

**STUDY ON RISK ASSESSMENT OF SOME TRADITIONAL FOOD
IN NORTH AFRICA (LIBYA AND EGYPT)**

Submitted By

Widad Mohamed El Fiatoure Abdallah

B.Sc. of Food Technology, Faculty of Engineering & Technology, Sebha University, Libya, 1995

M. Sc.in Food Technology, Faculty of Engineering & Technology, Sebha University, Libya, 2009

A Thesis Submitted in Partial Fulfillment
Of
The Requirement for the Doctor of Philosophy Degree
In
Environmental Sciences

Department of Environmental Agricultural Sciences
Institute of Environmental Studies and Research
Ain Shams University

2018

APPROVAL SHEET
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Acknowledgment

In the name of Allah, most Gracious, most Merciful.

It is my duty, as a start to praise Almighty Allah, Lord of the world, whose guidance, blessing and help enabled me to take this step on my life for improving my knowledge through this humble effort.

Most extensive gratitude is expressed to **Prof. Dr. Farouk EL-Tellawy** president of the Department of Agricul science, Environmental Studies and Research Institute, Ain Shams University, **Prof. Dr. Mohamed EL-Nawawy** of Food Science Dept, Faculty of Agriculture, Ain Shams University and **Prof. Dr. Kadry Weshahy** of Plant Protection Dept, Faculty of Agriculture, Ain Shams University who has been most kind and helpful and they consistently allowed this thesis to be my own work, but steered me in the right direction whenever he thought I needed it. I would like to thank **Prof. Dr. Abdulaziz Zorgani** Microbiology and Immunology Dept, Faculty of Medicine, Tripoli University for his acceptance of this thesis and did not hesitate to help me.

I also thank my family who encouraged me and prayed for me throughout the time of my research. This thesis is heartily dedicated to My mother forgave her and my dear brothers who took the lead to heaven before the completion of this work.

Special thanks to my distinguished professors **Prof. Dr. Hesham EL-Kassas** dean of Environmental Studies and Research Institute, Ain Shams University, **Prof. Dr. Mohamed Sarhan** of Food Technology, Fac. of Agric, Fayoum University **Prof. Dr. Ahmed Jibril** of Food Science Dept, Faculty of Agriculture, Ain Shams University, **Dr. Samar Abdo Alhameed**, Facluty of Science, Ain Shams University and **Dr. Tarek Abd El Aleim** of Agriculture Research Center, for providing assistance, advice and guidance to me.

I thank my country Libya for supporting me in all stages of my education and I hope that God will keep it always.

Abstract

The aim of this work is to evaluate thirty traditional foods commonly consumed in both Cairo and Tobruk cities for the detection of some pathogenic bacteria, heavy metals pollution and residues of pesticides. These foods were: Fifteen samples (Foul Medamis, Falafel and Koshari) from five areas in Cairo governorate and Fifteen samples (Couscous, Mbcabach and Bazin) from five areas in Tobruk city. The number of mesophilic aerobic bacteria in different Egyptian food samples ranged between (1.24×10^4 to 1.14×10^7 cfu/g) in Foul Medamis sample from Heliopolis and Koshari sample from Ghamra area. The total coliforms and *Staphylococci* counts from (10×10^1 to 6.3×10^2 cfu/g) and (15×10^1 to 62×10^1 cfu/g). On the other hand, the presence of *E. coli*, *Bacillus cereus* and *Salmonella. sp* were observed in some samples. All samples showed no growth of yeast and mold. The number of total plate count of bacteria in different Libyan food samples ranged between (1.17×10^2 to 4.25×10^3 cfu/g) in Bazin from Albelad area and Couscous from Industrial area. All samples showed no growth of any pathogenic bacteria except *Bacillus cereus* in some food samples. Proximate composition of protein, fats, total ash, fiber and carbohydrate were calculated on dry weight basis, the highest lipid contents in fried Falafel (32.46%) was noted in sample from Ramses area. The content of Cd, Pb, Al, in all food samples were determined using Atomic Absorption Spectrometry (AAS). The results of this study showed that there was a wide variation in the concentration of these metals in food samples collected from different sites. The highest Pb level in Faba beans (0.74 mg/Kg) was found in samples from Ramses area, (Pb) concentration in ten samples were more than the permitted level. (Al) content was high (2.1 mg/kg) in Falafel samples from Ghamra area and it was found in all samples with a significant differences at ($P \leq 0.05$). In Libyan foods, the highest Pb and Al levels in Bazin

