

**STUDY ON DRINKING WATER QUALITY OF KATHMANDU
AND ANTIBIOTIC SUSCEPTIBILITY OF ISOLATES**

**A
DISSERTATION
PRESENTED TO THE CENTRAL
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**IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE AWARD OF DEGREE OF
MASTER OF SCIENCE
IN MICROBIOLOGY
(ENVIRONMENT AND PUBLIC HEALTH MICROBIOLOGY)**

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RECOMMENDATION

This is to certify that Mr. Prashanna Raj Kafle has completed his dissertation work entitled "**Study on Drinking Water Quality Of Kathmandu And Antibiotic Susceptibility Of Isolates**" as a partial fulfillment of Master of Science Degree in Microbiology under our supervision. To our knowledge this work has not been submitted for any other degree.

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ABSTRACT

The bacteriological and physico-chemical analysis of the drinking water is very important as it is directly related to the health of the people. This effort to assess drinking water quality was performed during the period of March 2005 to January 2006. It was carried out in water quality laboratory of Nepal water supply corporation, Bansbari.

During the study period a total of 100 water samples were randomly collected from treatment plant, wells, stone spouts and public taps of Kathmandu Valley. Out of these, 72% of sample showed presence of total coliforms and 62% contained fecal coliforms, that exceed the WHO permissible level for drinking water. As well, other indicator and pathogenic bacteria were detected, the percentage of which are as: *Escherichia coli* 44%, *Enterobacter* spp. 26%, *Klebsiella* spp. 22%, *Salmonella* spp. 5%, and *Shigella* spp. 3%.

Simultaneously, physico-chemical parameters were also analyzed. Majority of the samples showed values within WHO standard limit for drinking water. The values for appearance, p^H, iron, ammonia were found above permissible level in the percentage range 10%, 10%, 20%, and 25% respectively.

Isolated bacteria were also tested for antibiotic susceptibility patterns. The result showed Tetracycline 90% sensitive, Chloramphenicol 100% sensitive, Ampicillin 100%, resistant, Ofloxacin 80% sensitive and Cephalexin 90% resistant. Frequency of multiple-antibiotic resistant (MAR) against antibiotics within species are as: *E. coli* 20%, *Enterobacter* spp. 12%, *Citrobacter* spp. 5%, *Klebsiella* spp. 20% and *Salmonella* spp. 25%.

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LIST OF ABBREVIATIONS

Abbreviation	Full Form
ADB	Asian Development Bank
APHA	American Public Health Association
BOD	Biochemical Oxygen Demand
CBS	Central Bureau of Statistics
CEDA	Central for Economic Development and Administration
CFU	Colony Forming Unit
cm	Centimeters
DISVI	Italian International co-operation
DO	Dissolved oxygen
ENPHO	Environment and Public Health Organization
HMG	His Majesty's Government
NGO	Non-Governmental Organization
ml	Milliliter
mm	Micrometer
NTU	Nephelometric Turbidity Unit
NWSC	Nepal Water Supply Corporation
ppm	Parts per million
NAST	Nepal Academy of Science and Technology
SWMRMC	Solid Waste Management and Resource Mobilisation Centre
UNICEF	United Nations Children Fund
WHO	World Health Organization