Incidence and antibiotic resistance pattern of *E.coli* in different clinical specimens

By:

Sidra Marium

Id: 14003140045

Supervisor:

Dr. Muhammad Sohail Afzal

Department of Chemistry

School of Science

University of Management and Technology, Lahore, Pakistan

2016

Incidence and antibiotic resistance pattern of *E.coli* in different clinical specimens

Submitted to University of Management and Technology Lahore

In partial fulfillment of the requirements

For the award of degree of

Ms

In

Chemistry

By

Sidra Marium

ID

1	4	0	0	3	1	4	0	0	4	5

Session: 2014-2016

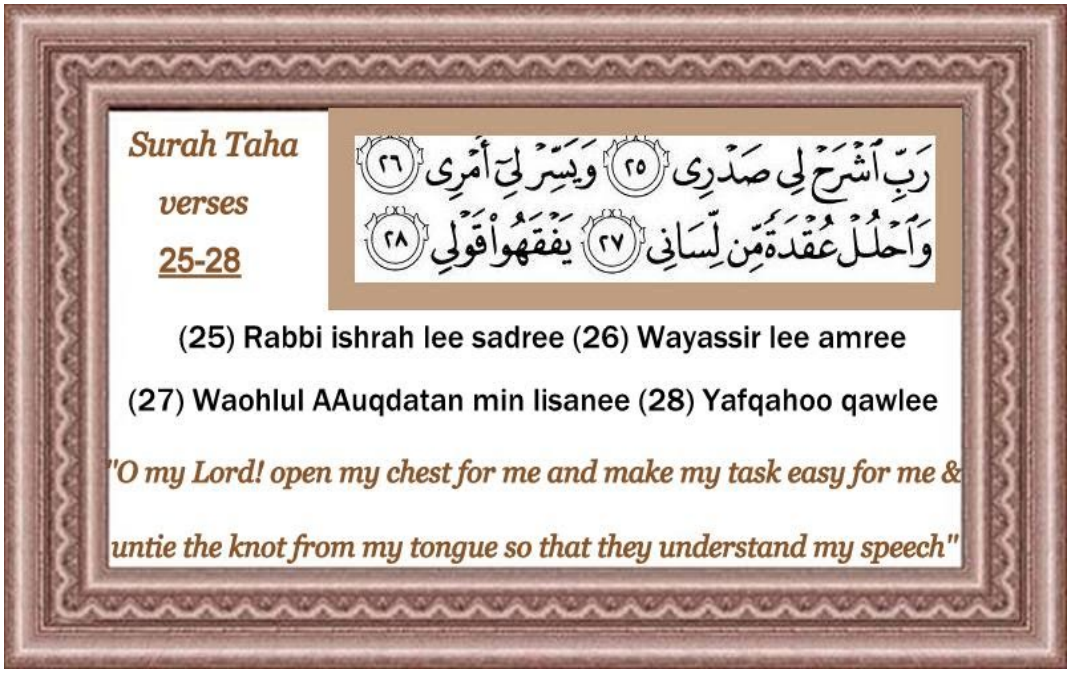
Department of Chemistry

School of Science

University of Management and Technology, Lahore, Pakistan

2016


In the name of Allah the most beneficent the most merciful


Surah Taha
verses
25-28
رَبِّ ٱشۡرَحۡ لِي صَدۡرِي ٢٥ وَيَسِّرۡ لِيٓ أَمۡرِي ٢٦
وَٱحۡلُلۡ عُقۡدَةٗ مِّن لِّسَانِي ٢٧ يَفۡقَهُواْ قَوۡلِي ٢٨
(25) Rabbi ishrah lee sadree (26) Wayassir lee amree
(27) Waohlul AAuqdatan min lisanee (28) Yafqahoo qawlee
"O my Lord! open my chest for me and make my task easy for me &
untie the knot from my tongue so that they understand my speech"

DECLARATION

I **SIDRA MARIUM** D/O **MUHAMMAD SIDDIQUE HASRAT** ID: **14003140045** Session **2014-2016** hereby declare that the matter printed in the thesis titled **"INCIDENCE AND ANTIBIOTIC RESISTANCE PATTERN OF *E.COLI* IN DIFFERENT CLINICAL SPECIMENS"** is my own work and has not been printed, published and submitted as research work, thesis or publication in any form in any University, Research institution etc. in Pakistan or Abroad.