samples were (0.61 and 1.09mg/kg. All samples were free from any contamination with cadmium. Organochlorine pesticide residues were detected in all Egyptian samples. D-HCH, Endrin and P,P-DDE recorded (0.00034, 0.00046 and 0.00071 mg/kg), D-HCH and Dildrin (0.0002 and 0.0005 mg/kg), G-HCH, D-HCH and Endrin (0.0004, 0.0003 and 0.0023 mg/kg), Dildrin (0.00061 mg/kg), D-HCH and Dildrin (0.00018 and 0.0005 mg/kg) in Foul Medamis samples, respectively, D-HCH, P,P-DDD and Endrin (0.00054 and 0.001 mg/kg), Endrin (0.00081 mg/kg), Endrin (0.0011 mg/kg), D-HCH, Dildrein and P,P,-DDD (0.00032, 0.00057 and 0.0006 mg/Kg) and (Endin and P,P-DDD) recorded (0.0007 and 0.0002 mg/kg) in Falfel samples, respectively and G-HCH and Dildrein (0.00044 and 0.001 mg/kg), While Dildrein recorded (0.0003 mg/kg), (0.00034 mg/kg), (0.0009 mg/kg) and (0.0005 mg/kg) in Koshari samples from Abbasiya, Nasr city Ramses, Ghamra and Heliopolois areas, respectively. Libyan traditional foods had no detectable concentrations of any organochlorines pesticide.

Key words: Pathogenic, Heavy Metals, Atomic absorption, Organochlorines, pesticide residues

List of Contents

Title	Page
List of Tables	V
List of Figures	VIII
I. INTRODUCTION.	1-4
II. REVIEW OF LITERATURE.	5-58
1. (Traditional foods).	5
2. Food contaminants.	11
3. Food Contamination Sources.	13
4. Risks of contaminated food.	24
5. Types of food contamination.	34
5.1. Physical contamination.	34
5.2. Microbiological Contamination.	35
5.3. Chemical pollutants.	41
5.3.1. Contamination by heavy metals.	41
5.3.2. Contamination by pesticide residues.	50
III. MATERIAL AND METHODS.	59-67
1. Materials.	59
1.1.Traditional food samples from Cairo Governorate, Egypt and Tobruk city, Libya.	59
1.1.1. Traditional food samples from Cairo Governorate.	59
1.1.2. Traditional food samples from Tobruk city.	60
2.Methods.	60
2.1. Microbiological analysis.	60

Title	Page
2.1.1. Sample preparation.	60
2.1.2. Detection of bacteria in traditional food samples.	60
2.1.3. Purification and identification of bacterial isolates.	62
2.1.3.1. Gram stain.	62
2.1.3.2. Indole production.	62
2.1.3.3. Methyl red test.	62
2.1.3.4. Catalase production.	63
2.2. Chemical composition analysis.	63
2.3. Detection of chemical contamination in traditional food samples.	63
2.3.1. Detection of heavy metals.	63
2.3.1.1. Preparation and treatment of samples.	63
2.3.1.2. Chemicals and Standards.	63
2.3.1.3. Quality assurance procedure.	64
2.3.2. Detection of Pesticide residues.	64
2.3.2.1. Preparation of samples.	64
2.3.2.2. Solvents.	64
2.3.2.3. Pesticides detected.	65
2.3.2.4. Analysis of tested and monitored pesticides.	65
2.3.2.5. Gas chromatographic analysis.	65
2.4. Statistical analysis	67
IV. RESULTS AND DISCUSSION	68-104
1. Microbiological analysis of traditional food samples collected from local markets located in Cairo and Tobruk cities.	68

Title	Page
1.1.Detection of pathogenic bacteria in 15 traditional food samples (Foul Medamis, Falafel and Koshari) collected from some local markets (Abbasiya area, Nasr city, Ramsis area , Ghamra area and Heliopolois) in Cairo governorate 2016.	68
1.2.Detection of pathogenic bacteria in 15 samples of Libyan tradional food collected from local markets (Industrial area, Alhoreeh area, Almokhtar area, Albelad area and Tobruk center) in Tobruk city in Libya 2016.	72
1.2.1.Detection of pathogenic bacteria in 15 Libyan traditional food samples.	72
2.Analysis of chemical compositions in traditional food samples collected from local markets located in Cairo and Tobruk cities.	76
2.1.Analysis of chemical compositions in 15 traditioal food samples collected from some local Egyptian markets in Cairo city, 2016.	76
2.2.Analysis of chemical compositions in 15 traditional food samples collected from local Libyan markets in Tobruk city, 2016.	79
3.Detection of heavy metals in traditional food samles collected from local markets located in Cairo and Tobruk cities.	82
3.1.Detection of heavy metals in 15 traditional food samples (Foul Medamis, Falafel and koshari) collected from some local Egyptian markets (Abbasiya area, Nasr city, Ramsis area, Ghamra area and Heliopolois) in Cairo city, 2016.	82

Title	Page
3.2.Detection of heavy metals in 15 samples of Libyan traditional food (Mbcabach, Couscous and Bazin) from local markets in Tobruk city, 2016.	87
4.Detection of organochlorines pesticides residues in traditional food samles collected from local markets located in Cairo and Tobruk cities	93
4.1.Detection of organochlorines pesticides residues in 15 traditional food samples cooked (Foul Medamis, Falafel and koshari) collected from some local Egyptian markets (Abbasiya area, Nasr city, Ramsis area, Ghamra area and Heliopolois) in Cairo city, 2016.	93
4.1.1.Detection of organochlorines pesticide in Foul Medamis samples.	94
4.1.2.Detection of organochlorines pesticide in Falafel samples.	97
4.1.3.Detection of organochlorines pesticide in Koshari samples.	100
4.2.Detection of organochlorine pesticides in Libyan traditional food samples.	103
V. SUMMARY.	105-111
VI. REFERENCES.	112-134
VII. ARABIC SUMMARY.	

