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Evaluation of Quality control for Detection of Bacteria Contaminated SPF and Commercial Eggs

A Thesis Presented

By

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Under The Supervision of

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اقْرَأْ بِاسْمِ رَبِّكَ الَّذِي خَلَقَ ۞ خَلَقَ الإِنسَانَ مِنْ
عَلَقٍ ۞ اقْـرَأْ وَرَبُّــكَ الأَكْـرَمُ ۞ الَّذِي عَلَّمَ
بِالْقَلَـمِ ۞ عَلَّمَ الإِنسَانَ مَا لَمْ يَعْلَمْ ۞

صدق الله العظيم

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Abstract

Salmonella spp. are one of the major bacterial causes of food borne gastroenteritis. Eggs are most commonly identified as food sources responsible for salmonellosis outbreaks. *Mycoplasma gallisepticum* is the most economically significant *Mycoplasma* pathogen of poultry, and has a world-wide distribution in common with other mycoplasmas. The present study aimed to isolate and identify salmonellae and *Mycoplasma gallisepticum* from hen's eggs, as well as using of PCR for direct identification of the *S.* Typhimurium, *S.* Enteritidis and *Mycoplasma gallisepticum* from eggs. Among salmonellae, the general incidence among the native eggs yolk was 1.3%. While the incidence of salmonellosis among white and brown eggs was 1.2% for both. The 13 *Salmonella* isolates from the native egg yolk were indicated as 7 *S.* Typhimurium and 6 *S.* Enteritidis. From the white eggs, one *S.* Enteritidis and two *S.* Typhimurium were isolated from the egg yolk. The brown eggs harbored two *S.* Enteritidis and one *S.* Typhimurium. All positive samples were from yolk samples. Using PCR 66 albumin samples were positive for salmonellae (48 *S.* Enteritidis and 18 *S.* Typhimurium). Mycoplasmae could be isolated from the examined egg samples. A total of 4%, 2% and 2% were recorded among white, brown and native breed egg samples. All negative samples were retested by PCR. And the results showed that 24 negative yolk samples by culture, biochemical and serological tests gave positive results for *Mycoplasma gallisepticum.* All examined SPF eggs were free from salmonellae and mycoplasmae.

DEDICATION

ALLAH *, I don't like the night withought thanking you, I don't like the day withought obedience for you, and there is no happy afterlife withought your pardon, and we won't enjoy paradise withought seeing you, Almighty God.*

The Prophet of mercy and the light of the Worlds Peace be upon him, ***Prophet Mohammed****.*

 *Dear Mother the secret of my life and success. Dear Father whom I carry his name proudly, my sister Al-Shimaa and brothers Abdel-Aziz, Mohammed and Mohammed Aly I see optimism in their eyes & happiness in their laughter. And Dear Aunt Dr. Fatma moharram for her encouragement and faithful efforts, Dear friends Safwa, Hala, Marwa and Reem.* 

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CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

API	Analytical Profile Index
BFP	bundle-forming pilus
BS	bismuthsulphite agar
CDC	Centers for Disease Control and Prevention
CDC	Communicable Disease Center
CRD	chronic respiratory disease
DCA	desoxycholate-citrate agar
DIASALM	diagnostic semi-solid *Salmonella* medium
DNA	Deoxy Nucleic Acid
EDTA	Ethylene Diamine Tetraacetic Acid
ELISA	enzyme linked immunosorbent assay
EU	European Union
Fig.	Figure
FT	Fowl typhoid
GIT	Growth inhibition test
HI	Haemagglutination inhibation test
IB	infectious bronchitis
IFA	Indirect fluorocent antibody test
IgM	immunoglobulin M
IP	Immunoperoxidase test
ISO	International Organization of Standardization
LPF	long polar fimbriae
LPS	lipopolysaccharide
MAb	monoclonal antibody
MAbs	monoclonal antibodies
MG	*Mycoplasma gallispteicum*
MI	*Mycoplasma iowe*
MKTTn	Mueller-Kauffman Tetrathionate novobicin
m-PCR	Multiplex Polymerase Chain Reaction
MS	*Mycoplasma* synoviae
MSRV	modified semi-solid Rappaport Vassiliadis
NAD	Nicotinamide adenine dinucleotide
ND-vaccinated	Newcastle disease-vaccinated
NO.	Number
NS	non-selective
OIE	International Office of Epizootics
PBS	Phosphate buffer saline

PCR	Polymerase Chain Reaction
PCR-RV	Polymerase Chain Reaction combined with Rappaport- Vassiliadis
PD	Pullorum disease
PEF	plasmid-encoded fimbriae
PPLO	pleuropneumonia-like organism
RAPD	random amplified polymorphic DNA
RBCs	red blood cells
RNA	Ribonucleic acid
RSA	Rabid serum agglutination test
RST	Rabid serum agglutation test
SCV	*Salmonella*-containing vacuole
SE	*Salmonella* Enteritidis
SEF14	*S.* Enteritidis fimbriea antigen 14
SG	*Salmonella* Gallinarum
SMT	standard microbiological techniques
SP	*Salmonella* Pullorum
SPA	slide plate agglutination
SPA	Serum plate agglutination
SPF	Spesfic pathogenic free
SPI-1 and -2	*Salmonella* pathogenicity islands 1 and 2
ST	*Salmonella* Typhimurium
T3SS	type III secretion systems
TSI	triple sugar iron agar
US	United states
UV	Ultra violet
V-P	Voges-Proskauer
WHO	World Heath Organization
XL	Xylose Lysine