Dated: _____ _____

(SIDRA MARIUM)

RESEARCH COMPLETION CERTIFICATE

Certified that the research work contained in this thesis titled, **"INCIDENCE AND ANTIBIOTIC RESISTANCE PATTERN OF *E.COLI* IN DIFFERENT CLINICAL SPECIMEN**" has been carried out and completed by **SIDRA MARIUM, ID: 1400314004**. The quantum and the quality of the work contained in this thesis is adequate for the award of Degree of MS.

Supervisor	**External Examiner**
Dr. Muhammad Sohail Afzal	
Assistant Professor	
Department of Chemistry	
UMT, Lahore	

Dr Sammia Shahid	**Dr Muhammad Azhar Iqbal**
Chairperson	**Dean**
Department of Chemistry	School of Science
UMT, Lahore	UMT, Lahore

Dedication

This effort is dedicated to my beloved parents and family and my teachers and to every person in the world who help others without any reward with the spirit of Abdul Sttar Edhi.

ACKNOWLEDGEMENT

First of all, many thanks to **ALLAH ALMIGHTY** for blessing me potential and for providing me talented teachers, sympathetic family members, friends and sufficient opportunity to complete this study. Thank you so much **ALLAH ALMIGHTY**.

This dissertation would not have been possible without the help and guidance of several people who contributed and extended their valuable assistance and prayers in preparation and completion of this study. I would like to extend my sincere affection and love to all of them.

I would like to acknowledge my sincere thanks and deepest respect to my research supervisor **Dr. Muhammad Sohail Afzal** (Assistant Professor of chemistry Department, UMT) not only for providing me opportunity to do my research work but also for her dynamic elaborate instructions, kind advises, persistent help and constant encouragement during whole this academic session.

I am thankful to **Dr. Muhammad Azhar Iqbal** (Dean of School of Science, UMT,) who takes special interest in research activities.

I feel a great honor in expressing my profound gratitude to **Dr. Sammia Shahid** (Chairperson of Chemistry Department, UMT Lahore) for her guidance and kind behavior during the course of my studies.

Last but not least, I would like to thanks my family: my parents and my brothers and sisters, my beloved friend and my school Head Madam Anjum and my colleague Mis Rehana who support me and encourage me during this study.

ABSTRACT

Antibiotic drug resistance is a major public problem which leads to the ban on many antibiotics. The objective of the present study was to determine the incidence and antibiotic resistance pattern of *E.coli* in different clinical specimens. 800 samples of urine, tracheal secretion, wound and blood were collected. The microbe identification was carried out by using standard method. The antibiotic resistance pattern of *E.coli* were determined through Disk diffusion method. The result showed the maximum incidence of *E.coli* was observed in urinary tract infection. The maximum antibiotic resistance was observed for cefixime 90% followed by co-trimaxazole 89.6%, ciprofloxacin 85.7%, ceftriaxone 84.2%, ceftaidime 80.3%, amoxicillin+clav 73.2%, tobramycin 44%, pipercillin+tazob 20%, imipenam 12.6% and amikacin 122.2%. Maximum sensitivity was showed by amikacin 87.7% and imipenam 87.3%, cefoprazone+sul 84.6%, pipercillin+tazob 80%, tobramycin 55.2%. This study showed that single antibiotic showed different resistance pattern according to different sites of infection. This proved that single antibiotic cannot be used for different infection sites. The incidence pattern of *E.coli* was changing according to time period. *E.coli* changing resistance pattern is need to be addressed.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

Abbreviations	Full Text
CD4 T-cell	Receptor for HIV
CD8T	T cell with CD receptor
EHEC	Enterohaemorrhagic *Escherichia coli*
ETEC	Enterotoxigenic *Escherichia coli*
EAEC	Enteroaggregative *Escherichia coli*
EIEC	Enteroinvasive *Escherichia coli*
HIV	Human Immunodeficiency virus
MDR	Multi-drug resistance
PCR	Polymerase chain reaction
PD- 1	Precursor D1 Protein
URI	Upper respiratory infection
UTI	Urinary tract infection
UT	Urinary tract
URTI	Upper respiratory tract infection
WI	Wound infection

References

Chapter 01

INTRODUCTION

1.1-Infection:

The entry of the microorganism into the body of the host after occupation of the host immune system, causing invasion of the host tissues (Signore A *et al.*, 2011). The host response to the infection in different ways like sub-clinical or clinical which are characterized by onset, by count of white cells or inflammation. The different agent are responsible for infection which may be bacteria, viruses, parasites, nematodes, arthropods and helminths (Alberto Signore, 2013).