
CONTENTS

Title	Page
ABSTRACT	1
INTRODUCTION	2
AIM OF THE WORK	7
REVIEW OF LITERATURE	8
1.1. Recovery of <i>Salmonella</i> in poultry	8
1.2. Antibigram studies among <i>Salmonellae</i>	17
1.3. Bacterial pathogenicity	27
1.3.1. Pathogenicity islands	29
1.4. Virulence factors	30
1.4.1. Specific Virulence Factors of <i>Salmonella</i>	32
1.4.1.1. Adherence and colonization factors	32
1.4.1.2. Invasion Factors	32
1.4.1.3. Capsules and other surface components	32
1.4.1.4. Endotoxins	33
1.5. Mechanisms of bacterial pathogenicity	33
1.5.1. Adherence and colonization factors	34
1.5.2. Invasiveness	36
1.5.3. Toxigenesis	37
1.6. Genetic and molecular basis of virulence	43
1.7. Virulence genes in <i>Salmonella</i> Typhimurium strains	49
MATERIALS AND METHODS	57
2.1. Materials	57
2.1.1. Collected isolates	57
2.1.2. Media used	58
2.1.2.1. Media used for cultivation and identification of <i>Salmonella</i>	58
2.1.2.2. Media used for biochemical identification of <i>Salmonella</i>	58
2.1.2.3. Media used for antibiogram assay for <i>Salmonella</i>	59
2.1.2.4. Media used for genomic DNA preparation	59
2.1.3. Chemicals and Reagents	59

2.1.4. Gram's Stain	60
2.1.5. Diagnostic <i>Salmonella</i> antisera	60
2.1.6. Antimicrobial sensitivity discs	60
2.1.7. Solutions	61
2.1.7.1. Gluteraldehyde solution	61
2.1.7.2. Lyses solution of Vero cells	62
2.1.7.3. Trypsin solution	62
2.1.8. Materials used for genomic DNA extraction	62
2.1.9. Materials and reagents for (PCR)	62
2.1.10. Materials used for detection of PCR product	63
2.1.11. Materials used for purification of PCR product using agarose gel extraction kit Qiaquick.	64
2.1.12. Material used for sequencing analysis of <i>invA</i> gene	65
2.1.13. Equipments and apparatus	65
2.2. Methods	66
2.2.1. Colonial morphology	66
2.2.2. Microscopical examination	66
2.2.3. Motility test	67
2.2.4. Biochemical examination	67
2.2.5. Serological identification of <i>Salmonella</i>	69
2.2.6. Antibioqram of salmonella isolates	70
2.2.7. Maintenance of clinical isolates	71
2.2.8. Maintenance, propagation and preparation of Vero cell monolayer	72
2.2.8.1. Cell Line	72
2.2.8.2. Maintenance and propagation of Vero cell	72
2.2.9. Preliminary assay of virulence factors	73
2.2.9.1. Preparation of bacterial inoculum	73
2.2.10. Quantitative assay of virulence factors	74
2.2.10.1. Quantitative assay of invasion and adherence	74
2.2.10.2. Quantitative assay of invasion	74
2.2.10.3. Quantitative assay of cytotoxicity	75
2.2.11. Tissue culture techniques	77
2.2.11.1. Tissue culture equipment's	77
2.2.11.2. Cell Counting	78
2.2.11.3. Cryopreservation of cell lines	78
2.2.11.3.1. Freezing	78
2.2.11.3.2. Thawing	79
2.2.12. Extraction of <i>Salmonella</i> genome	80
2.2.13. Polymerase chain reaction assay (PCR)	82
2.2.14. Agarose gel electrophoresis	83

2.2.15. Purification of <i>invA</i> fragment of local <i>Salmonella</i> strain	84
2.2.16. Sequence of the DNA fragment	86
2.2.17. Sequence analysis of the DNA fragment	86
RESULTS	88
3.1. Identification of <i>Salmonella</i> isolates	88
3.1.1. Morphological and colonial characteristics	88
3.1.2. Biochemical identification	93
3.2. Serological identification of <i>Salmonella</i>	94
3.3. Antibioqram sensitivity test of <i>Salmonella</i> Typhimurium.	94
3.4. Quantitative assay of virulence factors	98
3.5. PCR assay for local <i>Salmonella</i> Typhimurium isolates.	107
3.6. Nucleotide sequence analysis of highly virulence <i>Salmonella</i> Typhimurium Local strain (ST12) ST. Egypt/Poultry/2014.	109
3.7. Multiple alignment of nucleotide sequence of <i>invA</i> gene of local <i>Salmonella</i> Typhimurium isolate with other published S. Typhimurium strains.	111
3.8. Multiple alignment of deduced amino acid sequence of <i>invA</i> gene of local <i>Salmonella</i> Typhimurium isolate with other published S. Typhimurium strains.	122
3.9. Phylogenetic analysis of <i>invA</i> gene of Egyptian local S. Typhimurium isolate with different S. typhimurium strains.	127
3.9.1. Phylogenetic relationship of the ST. Egypt/Poultry/2014 isolate based on the aligned nucleotide sequence to other <i>Salmonella</i> Typhimurium strains.	127
3.9.2. Phylogenetic relationship of the ST. Egypt/Poultry/2014 isolate based on the aligned 685 amino acid residues to other <i>Salmonella</i> Typhimurium strains.	130
DISCUSSION	133
SUMMARY	162
CONCLUSION	168
REFERENCES	169
ARABIC SUMMARY	-

