

شبكة المعلومات الجامعية







شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها على هذه الأفلام قد أعدت دون أية تغيرات



يجب أن

تحفظ هذه الأفلام بعيدا عن الغبار في درجة حرارة من ١٥-٥٠ مئوية ورطوبة نسبية من ٢٠-٠٠% To be Kept away from Dust in Dry Cool place of 15-25- c and relative humidity 20-40%



بعض الوثائـــق الإصليــة تالفــة



بالرسالة صفحات لم ترد بالإصل

KEEPING THE QUALITY OF

READY-TO-EAT MEALS BY GAMMA

IRRADIATION

BY

MOHAMMAD HASAN MOHAMMAD ABDEL-DAIEM

B.Sc. Agric. "Food Science", Zagazig University (1993)

M.Sc. Agric. 'Food Science", Zagazig University (1998)

THESIS

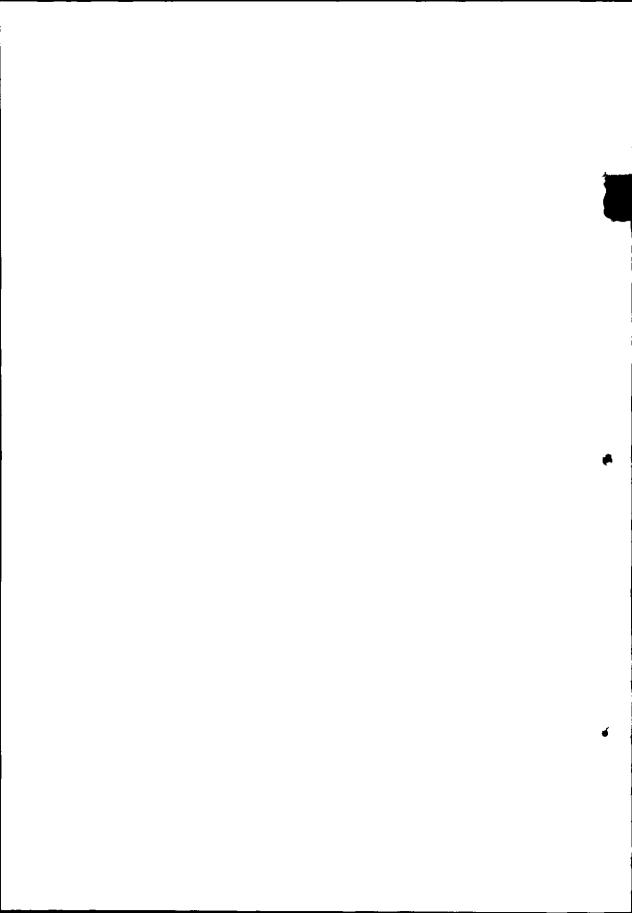
Submitted in Partial Fulfillment of The Requirements For The Degree of Doctor of Philosophy

IN FOOD SCIENCE

To
Department of Food Science
Faculty of Agriculture
Zagazig University

2004

0



KEEPING THE QUALITY OF READY-TO-EAT MEALS BY GAMMA IRRADIATION

BY MOHAMMAD HASAN MOHAMMAD ARDEL-DAIEM

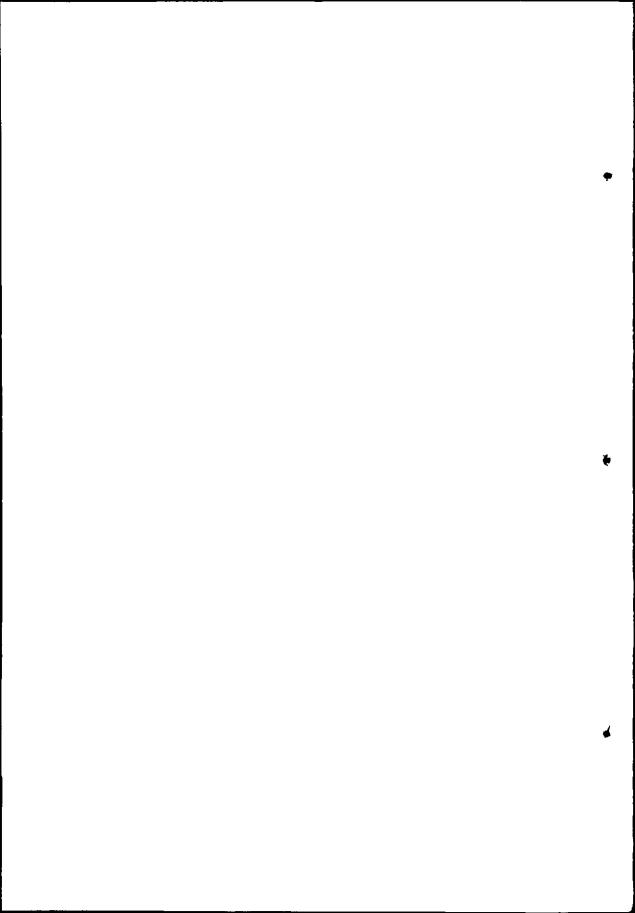
B.Sc. Agric. "Food Science", Zagazig University (1993) M.Sc. Agric. "Food Science", Zagazig University (1998)

