MICROBIOLOGICAL PROFILE OF RAW MEAT OF KATHMANDU VALLEY AND ANTIBIOTIC SUSCEPTIBILITY PATTERN OF THE BACTERIAL ISOLATES

A
DISSERTATION
SUBMITTED TO THE CENTRAL DEPARTMENT OF MICROBIOLOGY
TRIBHUVAN UNIVERSITY
KATHMANDU, NEPAL

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 **Monica Upadhyay** has completed this dissertation work entitled "**Microbiological profile of raw meat of Kathmandu valley and antibiotic susceptibility pattern of the bacterial isolates**" as a partial fulfillment of Master of Science in Microbiology under our supervision. To my knowledge this work has not been submitted for any other degree.

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CERTIFICATE OF APPROVAL

On the recommendation of **Dr. Dwij Raj Bhatta**, Associate Professor, **Mr. Binod Lekhak,** Lecturer and **Mr. Dev Raj Joshi,** Lecturer, this dissertation work of **Monica Upadhyay** entitled **"Microbiological profile of raw meat of Kathmandu valley and antibiotic susceptibility pattern of the bacterial isolates**" approved for the examination and is submitted to the Tribhuvan University in the partial fulfillment of the requirements for M.Sc. Degree of Microbiology (Environment and Public Health).

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Monica Upadhyay

ABSTRACT

Foods are the important vehicle for food borne pathogens. Improper sanitary and unhygienic practices adopted during slaughtering, processing and storage promotes the growth of several pathogens of meat which increases the incidence of food borne disease.

In order to find out bacterial flora of raw meat along with their antibiotic susceptibility pattern the study was conducted from December 2010 to May 2011 at the Central Department of Microbiology. During this study period 72 buff meat samples from different localities of Kathmandu valley were collected and subjected to bacteriological investigation. The bacteriological quality of raw meat was evaluated by total mesophilic count and coliform count. Few gram negative potential pathogens were also detected and antibiotic susceptibility profile of isolates was described. In this research work total bacterial count, total coliform count along with isolation and identification of *Salmonella* was carried out by standard microbiological methods. From this study the mesophilic bacterial load were found from 1.1×10^5cfu/gm - 1.1×10^7cfu/gm. Similarly total coliform count were found form <30cfu/gm- 8.9×10^6cfu/gm. Several bacteria were isolated during the study period which include *Escherchia coli, Klebsiella pneumoniae, Klebsiella oxytoca, Citrobacter fruendii, Salmonella* Typhi and other *Salmonella*. Among the isolates *E.coli* was found to be most predominant among all gram negative bacteria. The results of antibiotic susceptibility test showed that majority of the isolated gram negative bacteria were sensitive to Amikacin, Cotrimoxazole, Chloramphenicol, Nalidixic acid, Tetracycline. Some isolates of *E.coli*, *Citrobacter, Enterobacter* and *Klebsiella oxytoca* were reported as Nalidixic acid resistant.

Nearly all samples were found to be contaminated with elevated load of coliform bacteria showing unhygienic practice during slaughtering process; however, the gram negative isolates were susceptible to common antibiotics.

Key words: Raw meat, mesophilic count, coliform count, *Salmonella,* antibiotic susceptibility

TABLE OF CONTENTS

LIST OF TABLES

LIST OF PHOTOGRAPHS

LIST OF APPENDICES

ABBREVIATIONS

APC	-	Aerobic Plate Count
BPW	-	Buffered Peptone Water
CFU	-	Colony Forming Unit
DLS	-	Department of live stock Services
EMB	-	Eosine Methylene Blue
FAD	-	Food and Agriculture Organization
GDP	-	Gross Domestic Product
MA	-	Macconkey Agar
MR	-	Methyl Red
NA	-	Nutritent Agar
NARC	-	Nepal Agricultural Research Council
O/F	-	Oxidation Fementaiton
PCA	-	Plate Count Agar
TMTC	-	Too many to Count
TPC	-	Total Plate Count
TPCA	-	Total Plate Count Agar
VP	-	Voges-Proskauer
VRB	-	Voilet Red Bile
VRBA	-	Voilet Red Bile Agar
XLD	-	Xylose-Lysine-Deoxyctiolate