



Detection of Fluoroquinolones Resistance in *Enterobacteriaceae* and *Pseudomonas* species Using Molecular Techniques

Thesis

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قالوا

سُبْحَانَكَ لَا مَعْلَمَ لَنَا
إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ
الْعَلِيمُ الْعَظِيمُ

صدق الله العظيم

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List of Abbreviations

<i>A. baumannii</i>	: <i>Acinetobacter baumannii</i>
aac	: Aminoglycoside-modifying acetyltransferase
Asp	: Aspartate
ASPs	: Antibiotic stewardship programs
AST	: Antimicrobial susceptibility testing
ATS	: American Thoracic Society
BID	: Two times a day
CDC	: Centers for Disease Control and Prevention
CLSI	: Clinical and Laboratory Standards Institute
<i>E.coli</i>	: <i>Escherichia coli</i>
ECDC	: European Centre for Disease Prevention and Control
ESBL	: Extended Spectrum β -Lactamases
ESCMID	: European Society for Microbiology and Infectious Diseases
ETT	: Endotracheal tube
FDA	: United States Food and Drug Administration
FQs	: Fluoroquinolones
GIT	: Gastrointestinal
<i>H. influenzae</i>	: <i>Haemophilus influenzae</i>
ICUs	: Intensive care units

List of Abbreviations

IDSA	: Infectious Diseases Society of America
<i>K. pneumoniae</i>	: <i>Klebsiella pneumoniae</i>
MALDI-TOF	: Matrix-assisted laser desorption-ionization time-of-flight
MDR	: Multidrug resistant
MFS	: Major facilitator superfamily
MICs	: Minimum inhibitory concentrations
MRSA	: Methicillin-resistant <i>Staphylococcus aureus</i>
MS	: Moderate sensitive
NAATs	: Nucleic acid amplification techniques
NGS	: Next generation sequencing
NS	: Non significant
OMP	: Outer membrane protein
<i>P. aeruginosa</i>	: <i>Pseudomonas aeruginosa</i>
PBS	: Phosphate Buffer Saline
PCR	: Polymerase chain reaction
PCR-RFLP	: Restriction Fragment Length Polymorphism
PMQR	: Plasmid mediated quinolone resistance
qepA	: Quinolone efflux pump
<i>qnr</i>	: Quinolone resistance
QRDRs	: Quinolone resistance determining regions
RND	: Resistance–nodulation–division family

List of Abbreviations

<i>S. aureus</i>	: <i>Staphylococcus aureus</i>
<i>S. enterica</i>	: <i>Salmonella enterica</i> .
<i>S. epidermidis</i>	: <i>Staphylococcus epidermidis</i>
<i>S. pneumoniae</i>	: <i>Streptococcus pneumoniae</i>
<i>S. pyogenes</i>	: <i>Streptococcus pyogenes</i>
SDS	: Sodium dodecyl sulfate
Ser	: Serine
SNP	: Single nucleotide polymorphism
SOS	: Save our souls
spp.	: Species
TAE	: Tris Acetate EDTA
TID	: Three times a day
UTI	: Urinary tract infections
WHO	: World health organization

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Introduction





Aim of the Work





Review of Literature





Chapter (1):
**Fluoroquinolones resistance
in *Enterobacteriaceae* and
Pseudomonas species**

