



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم



HANAA ALY



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شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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جامعة عين شمس التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
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تحفظ هذه الأقراص المدمجة بعيدا عن الغبار



HANAA ALY



Aln Shams University
Faculty of Pharmacy
Microbiology & Immunology dept.

Molecular characterization of non-typhoidal *Salmonella* serovars isolated from human and animals In Egypt

A Thesis

Submitted in Partial Fulfillment of the Requirements for the

Master degree

In Pharmaceutical Sciences
(Microbiology and Immunology)

By

Reem Abu El-Fath Ragab Allam Youssef

Bachelor of Pharmaceutical sciences, 2016
QC specialist at Microbiology & Sterility Lab
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Under Supervision of

Dr. Khaled M. Anwar Aboshanab, PhD

Professor of Microbiology and Immunology,
Vice Dean for the Postgraduate Studies Affairs and Scientific Research
Faculty of Pharmacy, Ain Shams University

Dr. Mona Ibrahim Mabrouk, PhD

Professor of Microbiology,
Head of General Division of Basic Medical Sciences,
The Egyptian Drug Authority- EDA

Dr. Ahmad Mohammad Abbas, PhD

Lecturer of Microbiology and Immunology,
Faculty of Pharmacy, Ain Shams University

2021

Approval sheet

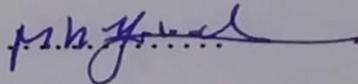
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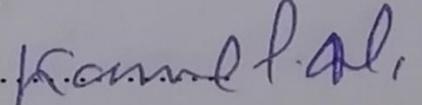
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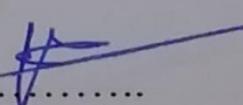
Reem Abu El-Fath Ragab Allam Youssef

Bachelor of Pharmaceutical Sciences, 2016
Faculty of Pharmacy, Ahram Canadian University

*This thesis towards a Master degree in
Pharmaceutical Sciences has been approved by:*

Prof. Dr. Mahmoud Abdul-Megead Yassien 
Professor of Microbiology and Immunology,
Faculty of Pharmacy – Ain Shams University

Prof. Dr. Kamel Ali El-Ghareeb Abou Ali 
Professor of Microbiology and Immunology,
Faculty of Pharmacy – Al-Azhar University (Boys)

Prof. Dr. Khaled Mohamed Anwar Aboshanab 
Professor of Microbiology and Immunology,
Vice Dean for the Postgraduate Studies Affairs and Scientific
Research,
Faculty of Pharmacy – Ain Shams University

(Committee in Charge)

Date: 7 / 9 / 2021

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

وَعَلَّمَكَ مَا لَمْ تَكُنْ تَعْلَمُ
وَكَانَ فَضْلُ اللَّهِ عَلَيْكَ
عَظِيمًا

صدق الله العظيم

من الآية ١١٣ سورة النساء

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Reem Abu El-Fath Ragab

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List of Abbreviations

Word	Abbreviation
<i>aac(6')-Ib</i>	Gene coding for aminoglycoside 6'-N-acetyltransferase type Ib ciprofloxacin resistant variant.
<i>AgfA</i>	fimbrin-encoding gene.
AHRI	Animal Health Research Institute.
<i>AmpC</i>	Gene coding for extended spectrum β -lactamase.
AMR	Antimicrobial resistance.
ANC	Absolute neutrophils count
<i>aph(3'')-Ib</i>	Gene encoding an aminoglycoside-modifying Enzyme
API	Analytical profile index
<i>AvrA</i>	Avirulence gene A.
<i>BapA</i>	Biofilm-associated protein A.
<i>BcfC</i>	Bacterial colonization factor.
BGA	Brilliant green agar
<i>BlaAmpC</i>	Gene coding for (AMP-C) extended spectrum β -lactamase.
<i>blaCMY-2</i>	Gene coding for (CMY-2) extended spectrum β -lactamase.
<i>bla_{CTX-m}</i>	Gene coding for cefotaxime (CTX-M) extended spectrum β -lactamase.
<i>blaNDM-1</i>	Gene coding for (NDM-1) extended spectrum β -lactamase.
<i>bla_{SHV}</i>	Gene coding for SHV extended spectrum β -lactamase
<i>bla_{TEM}</i>	Gene coding for TEM extended spectrum β -lactamase
Bp	Base pair
CFR	Case fatality rate
CFU	Colony forming unit
CLSI	Clinical & Laboratory Standards Institute
<i>cmy2</i>	AmpC-like β -lactamase
<i>DfrA</i>	Dihydroflavonol 4-reductase gene

