Physiological and Biochemical Studies on Certain Microorganisms Isolated From Some Confectionery and Bakery Products

A Thesis

Submitted to the Botany Dept.

Women's college
Ain Shams University

By

SHERIF SABRY RAGAB

Assist Lecture-Nutrition&Food Science Dept.
Home Economic Faculty-Menoufia University

Supervised By

DR. SAWSAN M. ELGAMAL

Prof.of Microbiology. Botany Dept.
Women's College-Ain Shams Univ.

DR. M. FAHMY SADIK

Head of food Hygiene Dept.
Nutrition Institute-Cairo

DR. M. REDA ELSHERBINY

Ass. Prof. of Microbiology
Nutrition Institute-Cairo

DR.FATMA ELZAHARA A. ELSHERIF

Lecture of Microbiology
Home Economic Faculty-Menoufia University

For the degree of
Ph.D. of Science
in
Microbiology

1993

Approval Sheet

Name :Sherif Sabry Ragab

Title :Physiological and biochemical studies on certain microorganisms isolated from some confectionery and bakery products.

This thesis has been approved by:

Prof. Dr./ Sawsan Mohamed El-Gamal S El-Gammal 5.9.1993

Prof. of microbiology - Ain Shams University. (Faculty of women's)

Prof. Dr./ Mohamed Fahmi Sadiek

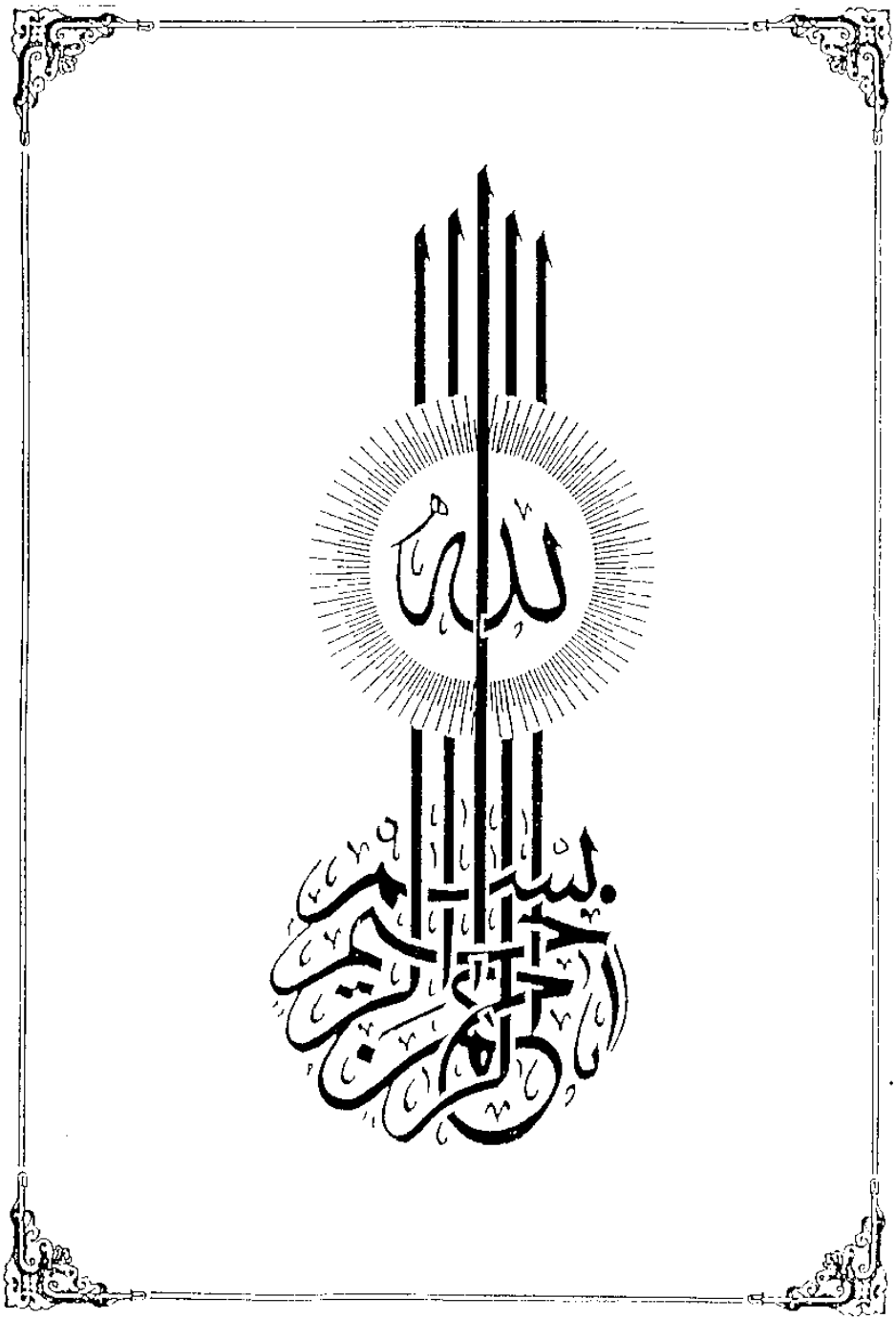
Prof. of food hygiene - Nutrition Institute, Cairo.