Under the Supervision of:

Prof. Dr. Aly Hasan Rady .. A. H. R. O. L.

Professor of Food Science and Technology and Chairman of Nuclear Research Center, Atomic Energy Authority.

Food Science Department Faculty of Agriculture, Moshtohor, Zagazig University, Benha Branch



APPROVAL SHEET

KEEPING THE QUALITY OF READY-TO-EAT MEALS BY GAMMA IRRADIATION

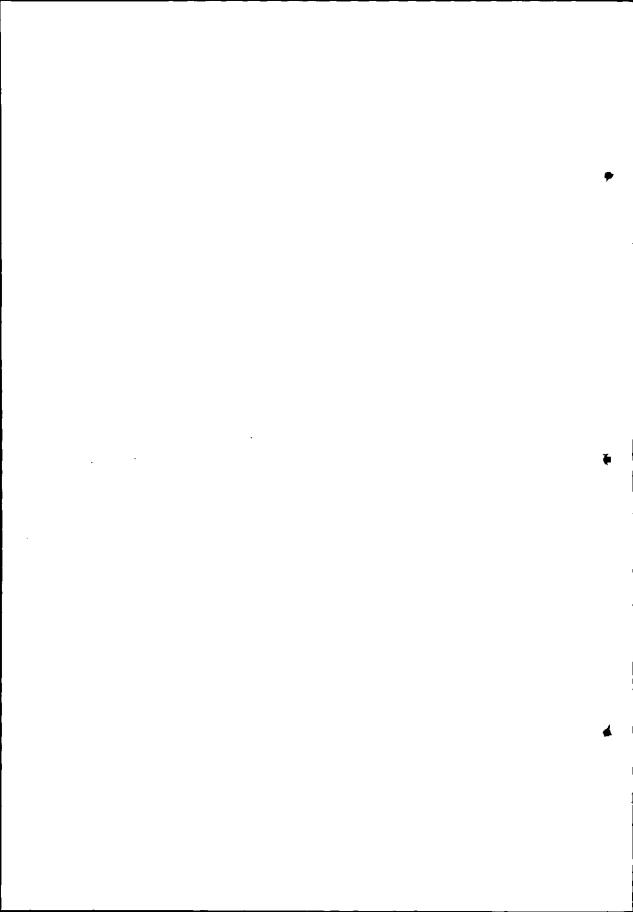
By

MOHAMMAD HASAN MOHAMMAD ABDEL-DAIEM

B.Sc. Agric. "Food Science", Zagazig University (1993) M.Sc. Agric. "Food Science", Zagazig University (1998)

Prof. Dr. R. M. A. El-Saadany J. M. A. C. Social Comprehensive of Food Science and Technology Fac. of Agric. Moshtohor, Zagazig University, Benha Branch.

