:	Mueller Hinton Agar
MIC	:	Minimum Inhibitory Concentration
Min	:	Minutes
ml	:	Milliliter
MoPH	:	Ministry of Public Health
MR	:	Methyl Red
MRSA	:	Methicillin-resistant <i>Staphylococcus aureus</i>
MSU	:	Mid-stream urine
NA	:	Nutrient agar
NCCLS	:	National Committee for Clinical Laboratory Standards
NLF	:	Non-lactose fermenting

No.	:	Number
NPHL	:	National Public Health Laboratory
NPV	:	Negative Predictive Value
PABA	:	Para-amino benzoic acid
PBP	:	Penicillin binding protein
PNSSP	:	Penicillin Non-Susceptible <i>Streptococcus pneumoniae</i>
PPV	:	Positive Predictive Value
RBC	:	Red Blood Cells
RNA	:	Ribonucleic Acid
rpm	:	revolution per minute
RS	:	Renal Stone
SHV	:	sulfhydryl reagent variable
SIM	:	Sulphide Indole Motility
TMP/SMX	:	Trimethoprim-Sulphamethoxazole
TSI	:	Triple Sugar Iron
TUTH	:	Tribhuvan University Teaching Hospital
UK	:	United Kingdom
UPEC	:	Uropathogenic <i>Escherichia coli</i>
US	:	United States
UTI	:	Urinary Tract Infection
VP	:	Voges Proskauer
VRE	:	Vancomycin-resistant Enterococcus
VUR	:	Vesicoureteral Reflux
WBC	:	White Blood Cells
WHO	:	World Health Organization