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

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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

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APPROVAL SHEET

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This thesis Towards a Doctor of Philosophy Degree in

Environmental Science Has been Approved by:

Name Signatur

1- Prof. Dr. Farouk Mohamed El-Talawy
Prof. of Food Technology and Head of Department of Environmental Agricultural Sciences – Institute of Environmental Studies & Research
Ain Shams University

2- Prof. Dr. Helmy Taha Omran
Prof. of Food Industry – Food Industry Department
Faculty of Agriculture
Suez Canal University

3- Prof. Dr. Kadry Weshahy Mahmoud
Prof. of Toxicology & Pesticides Chemistry
Faculty of Agriculture
Ain Shams University

4- Prof. Dr. Mohamed Abd El-Razek El-Nawawy
Emeritus Prof. of Food Sciences – Food Industry Department
Faculty of Agriculture
Ain Shams University

5- Prof. Dr. Sayed Mohamed Abdel Latif Dahroug
Emeritus Prof. of Pesticides – Plant Protection Department
Faculty of Agriculture
Ain Shams University

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Under The Supervision of:

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Ain Shams University

2- Prof. Dr. Mohamed Abd El-Razek El-Nawawy
Emeritus Prof. of Food Sciences - Food Industry Department
Faculty of Agriculture
Ain Shams University

3- Prof. Dr. Kadry Weshahy Mahmoud
Prof. of Toxicology and Pesticides Chemistry
Faculty of Agriculture
Ain Shams University

4- Prof. Dr. Abduaziz Abdelhafyz Alzorgani
Prof. of Microbiology and Immunology
Faculty of Medicine
Tripoli University, Libya

2018

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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 resedues of pesticids. 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 ($1.24x10^4$ to $1.14x10^7$ cfu/g) in Foul Medamis sample from Heliopolois and Koshari sample from Ghamra area. The total coliforms and *Staphylococci* counts from ($10x10^1$ to $6.3x10^2$ cfu/g) and ($15x10^1$ to $62x10^1$ 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 ($1.17x10^2$ to $4.25x10^3$ 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

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