Dr./ Mohamed Reda El-Shrbiny M.R.El-Shrbiny

Asst. Prof. of microbiology - Nutrition Institute, Cairo.

Dr./ Fatma El-Zahraa A. El-Sherif

Lecture of microbiology - Menoufia University. (Home Economic Faculty)



CONTENTS

ABSTRACT

Natural essential oils (clove ; pepper mint ; lemon ; and cumin) and synthetic preservatives (Potasium sorbate ; succinic acid ; and citric acid) has clear antimicrobial effect on the groth ; enzymatic activities ; and toxin production of microorganisms (moulds ; yeasts ; and bacteria) related directly to the contamination of both bakery and confectionery products .

These substances when applied to the foods in proper levels cause prolonging of the shelf life of Creep (sweet bakery product) .

List of Figures

List of Tables

Page

ACKNOWLEDGMENT

I wish to express my hearty appreciation to **Dr. Sawsan M. El.Gamal,** Prof. of microbiology, botany department, college for women's, Ain Shams University for her interest indispensable advice, valuable comments and criticism.

My sincere gratitude and indebtedness are due to **Dr. M. Fahmi Sadiek,** head of food hygiene department, nutrition institute, Cairo for suggesting the problem and significant advices in the preparation of the thesis.

I would like to express my sincere gratitude to **Dr. M. Reda El-Sherbiny,** Prof. of microbiology, nutrition institute, Cairo for his valuable comments and criticism.

Thanks are also payed to **Dr. Fatma El-Zahraa A. El-Sherif,** Lecture of microbiology, home economics faculty, Menoufia University, for her helpful action and kind encouragement.

The author is thankful to **Dr. Samir El-Dashloty,** dean of home economics faculty, Menoufia University for the facilities provided for this work.

Introduction

Significant levels of human illness in different areas of the world are related mainly to consumption of foods contaminated with infectious microorganisms such as Staph. aureus, Bacillus cereus, Escherichia coli, Salmonella Sp., Shigella sp., Clostridium perfringens, Clostridium botulinum, Vibrio cholera, Vibrio parahemolyticus, Brucella Sp., and group A streptococci, in addition to some toxigenic genera of moulds such as Penicillium, Aspergillus, Alternaria and Cladosporium. The main and absolute effects of microbial contamination of foods are due to the ability of these organisms to produce either exotoxins or endotoxins which may be heat-stable or heat-labile and cause severe enteric and gastro-intestinal diseases for both human and animals. On the other hand, toxins of moulds which are called mycotoxins and specially aflatoxins may cause liver cancer in man. Also, some organisms may invade the internal human tissues and reach blood stream and cause damage to some organs such as the brain.

Effective methods of food preservation had been the subject of research since the early civilizations. Our modern world with its rural production and urban consumpsion of foods has caused an increase in this field. The continuing crises in our world food supply dictate that spoilage must be reduced as much as possible.