Date of Examination: / / 2004



ACKNOLEDGEMENT

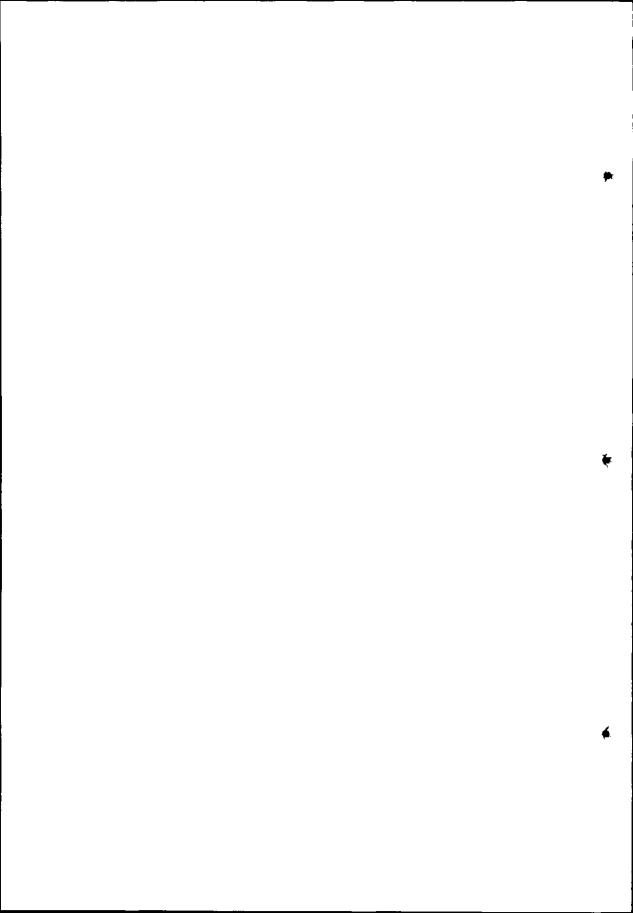
First and foremost, I wish to express my deep thank and gratitude fore my God who gave me the ability to finish my thesis.

I wish to express my heartfelt and deep thanks to **Prof. Dr. Hassan Hassan Khalaf**, Professor of Food Science and Technology, Faculty of Agriculture, Moshtohor, Zagazig University, for his supervision, interest and encouragement giving every possible advice and for his kind attention and valuable suggestion during this work.

It also gives me pleasure to record my deepest appreciation and sincere gratitude to *Prof. Dr. Aly Hasan Rady*, Professor of Food Science and Technology and chairman of Nuclear Research Center, Atomic Energy Authority for supervising the laboratory work providing all facilities and for his stimulative discussion, valuable suggestion and constructive criticism throughout writing the manuscript.

I wish to express my deep thanks and sincere gratitude to **Dr. Hesham Mohamad Badr**, Lecturer in Food Irradiation Unit, Plant Research Department, Atomic Energy Authority for his help in laboratory work, supervision, guidance and sustained help during the whole work.

Finally, sincere thanks are also extended to all staff members in Plant Research Department especially in Food Irradiation Unit for their helps in laboratory work.



CONTENTS

Contents	Page
INTRODUCTION	1
AIM OF INVESTIGATION	4
REVIEW OF LITERATURE	6
1. Microbiological quality of ready-to-eat foods	7
1.1. Meat products	7
1.2. Poultry products	9
1.3. Fish products	11
1.4. Potatoes and Rice products	12
2. Foodborne outbreaks associated with ready-to-eat	15
foods	
3. Treatment of food by ionizing radiation	17
4. Trails for improving the quality of ready - to	
 eat foods through irradiation processing 	18
4.1.Microbiological properties of irradiated of	
ready-to-eat foods	18
4.2. Chemical properties of irradiated ready-to-eat	21
foods	
4.3. Organoleptic properties of irradiated ready-to- eat foods	23
5. Sensitivity of microorganisms to ionizing radiation	25
5. Sensitivity of interoorganisms to fortizing radiation	

5.1. Effects of irradiation on foodborne pathogenic	25	
bacteria	25	
5.2. Effects of irradiation on spoilage bacteria	29	
5.3. Effect of irradiation on molds and yeasts	31	
MATERIALS AND METHODS	34	
2. Preparation of ready-to-eat meals	34	
2.1. Cooked meat balls (Kofta)	34	
2.2. Mashed potatoes	35	
2.3. Baked deboned chicken breast meat with		
slices of potatoes	35	
2.4. Baked fish	36	
2.5. Cooked rice	37	
3. Irradiation procedure	37	
4. Storage of samples	37	
5. Analytical procedure	38	
5.1. Sensory evaluation	38	
5.2. Microbiological analysis	38	
5.3. Chemical analysis	41	
RESULTS AND DISCUSSION	43	
1. Effects of gamma irradiation and cold storage		
(4±1°C) on the microbiological properties of the	43	
prepared meals	43	
1.1. Effects on the total bacterial count	43	