List of Table

Table No.	Title	Page
1	Data of sample collected from eggs, layers, broiler and ducks for isolation	57
2	Antibiotics used in this study to test for resistance/ sensitive	61
3	Years, different governorates and sources of different Salmonella isolates	89
4	Biochemical characterization of isolated Salmonella	93
5	Showing serotyping of the isolated Salmonella	94
6	Susceptibility of Salmonella Typhimurium isolates to different antibiotics	96
7	The distributional percentage of antibiotic sensitivity against the Salmonella Typhimurium	97
8(a)	Total count of invasion and adhesion of Salmonella Typhimurim	101
8(b)	Total count of invasion, adhesion and cytotoxicity of Salmonella typhimurim isolates	102
9	Cytotoxicity of Salmonella Typhimurium	103
10	Specific invA gene primers	107
11	Designation of S.Typhimurium Egyptian isolate representing time period (2014) from poultry and submission to GenBank with accession number	109
12	Showing list of S.Tyhimurium with the corresponding identification and accession numbers on Genbank used for sequence analysis.	110

13	Nucleotides changes between Egyptian local strain ST. Egypt/Poultry/2014 and other published S.T. strains of InvA sequence.	121
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List of Figure

Figure No.	Title	Page
1	An overview of bacterial mechanisms for pathogenicity	34
2	Type III Secretion System (T3SS or TTSS)	38
3	Schematic representation of Salmonella T3SS1 and T3SS2	39
4	Adherence and Invasion of Salmonella to Host Epithelial cells	40
5	Mechanisms of acquiring bacterial virulence genes	49
6	Antibiogram of Salmonella Typhimurium isolates	98
7	Total count of Invasion, Adhesion and Cytotoxicity of different local Salmonella Typhimurium isolates	104
8	Cytotoxicity Percentage of Salmonella Typhimurium isolates	104
9	Multiple alignment of nucleotide sequence of invA in Egyptian Salmonella Typhimurium strain compared with other 10 invA in Salmonella Typhimurium strains published sequences on Genbank.	119
10	Homology percentage of nucleotide sequence of invA in Egyptian Salmonella Typhimurium strain in comparison with other published Salmonella Typhimurium strains.	120

11	Multiple alignment of deduced amino acid sequence of invA in Egyptian Salmonella Typhimurium strain compared with other 10 invA in Salmonella Typhimurium strains published sequences on Genbank.	125
12	Homology percentage of deduced amino acid sequence of invA in Egyptian Salmonella Typhimurium strain in comparison with other published Salmonella Typhimurium strains.	126
13	Phylogenetic tree (Dendrogram) of nucleotide sequence of invA gene of Egyptian Salmonella Typhimurium strain (Egypt/Poultry/2014) with other published Salmonella Typhimurium strains. This rooted tree is constructed by MEGA 6 software using Maximum Likelihood method with bootstrap values calculated from 1000 replicate.	129
14	Phylogenetic tree (Dendrogram) of deduced amino acid sequence of invA gene of Egyptian Salmonella Typhimurium strain (Egypt/Poultry/2014) with other published Salmonella Typhimurium strains. This rooted tree is constructed by MEGA 6 software using Maximum Likelihood method with bootstrap values calculated from 1000 replicate.	132

List of Photo

Photo No.	Title	Page
1	Salmonella virulence factors	51
2	Hektoen Enteric agar plate shows blue-green colonies with black center of Salmonella spp.	90
3	XLD agar medium shows red colonies with black center of Salmonella spp.	90
4(a and b)	Selective SS (Salmonella-Shigilla) Agar Plate shows black center colonies of Salmonella spp.	91
5	MacConky selective media shows Lactose-fermenter (right side) and Non lactose-fermenter (left side) of Salmonella	92
6	Antibiotic sensitivity testing	95
7(a and b)	Tissue culture plates showing cytotoxicity of some local S.Typhimurium.	105
8	Normal Vero cells stained with crystal violet stain	106
9(a and b)	Cytotoxicity produced by S.Typhimurium	106
10	PCR products of 2058 bp fragment of invA gene using 1.5% agarose stained with ethidium bromide	108

