

**MEDICALLY IMPORTANT VIBRIOS
IN THE SEWAGE OF KATHMANDU VALLY DURING WINTER
SEASON**

A

Dissertation

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Tribhuvan University

**In Partial Fulfillment of the Requirements for the Award of the Degree of
Master of Science in Microbiology
(Environment and Public Health)**

by

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RECOMMENDATION

This is to certify that **Mr. Yub Raj Adhikari** has completed this dissertation work entitled "**MEDICALLY IMPORTANT VIBRIOS IN THE SEWAGE OF KATHMANDU VALLY DURING WINTER SEASON**" as a partial fulfillment of M. Sc. Degree in Microbiology. To the best of my knowledge this thesis work has not been submitted for any other degree.

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ABSTRACT

The natural lodgment of *Vibrios* in aquatic environment is the potential source for possible *Vibrios* infection. The study was aimed to isolate medically important *Vibrios* from the sewage of Kathmandu (KTM) Valley during winter season. A total of 60 random samples were taken from the different sewerages sites discharging sewage into the Bagmati River between 10th November 2008 to 6th February 2009 employing principle based on Moore's Technique. The samples [Moore's technique based swabs were submersed in alkaline peptone water (broth) pH of 8.6] were transported to Research Laboratory of Central Department of Microbiology in cold condition. The samples were incubated at 37⁰C for 8 hours enrichment followed by culture on thiosulfate-citrate-bile salts-sucrose (TCBS) agar and incubated at 37⁰C for overnight. The TCBS plates showing *Vibrios* like colonies were subjected for biochemical identification. *V. cholerae* suspected isolates were subjected to sero-typing using polyvalent *V. cholerae* O1 anti-sera. In this study, from 60 samples, 57 medically important *Vibrios* were isolated of which *V. parahemolyticus* (45.6%) was dominating isolates followed by *V. cholerae* (21%) and others. On sero-typing, all *V. cholerae* isolates were *V. cholerae* Non-O1 (NAG). NAG (n=12) isolates were tested for antibiotic susceptibility test (AST) using disc diffusion technique. Of total AST isolates, two isolates were found to be multidrug resistant. Since, Sewage of KTM Valley harbor the medically important *Vibrios* which could be the potential source for outbreak and demands proper sanistation and awareness among Valley residents.

Key words: *Vibrios*, *V. cholerae*, sewage and Kathmandu Valley.

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LIST OF ABBREVIATIONS

BOD	Biological Oxygen Demand
CDC	Centre for Disease Control
CLSI	Clinical Laboratory Standardization Institution
COD	Chemical Oxygen Demand
EWARS	Early Warning Reporting System
IUCN	International Union for Nature Conservation
JICA	Japan International Co-operative Agency
KTM	Kathmandu
LIM	l-Lysine indole motility
NCCLS	National Committee for Clinical Laboratory Standard
NESS	Nepal Environmental Engineering Services Society
NPC	National Planning Commission
NPHL	Nepal Public Health Laboratory
ONPG	O-nitrophenyl- – D-galactopyranoside- -galactosidase
TCBS	Thiosulfate Citrate Bile Salts Sucrose
TSI	Triple sugar iron
WHO	World Health Organization
NAG	Non-Agglutinable