In vitro activity of tigecycline against clinical isolates of extended- spectrum beta- lactamase- producing Gram negative bacilli

thesis

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CONTENTS

LIST OF ABBREVIATIONS

Abbreviations	Meaning
A. baumannii.	Acinetobacter baumannii.
Aptt	Activated partial thromboplastin time .
ARG	Arginine amino acid.
ASP	Aspartic acid.
ASUHs	Ain Shams University Hospitals .
B.cepacia	Burkholderia cepacia.
BD	Becton–Dickinson.
B.fragilis	Bacteroides fragilis.
β-lactam	βeta-lactam.
CA	Clavulanic acid.
CAC disc	Ceftazidime / Clavulanic acid disc.
CAP	Community-acquired pneumonia
CAZ disc	Ceftazidime disc.
CFU	Colony-forming units .
CSLI	Committee for Clinical and Laboratory Standards Istitute.

CSU	Catheter stream urine.
CTC disc	Cefotaxime / Clavulanic acid disc.
CTX disc	Cefotaxime disc .
CYP450	Cytochrome p450 .
DA	Dalton.
DNA	Deoxyribonucleic acid.
EARSS	European Antimicrobial Resistance Surveillance System .
ECDC	European Centre for Disease Prevention and Control
E. cloacae	Enterobacter cloacae.
E. Coli	Escherichia coli.
E. corrodens	Eikenella corrodens.
E. faecalis	Enterococcus faecalis.
E.faecium	Enterococcus faecium.
E/NF	Enteric/Nonfermenter .
ESBL	Extended spectrum beta lactamases .
ETA	Endotracheal aspirate.
FDA	Food and Drug Adminstration.
GLU	Glutamic acid.
GLY	Glycine amino acid.

GNEB	Gram-negative enteric bacteria
H. flu	Hemophilus influenzae.
HMM	High molecular mass
ICT	Infection Control Team.
ICU	Intensive care unit .
ID	Identification .
IF	Inoculum Fluid .
INR	International Normalization Ratio.
IRTs	The Inhibitor-Resistant TEM β Lactamases.
K. ascorbata	Kluyvera ascorbata.
K. pneumoniae	Klebsiella pneumoniae.
K. oxytoca	Klebsiella oxytoca.
LMM	Low molecular mass .
LRTI	Lower respiratory tract infection .
LTCFs	Long-term care facilities .
LYS	Lysine amino acid.
M. avium	Mycobacteria avium.
M. catarrhalis	Moraxilla catarrhalis.
MDROs	Multi drug resistant organisms .

MIC	Minimum inhibition concentration .
µg	Microgram.
Mg	Milligram.
MHA	Muller Hinton Agar medium .
mL	Milliliter.
Mm	Millimeter.
MRSA	Methicillin resistant Staphylococcus aureus.
MR	Multi-resistance.
MSSA	Methicillin sensitive staph. aureus **.**
MSU	Mid-stream urine .
NCCLS	National Committee for Clinical Laboratory Standards.
N.gonorrhoeae	Niesseria gonorrhoeae.
OM	Outer membrane.
P. aeruginosa	Pseudomonas aeruginosa.
P. anaerobius	Peptostreptococci anaerobius.
PBPS	Penicillin binding proteins.
PDB	Protein Data Bank .
P. mirabilis	Proteus mirabilis.
PRO	Proline amino acid.

PRSP	Penicillin-resistant Streptococcus pneumonia .
PT	Prothrombin time .
P.valgaris	Proteus valgaris.
QC	Quality control .
RNA	Ribonucleic acid.
S. agalactiae	Streptococcus agalactiae.
SER	Serine amino acid.
S. maltophilia	Stenotrophomonas maltophilia.
S. marcescens	Serratia marcescens.
SMI	Swedish Institute for Infectious Disease Control .
S. pneumoniae	Streptoccocus pneumoniae.
SPP	Species.
S. pyogenes	Streptococcus pyogenes.
TGC disc	Tigecycline disc .
UK	United Kingdom.
USA	United States of America.
UTI	Urinary tract infection .
VRE	vancomycin resistant enterococci.

VS	Versus.
WHO	World Health Organization.

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION

In the present era of multi-drug resistant organisms (MDRO), clinicians are facing an acute shortage of antibiotics with activity against the MDROs. Pathogens like methicillin resistant *Staphylococcus aureus* (MRSA), vancomycin resistant *enterococci* (VRE) and extended spectrum β lactamase (ESBL) producing Gram-negative bacilli harbour genetic determinants, which render them resistant to most of the available antimicrobials ***(Hernández et al., 2005).***

With the emergence and spread of carbapenem resistant and metallo- β lactamase (MBL) producing *Pseudomonas aeruginosa* and *Acinetobacter spp.*, the only viable treatment option remains the potentially toxic colistin/polymyxin B group of antibiotics. Infections by these MDRO lead to prolonged hospitalization, increased mortality, morbidity and cost of treatment (***Lee et al., 2008)***.

Most ESBLs are found in *E.coli* or *Klebsiella sp*., but may be found in other genera of the *Enterobacteriaceae*, plus some of the non-fermenters (e.g.*Pseudomonas aeruginosa*, *Acinetobacter spp*) ***(Mathur et al.,2002; Bijayini et al.,2009).***

ESBLs are plasmid-borne enzymes produced by Gram negative rods that confer resistance to all the penicillins, cephalosporins (with the exception of cephamycins) and monobactams. The plasmids encoding these enzymes can also carry genes for resistance to other antibiotics such as cotrimoxazole, aminoglycosides and tetracyclines . ***(Bradford , 2007*)*.***