



Faculty of Veterinary Medicine
Department of Microbiology

**Rapid detection of bacterial food borne pathogens by
using molecular techniques**

A thesis presented

By

Zeinab Abd EL-Badiea El-Sayed

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PhD in Veterinary Medical Sciences, Microbiology
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Under The Supervision of

Prof. Dr. Jakeen Kamal Abdel Haleem Eljakee

Professor of Microbiology
Faculty of Veterinary Medicine,
Cairo University

**Dr. Soad Abd El-Aziz
Abd El-Wanis**

Chief Researcher of
poultry diseases
Reference Laboratory for
Veterinary Quality Control
on Poultry Production
Animal Health Research
Institute, Dokki

**Dr.Rehab Ali Mohamed
Elhelw**

Assistant Professor of
Microbiology
Faculty of Veterinary
Medicine,
Cairo University

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CONTENTS

Content	Page
Chapter (1) INTRODUCTION	1
Chapter (2) REVIEW OF LITERATURE	6
2.1. Food borne pathogens	6
2.2. Food borne pathogens associated with human diseases	16
2.3. Detection of food pathogen by multiplex PCR:	24
Chapter (3) Published paper	49
3.1: paper published in : Bioscience Research (pISSN: 1811-9506 eISSN 2218-3973)	49
Chapter (4) DISCUSSION	77
Chapter (5) CONCLUSION AND RECOMMENDATIONS	84
Chapter (6) SUMMARY	85
Chapter (7) REFERENCES	87

List of Figures

Number	Title	Page
1	The multiplex PCR assay for detection of <i>Salmonella</i> , <i>Bacillus cereus</i> and <i>Staphylococcus aureus</i> in broth with different concentrations.	60
2	The multiplex PCR assay for detection of <i>Listeria monocytogenes</i> , <i>E. coli</i> and <i>Campylobacter</i> in broth with different concentrations.	61
3	. The multiplex PCR assay for detection of <i>Salmonella</i> , <i>Bacillus cereus</i> and <i>Staphylococcus aureus</i> in spiked meat with different concentrations .	62
4	Application of the multiplex PCR assay for detection of target pathogens (<i>Listeria monocytogenes</i> , <i>E. coli</i> and <i>Campylobacter</i>) in spiked meat with different concentrations	63

List of Tables

Number	Title	Page
1	Primers sequences with amplified product.	55
2	PCR condition	57
3	occurrence of food pathogens from retail food samples using Multiplex Polymerase Chain Reaction (PCR) and Conventional culture methods:	58

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Name	Zeinab Abd EL-Badica El-Sayed
Date of birth	1/09/1987
Nationality	Egyptian
Degree	PhD. Of Veterinary Medical Sciences
Specialization	Microbiology (Bacteriology - Immunology - Mycology)
Title of thesis	Rapid detection of bacterial foodborne pathogens by using molecular techniques.
Under supervision of	Prof. Dr. Jakeen Kamal Abdel Haleem El jakee Prof. of Microbiology, Department of Microbiology Faculty of Veterinary Medicine, Cairo University Dr. RehabAli Mohamed Elhelw Assistant professor of Microbiology, Department of Microbiology Faculty of Veterinary Medicine, Cairo University Dr.Soad Abd El-Aziz Abd El-Wanis Chief Researcher of poultry diseases Reference Laboratory for Veterinary Quality Control on Poultry Production, Animal Health Research Institute

Abstract

Rapid detection of pathogens in food becomes a critical and important demand for human safety, since most foodborne illnesses and deaths are caused by pathogenic bacteria. So application of rapid, sensitive method to detect foodborne pathogen is essential in controlling food safety. In this study, a two multiplex polymerase chain reaction (mPCR) technique for the simultaneous detection of some foodborne pathogens (*Salmonella*, *S. aureus*, *Bacillus cereus*, *Listeria monocytogenes*, *E. coli* and *Campylobacter* spp.) was done in culture broth and artificial food matrix. Pathogen-specific DNA sequences in the *invA*, *clfA*, *groEL*, *16S* rRNA, *phoA* and *23S* rRNA genes were used as targets to design primers for the identification of *Salmonella*, *S. aureus*, *Bacillus cereus*, *Listeria monocytogenes*, *E. coli* and *Campylobacter* spp. respectively. The detection of sensitivity in this assay was 10 CFU/ml of each pathogen in a culture broth and artificially inoculated samples after enrichment for 24 h. The mPCR assay proposed here can gain results within

24 h and correspond to the results obtained by the classical cultivation based on ISO methods, which will be valuable for food safety investigations.

Key words: mPCR-foodborne pathogens,, *Salmonella*, *S. aureus*, *B. cereus*, *L. monocytogenes*, *E. coli* and *Campylobacter*.