



شبكة المعلومات الجامعية

شبكة المعلومات الجامعية
جامعة عين شمس
جامعة عين شمس
جامعة عين شمس





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 اعدت دون أية تغيرات



يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %



شبكة المعلومات الجامعية



بعض الوثائق الأصلية تالفة



شبكة المعلومات الجامعية



بالرسالة صفحات

لم ترد بالأصل

TANTA UNIVERSITY
FACULTY OF AGRICULTURE,
KAFR EL-SHEIKH

**CHEMICAL AND TECHNOLOGICAL STUDIES
ON SOME FOOD**

**METHODS OF BIOTECHNOLOGY FOR QUALITY CONTROL OF
LOCAL SMOKED FISH DURING PROCESS AND STORAGE
UNDER DIFFERENT CONDITIONS**

BY

MOHAMED SOBHY MOHAMED ELSHENAWI

B.Sc. Agric. (Food Technology), Fac. of Agric. Tanta Univ., 1998

THESIS

Submitted in Partial Fulfilment of the
Requirements for the Degree of

MASTER OF SCIENCE

IN

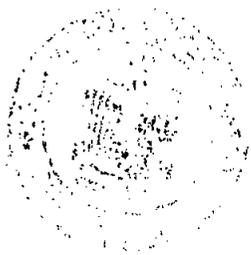
**AGRICULTURE SCIENCES
(FOOD TECHNOLOGY)**

**FOOD TECHNOLOGY DEPARTMENT
FACULTY OF AGRICULTURE, KAFR EL-SHEIKH
TANTA UNIVERSITY**

(2005)

B
7A7V

Handwritten text, possibly a signature or address, located in the middle-left section of the page. The text is faint and difficult to decipher.



APPROVAL SHEET

Title of Thesis: CHEMICAL AND TECHNOLOGICAL
STUDIES ON SOME FOODS

(METHODS OF BIOTECHNOLOGY FOR QUALITY
CONTROL OF LOCAL SMOKED FISH DURING PROCESS
AND STORAGE UNDER DIFFERENT CONDITIONS)

Name of Candidate: Mohamed Sobhy Mohamed Elshenawi

Degree of Master of Science

. in (Food Technology)

Approved by:

وكيل الكلية
لشئون الدراسات العليا والبحوث
أ.د. محمود مصباح عبد الرحمن

Prof. Dr. A. Muly

Prof. Dr. M. S. Gonda

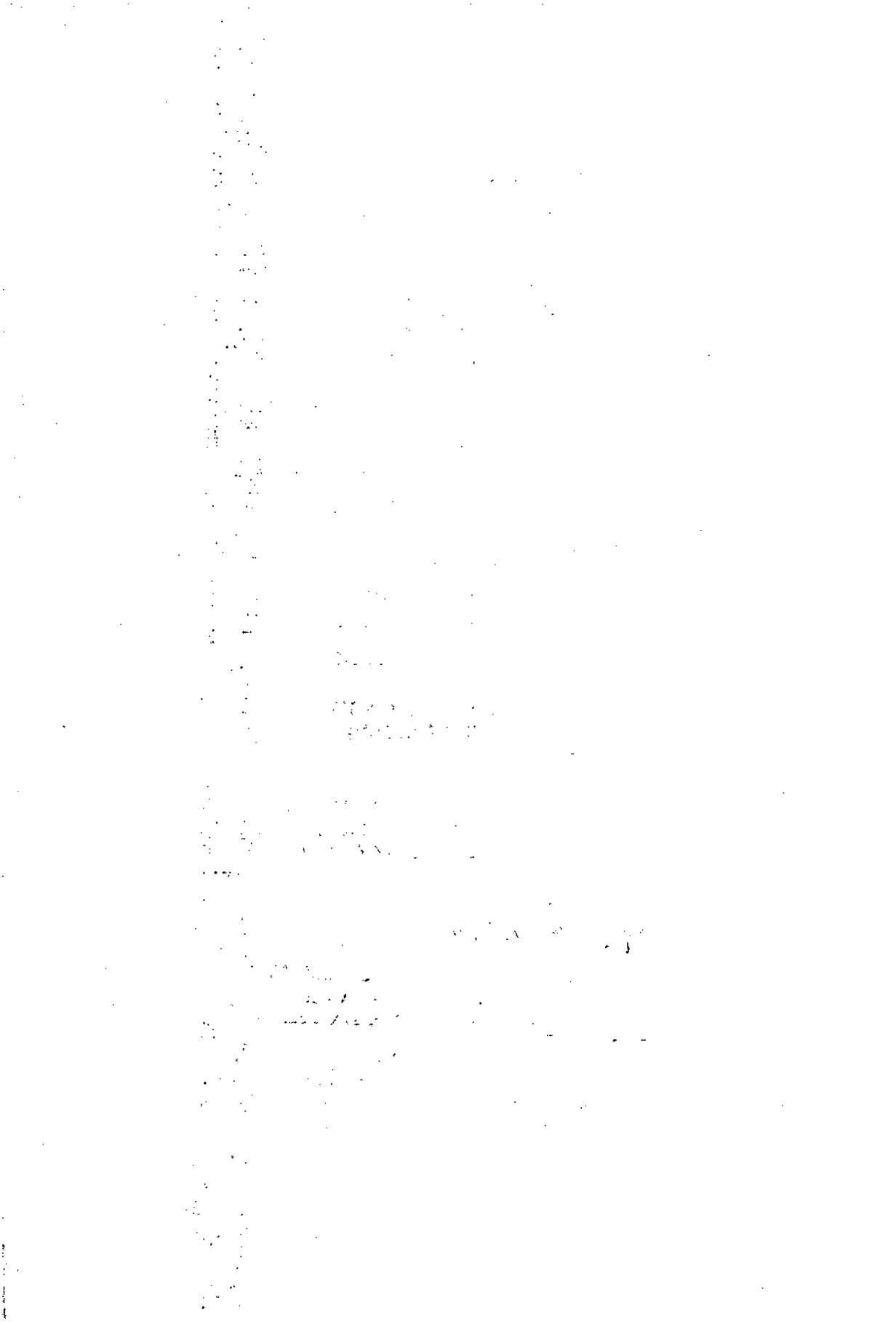
Prof. Dr. M. Owan

Prof. Dr. [Signature]

(Committee in Charge)



Date: / /2005



TANTA UNIVERSITY
FACULTY OF AGRICULTURE,
KAFR EL-SHEIKH

**CHEMICAL AND TECHNOLOGICAL STUDIES
ON SOME FOOD**

**METHODS OF BIOTECHNOLOGY FOR QUALITY CONTROL OF
LOCAL SMOKED FISH DURING PROCESS AND STORAGE
UNDER DIFFERENT CONDITIONS**

BY

MOHAMED SOBHY MOHAMED ELSHENAWI
B.Sc. Agric. (Food Technology), Fac. of Agric. Tanta Univ., 1998

THESIS

Submitted in Partial Fulfilment of the
Requirements for the Degree of

**MASTER OF SCIENCE
IN
AGRICULTURE SCIENCES
(FOOD TECHNOLOGY)**

**FOOD TECHNOLOGY DEPARTMENT
FACULTY OF AGRICULTURE, KAFR EL-SHEIKH
TANTA UNIVERSITY**

Under the Supervision of :

- Prof. Dr. **ABD EL-HAMEED MILIGI**
Professor of Food Science and Technology,
Department of Food Technology, Faculty of
Agriculture, Kafr El-Sheikh, Tanta University.
- Prof. Dr. **MAHMOUD SABER GOUDA**
Professor of Food Science and Technology,
Department of Food Technology, Faculty of
Agriculture, Kafr El-Sheikh, Tanta University.
- Dr. **SAADALAH MOHAMED SALIH**
Lecture of Food Science and Technology,
Department of Food Technology, Faculty of
Agriculture, Kafr El-Sheikh, Tanta University.