List of Abbreviations

DNA	Deoxy ribonucleic acid.
ERIC	Enterobacterial repetitive intergenic consensus
ESBLs	Extended spectrum beta-lactamases
FIC	Fractional inhibitory concentration
<i>FimH</i>	fimbrin-encoding gene
<i>FloR</i>	Tetracycline resistance gene
GI	Gastrointestinal
<i>GipA</i>	Phage encoded virulence factor.
<i>HilA</i>	encodes an OmpR/ToxR family transcriptional regulator that activates the expression of invasion genes.
<i>IcmF</i>	Intracellular multiplication protein F.
Ints	Invasive non-typhoidal <i>Salmonella</i>
<i>InvA</i>	Encoding invasion protein
Kb	Kilo base
KIA	Kligler Iron Agar
<i>LpfA</i>	Long polar fimbriae gene
MAR	Multiple antibiotic resistance
<i>MarT</i>	gene encoding the MisL protein (an autotransporter protein encoded by <i>Salmonella</i> pathogenicity island 3).
MDR	Multidrug resistant
<i>MgtB</i>	Magnesium transport protein of <i>S. Typhimurium</i>
<i>MgtC</i>	Magnesium transport protein of <i>S. Typhimurium</i> .
MIC	Minimum inhibitory concentration.
MKTTn broth	Muller- Kauffmann Tetrathionate novobiocin broth.
MR-VP	Methyl red –Voges Proskauer.
<i>NlpI</i>	Lipoprotein precursor gene.
NTS	Non Typhoidal <i>Salmonella</i>
<i>OafA</i>	A putative O-antigen Lipopolysaccharides acetylase of <i>S. Typhimurium</i>
<i>OmpA</i>	Outer membrane protein A.

List of Abbreviations

<i>OqxAB</i>	Multidrug efflux pump gene, active on fluoroquinolones.
<i>pagN</i>	Outer membrane protein.
PCR	Polymerase Chain Reaction.
<i>pefA</i>	Encoding plasmid-encoded fimbrial protein.
pmol	Picomolar.
<i>pipA</i>	Pathogenicity island-encoded protein A.
PMQR	Plasmid mediated quinolone resistance.
PT	Paratyphoid.
PFGE	Pulsed-field gel electrophoresis.
<i>QnrA</i>	Quinolone resistance determinant A.
<i>QnrB</i>	Quinolone resistance determinant B.
<i>QnrS</i>	Quinolone resistance determinant S.
RVB	Rappaport-Vassiliadis broth.
<i>sefA</i>	Fimbrin-encoding gene.
SG	<i>Salmonella</i> Gallinarum.
<i>sifA</i>	Fimbrin-encoding gene.
<i>sipB</i>	Pathogenicity island 1 effector protein.
<i>sivH</i>	Single integration vector gene.
<i>sodC1</i>	Superoxide dismutase gene.
<i>sopB</i>	A Plasmid-partitioning protein.
<i>sopE1</i>	Encoding a translocated effector protein.
SP	<i>Salmonella</i> Pullorum.
SPIs	<i>Salmonella</i> pathogenicity islands.
<i>spi4D</i>	Encoding hemolysin secretion protein D for SPI-4
<i>spiA</i>	Encoding type 3 secretion system secretin.
<i>spvB</i>	Encoding secreted effector protein (<i>Salmonella</i> plasmid virulence).
<i>spvC</i>	Encoding secreted effector protein (<i>Salmonella</i> plasmid virulence).
<i>spvR</i>	Encoding secreted effector protein (<i>Salmonella</i> plasmid virulence).

List of Abbreviations

SS	Salmonella Shigella.
<i>ssaQ</i>	Secretion system apparatus protein.
<i>stn</i>	Encoding heat-labile <i>Salmonella</i> enterotoxin.
<i>strA</i>	Streptomycin resistance genes
<i>strB</i>	Streptomycin resistance genes
<i>sul2</i>	Sulfonamide resistance gene.
Ta	Annealing temperature.
<i>tetRACD</i>	Tetracycline resistance gene cluster.
<i>tolC</i>	Outer membrane protein.
TSA	Tryptic soy agar.
TSB	Tryptic soy broth.
TSI	Triple Sugar Iron agar.
TTB	Tetrathionate broth.
<i>viaB</i>	Gene encoding expression of Vi antigen.
WHO	World Health Organization
WHOCC-Salm	World Health Organization Collaborating Centre for Reference and Research on <i>Salmonella</i>
XLD	Xylose lysine decarboxylase.
XLT-4	Xylose Lysine Tergitol 4.