List of Tables

Table	Title	Page
1	The group, pesticide, LOD, LOQ, r ² , RSD%, and average recoveries percentage of OC pesticides in samples using GC-ECD.	67
2	Guidelines used for permissible bacterial load (CFU/g).	68
3	Detection of pathogenic bacteria (cfu/g) in 15 Egyptian traditional food samples collected from local markets (Abbasiya area, Nasr city, Ramses area, Ghamra area and Helipolois) in Egypt 2016.	69
4	Contamination percentage of microorganisms and pathogenic bacteria in 15 Egyptian traditional food samples collected from local markets (Abbasiya area, Nasr city, Ramses area, Ghamra area and Helipolois) in Egypt 2016.	71
5	Detection of pathogenic bacteria in 15 Libyan traditional food samples collected from local markets (Industrial area, Alhoreeh area, Almokhtar area, Albelad area and Tobruk center).	74
6	Contamination percentage of microorganisms and pathogenic bacteria in 15 Libyan traditional food samples collected from local markets (Industrial area, Alhoreeh area, Almokhtar area, Albelad area and Tobruk center) in Egypt 2016.	75
7	Proximate analysis of fifteen traditional Egyptian foods (Foul Medamis, Falafel and Koshari) collected from local markets (Abbasiya area, Nasr city, Ramsis area, Ghamra area and Heliopolois) in Cairo city, 2016.	77

Table	Title	Page
8	Proximate analysis of fifteen traditional Libyan foods (Mbcabach, Couscous and Bazin) collected from local markets (Industrial area, Alhoreeh, Almokhtar, Albelad and Tobruk center) in Libya 2016.	81
9	Detection of metals (mg/kg dry base) in 15 traditional food (Foul Medamis, Falafel and Koshari) samples collected from Egypt.	83
10	Minimum, maximum, mean, standard deviation, contamination, maximum permissible limits (MPLs) and violation of heavy metals monitored in 15 traditional food (Foul Medamis, Falafel and Koshari) samples collected from Egypt.	85
11	Detection of metals (mg/kg dry base) in 15 traditional food (Mbcabach, Couscous and Bazin) samples collected from Libya.	88
12	Minimum, maximum, mean, standard deviation, contamination, maximum permissible limits (MPLs) and violation of heavy metals monitored in 15 traditional food (Mbcabach, Couscous and Bazin) samples collected from Libya.	92
13	Detection of organochlorines pesticide (mg/kg) in 5 local Foul Medamis samples collected from local markets (Abbasiya area, Nasr city, Ramses area, Ghamra area and Heliopolis) in Egypt 2016.	95
14	Minimum, maximum and mean contamination of organochlorines pesticide residues monitored in 5 samples of local Foul Medamis collected from local markets in Egypt 2016.	96

Table	Title	Page
15	Detection of organochlorines pesticide (mg\kg) in 5 local Falafel samples collected from local markets (Abbasiya area, Nasr city, Ramses area, Ghamra area and Heliopolis) in Egypt 2016.	98
16	Minimum, maximum and mean contamination of organochlorines pesticide residues monitored in 5 samples of local Falafel collected from local markets in Egypt 2016.	99
17	Detection of organochlorines pesticide (mg\kg) in 5 local Koshari samples collected from local markets (Abbasiya area, Nasr city, Ramses area, Ghamra area and Heliopolis) in Egypt 2016.	101
18	Minimum, maximum and mean contamination of organochlorines pesticide residues monitored in 5 samples of local Koshari collected from local markets in Egypt 2016.	102

List of Figures

Fig	Title	Page
1	Detection of metals in 15 traditional food (Foul Medamis) samples collected from local markets in Egypt.	83
2	Detection of metals in 15 traditional food (Falafel) samples collected from local markets in Egypt.	84
3	Detected of metals in 15 traditional food (Koshari) samples collected from local markets in Egypt.	84
4	Detected of metals in 15 traditional food (Mbcabach) samples collected from local markets in Libya.	89
5	Detected of metals in 15 traditional food (Couscous) samples collected from local markets in Libya.	89
6	Detected of metals in 15 traditional food (Bazin) samples collected from local markets in Libya.	90
7	The mean concentration of organochlorines pesticide (mg/kg) in 5 local Foul Medamis samples collected from local markets in Egypt.	96
8	% Frequency of contaminated organochlorines pesticide in 5 samples of local Foul Medamis collected from local markets in Egypt.	97
9	The mean concentration of organochlorines pesticide (mg/kg) in 5 local Falafel samples collected from local markets in Egypt.	99
10	% Frequency of contaminated organochlorines pesticide in 5 samples of local Falafel collected from local markets in Egypt.	100

Fig	Title	Page
11	The mean concentration of organochlorines pesticide (mg/kg) in 5 local Koshari samples collected from local markets in Egypt.	101
12	% Frequency of contaminated organochlorines pesticide in 5 samples of local Koshari collected from local markets in Egypt.	102