ACKNOWLEDGEMENT

*I wish to express my thanks and deep gratitude to **Prof. Dr. Abd El-Hamid M. Abd El-Hamid**, Professor of food Technology, Food Technology Department, Faculty of Agriculture, Kafr El-Sheikh, Tanta University for his valuable supervision, Careful guidance, continous advice during the progress of the whole work.*

*The author wishes to express his sincere appreciation and my great thanks to **Prof. Dr. Mahmoud S. Gouda** Professor of Food Technology, Food Technology Department, Faculty of Agriculture, Kafr El-Sheikh, Tanta University, for sincere help, guidance and keen supervision during the work and the writing of the thesis.*

*I wish also to express my deep gratitude to **Dr. Saadallah M. Saleh** Lecturer of Food Technology, Food Technology Department, Faculty of Agriculture, Kafr El-Sheikh, Tanta University, for his kind cooperation where he offered a great support in the present study.*

My special deep thanks goes to all staff members of the Food Technology Department, Faculty of Agriculture, Kafr El-Sheikh, Tanta University For their help and Cooperation.

Methods of biotechnology for quality control locally smoked fish during process and storage under different conditions

ABSTRACT

BY

MOHAMED SOBHY MOHAMED EL- SHENAWI

The present investigation was aimed to study the chemical, microbiological and sensory properties of cold smoked herring, stored in three degrees of temperature (Room temperature, refrigerator at $4\pm 1^{\circ}\text{C}$ and deep freezer at -18°C) with two types of packing (normal package and vacuum package), to evaluate quality and storage stability of smoked herring fish. The effect of smoking process on the quality of herring fish was also studied. Smoked herring fish stored at room temperature were the lowest samples in quality and shelf life was little. Samples were spoiled after 21 days for normal package, while the samples stored in vacuum package were spoiled after 30 dates of storage. Fish stored at refrigerator storage had the higher in quality and longer shelf life than those stored in room temperature. The samples were spoiled after 60 and 150 days of storage for normal and vacuum package, respectively. Samples stored at frozen storage (-18°C) had the highest fish for quality and longest of shelf life where the samples stored in vacuum package stile accepted after 12 months.

	Page
3.2. Methods	23
3.2.1. Technological process	23
3.2.1.1. Frozen herring fish	23
3.2.1.2. Salting	23
3.2.1.3. Washing	23
3.2.1.4. Semi drying	23
3.2.1.5. Cold smoking process	23
3.2.2. Storage	24
3.2.2.1. Room temperature	24
3.2.2.2. Refrigerator storage at $4 \pm 1^{\circ}\text{C}$	24
3.2.2.3. Frozen storage at -18°C	24
3.2.3. Analytical methods	24
3.2.3.1. Preparation of samples for analysis	24
3.2.3.2. Chemical analysis	25
3.2.4. Microbiological analysis	28
3.2.4.1. Preparation of samples	28
3.2.4.2. Total viable bacterial counts per one gram of samples	28
3.2.4.3. Mold and yeast counts	28
3.2.4.4. Coliform bacterial counts	29
3.2.4.5. Total staphylococci	39
3.2.4.6. <i>Salmonella</i> – <i>Shigella</i> counts	30
3.2.4.7. <i>Staphylococcus aureus</i> counts	30
3.2.4.8. <i>Esherichia coli</i>	31
3.2.5. Sensory evaluation	31
4. RESULTS AND DISCUSSION	32
4.1. Effect of smoking	32
4.1.1. Chemical composition of herring fish before and after smoking process	32
4.1.2. Quality attributes of herring fish before and after smoking process.	35
4.1.2.1. Total volatile basic nitrogen (TVB-N)	35
