Microbiological and Physiological Studies on Utilization of Some Local Agro-Industrial Wastes

A Thesis Submitted to Botany Department, Faculty of Women for Arts, Science and Education, Ain Shams University

For

The Degree of Master of Science (Microbiology)

By
Thanaa Hassanein El-Said Shaltout
B.Sc Microbiology and Chemistry (2007)

Botany Department,
Faculty of Women for Arts,Science and Education,
Ain Shams University

2018

M.Sc. Thesis

Name: Thanaa Hassanein El-Said Shaltout

Title: Microbiological and Physiological Studies on Utilization of Some Local Agro-Industrial Wastes.

Scientific Degree: M.Sc. of science (Microbiology)

Department: Botany

Faculty Name: Faculty of Women for Arts, Science and Education
University: Ain Shams University.

Approval sheet

Name: Thanaa Hassanein El-Said Shaltout

Title: Microbiological and Physiological Studies on Utilization of Some Local Agro-Industrial Wastes.

Approved by

Dr. Zeinab M. Hassan. Kheiralla
Prof. of Microbiology, Botany Department,
Faculty of women, for Arts, Science and Education
Ain Shams University.

……

Dr. Mohamed M .El-Din H. Darwish
Prof. of Natural and Microbial products , Natural and Microbial products Department , National Research center.

……

Dr. Hala Abd Elmonem Ahmed
Lecturer of Microbiology, BotanyDepartment,
Faculty of women,Arts, Science and Education
Ain Shams University.

……..

Announcement

This thesis has not been previously, submitted for any degree at this or at any other university.

Signature

Thanaa Hassanein El-Said Shaltout

Acknowledgement

First, I think god for giving me strength and ability to accomplish this study successfully.

I would like to express my sincere thanks and appreciation to ***Prof. Dr. Zeinab Mohamed Hassan kheirallah*** *Prof. of microbial, Faculty of Women for Arts, Science and Education, Ain Shams University for her supervision, great support, guidance, valuable comments, encouragement , kind help , agreement of suggestion of thesis , manuscript and revision the manuscript of this thesis.*

I owe very special thanks to ***Prof. Dr. Mohamed Magd el din Hussein Darwish*** *prof. Of chemistry of microbial and natural products, National Reaserch Centre for this supervision, suggestion of manuscript, continual assistance, valuable discussion and revision.*

I am deeply grateful to ***Dr. Hala Abd Elmonem Ahmed.*** *Lecturer of Microbiology, Botany Department, Faculty of women, for Arts, Science and Education, Ain Shams University, for her supplying all facilities to perform and finish this work.*

My deepest gratitude to Prof. ***Dr. Nour Shafik El-Gendy.*** *Prof. of Petroleum and Environmental Biotechnology. Egyption Petroleum Research Institute, for her carefully reviewing and valuable comments and the work improvement.*

I am deeply grateful to ***Prof. Dr. Ahmed Farahat Sahab*** *for his giving fungal strains used in this work.*

I am truly grateful for head of department all staff members of botany Department, Faculty of Women, Ain Shams University.

Special thanks to staff members of Chemistry of microbial and natural products department, National Reaserch Centre.

Special thanks to Egyption Petroleum Research InstituteDirector, head of department and staff members of biotechnology laboratory, Egyption Petroleum Research Institute.

Dedication

I dedicate this work to the spirit of my dear father. Also, I dedicate this work to my dear mother, my beloved husband, son, sisters, and brother and to all people who support me.

ABSTRACT

Name of candidate: Thanaa Hassanein El-said Shaltout

Title of Thesis: Microbiological and Physiological Studies on Utilization of Some Local Agro-Industrial Wastes

Department: Botany department, Faculty of women for Arts, Science and Education, Ain Shams University.

ABSTRACT

Production of cellulytic and hemicellulytic enzymes is the most important step in the bioconversion of lignocellulosic wastes. Therefore, nineteen fungal strains were screened for cellulases and hemicellulase enzymes production. *Synchytrium endobioticum* had the highest CMCase (598.07 U/l) and FPase(88.45 U/l), *Aspergillus niger* was found the only fungal isolates which exhibited considerable level of cellobiase (300U/l) while , the highest hemicellulase activities, 2594 U/l and 2310.07 U/l were recorded in the culture filtrate of *F. moniliforme* and *P. chrysogenum*, respectively under submerged fermentation using cellulose and corncobs xylan (added individually) as a carbon sources and inducer at 7 days incubation peroids.

Optimizing production of cellulases and hemicellulases enzymes is of great interest in order to increase the feasibility of constructing biorefinery facilities for a sustainable supply of energy and chemical products. Different concentrations of