List of Abbreviation

ACSSUT	Ampicillin, chloramphenicol, streptomycin, sulfonamides and tetracycline resistant
AKT	Serine protein kinase
Bp	Base pair
BLAST	Basic Local Alignment Search Tool
BTC	Basal Tissue Culture medium
CFU	Colony forming unit
DNA	Deoxyribonucleic acid
DOD	Day-old duckling
dNTPs	Deoxy nucleotide triphosphate
EDTA	Ethylene diamine tetra-acetic acid
EFSA	European Food and Safety Authority
EHEC	Enterohemorrhagic <i>E.coli</i>
EPEC	Enteropathogenic <i>E.coli</i>
ERIC-PCR	Enterobacterial Repetitive Intergenic Consensus – Polymerase Chain Reaction
FASTA	Format as text for either nucleotide sequences or peptide sequences
HGT	Horizontal gene transfer
LB	Luria-Bertani broth
LPS	Lipopolysaccharide profile analysis
LT	Heat Labile toxin
MEGA	Molecular Evolutionary Genetics Analysis
MLIA	Multilocus variable-number tandem repeat analysis
MR/VP	Methyl red/Vogus Proskaur
NA	Nutrient ager

NARMS	National Antimicrobial Resistance Monitoring System for Enteric Bacteria
NCBI	National center for biotechnology information
OMP	Outer membrane protein
PAI	Pathogenicity island
PBS	Phosphate buffer saline
PCR	Polymerase chain reaction
PFGE	Pulsed field gel electrophoresis
ORF	Open reading frame
REP-PCR	Repetitive extragenic palindromic polymerase chain reaction
RNA	Ribonucleic acid
SCAMP3	Secretory carrier membrane protein 3
SCV	Salmonella-containing vacuole
SPI	Salmonella Pathogenicity Island
SE	<i>Salmonella enteritidis</i>
SIM	Sulphur Indol Motility media
SS	Salmonella-Shigella agar
ST	Salmonella typhimurium
SXT	Sulphamethaxazone-trimethoprim
TAE	Tris acetate EDTA
TE	Tetracycline
TGN	Trans-Golgi network
TSI	Triple sugar agar
TTSS	Type three secretion system
T3SS	Type three secretion system
UTI	Urinary tract infectious
UVP	Ultra violet trans-illuminator
WGS	Whole genome sequencing
XLD	Xylose lysine deoxycholate

ABSTRACT

Salmonella is considered to be one of the most important causative agents which infect animal causing great mortalities and various morbidity changes. Avian salmonellosis is a large group of diseases of poultry caused by the genus *Salmonella*. Twelve strains of *Salmonella* (10 chickens and 2 ducks) isolated from poultry flocks in different geographical areas and these isolates were serotyped as Typhimurium. All strains in this study were characterized by phenotypic and genotypic methods to compare the usefulness of the methods in epidemiological studies. The obtained results, the twelve local isolates of *S.*Typhimurium were sensitive to ten different antibiotics by percentage 91.7%, 83.3%, 75% and 50% .While 100%, 83.3% and 66.7% of the isolates were resistant to this antibiotics. All isolates could be classified as either invasive or cytotoxic according different assays. The results showed that, all isolates of *S.T.* were able to invade the Vero cells by different percentage (33.3% have high invasion capability, 41.7% have moderate capability and 25% have low capability) and the isolates with high invasiveness capability exhibited high epithelial cell cytotoxicity (ranged from 49% to 80%). Also, all strains were able to adhere to Vero cells by different degrees (75% of strains have high adherence capability while 25% of them have moderate capability). The molecular characterization of Egyptian isolates were performed using sequence analysis of *invA* whole gene of most invasive strain that amplified by PCR technique by specific synthesized primers and all of *S.T.* strains have *invA* gene at specific molecular size (2058 bp). Sequencing of *invA* gene of the local isolate has been done for characterization and to detect the similarity and differences between it and the reference strains (isolates) all over the world. The nucleotide sequence of the highly virulence Egyptian isolate collected in 2014 was determined and encoding a 685 amino acid polypeptide then compared with *invA* gene of *S.T.* published sequences on Genbank. The results of the homology percentage of nucleotide and amino acid sequence leading us to say that the Egyptian *S.*Typhimurium strain has high similarity with other published *S.*Typhimurium strains (~99%) which use in antigen or vaccine production, so this local strain can be used in vaccine production in the future instead of other international strains.

Key words: *Salmonella* Typhimurium, *S.T.*, Invasion, Adherence, Cytotoxicity, Sequencing.