



شبكة المعلومات الجامعية  
التوثيق الإلكتروني والميكرو فيلم

# بسم الله الرحمن الرحيم



**HANAA ALY**



شبكة المعلومات الجامعية  
التوثيق الإلكتروني والميكروفيلم



# شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



**HANAA ALY**



شبكة المعلومات الجامعية  
التوثيق الإلكتروني والميكروفيلم

# جامعة عين شمس

## التوثيق الإلكتروني والميكروفيلم

### قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها  
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات



### يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار



**HANAA ALY**



**Faculty of Science  
Microbiology Dept.**



# **Biochemical Studies on Microbial L-Asparaginase and Its Use in Chemotherapy**

## **A THESIS**

Submitted in partial fulfillment of the requirements of the degree  
of Master of Science in Microbiology

**By**

**Hanan Maher Ahmed Ibrahim Abo-Stait**

(B.Sc. Botany-Chemistry (2012), Ain Shams University)

**Under supervision of**

**Prof. Dr.**

**Saadia Mohamed H. Easa**

Prof. of Microbiology, Microbiology  
Department, Faculty of Science, Ain  
Shams University

**Prof. Dr.**

**Abdel-Mohsen S. Ismail**

Prof. of Biochemistry, Chemistry of Natural  
and Microbial Products Department,  
National Research Centre

**Dr.**

**Fatma Abd EL Kareem Alzaki Abu Zahra**

Microbiological Fellow in Molecular  
Biology, Medical Research Center,  
Ain Shams University Hospitals

**Department of Microbiology  
Faculty of Science  
Ain Shams University  
(2021)**





Faculty of Science  
Microbiology Dept.



## Approval Sheet

**Name: Hanan Maher Ahmed Ibrahim Abo-Stait**

**Title: Biochemical Studies on Microbial L-Asparaginase and  
Its Use in Chemotherapy**

### Supervisors

### Approval

**Prof. Dr. Saadia Mohamed H. Easa**

Prof. of Microbiology, Faculty of Science, Ain Shams University

**Prof. Dr. Abdel-Mohsen S. Ismail**

Prof. Biochemistry, Chemistry of Natural and Microbial Products Dept.,  
National Research Centre

**Fatma Abd EL Kareem Alzaki Abu Zahra**

Microbiological Fellow in Molecular Biology, Medical Research Center,  
Ain Shams University Hospitals

### Examination Committee:

**Prof. Dr. Mohamed Abdel-Maksoud Rizk**

Prof. of Microbiology, Botany and Microbiology Dept., Faculty of  
Science, Cairo University

**Prof. Dr. Mohamed Farouk Ghaly**

Prof. of Microbiology, Botany and Microbiology Dept., Faculty of  
Science, Zagazig University

**Prof. Dr. Saadia Mohamed H. Easa**

Prof. of Microbiology, Faculty of Science, Ain Shams University

**Prof. Dr. Abdel-Mohsen S. Ismail**

Prof. Biochemistry, Chemistry of Natural and Microbial Products Dept.,  
National Research Centre

Date of Discussion     /     /  
University Council approved     /     /

Approval date     /     /



## ***Declaration***

This thesis has not previously submitted  
for any other universities.

*Hanan Maher Ahmed Ibrahim Abo-Stait*





## *Dedication*

*I dedicate this work to the soul of my father who  
formed part of my vision and taught me the good  
things that really matter in life*

*I give my deepest expression of appreciation to my  
family and my husband for their great help and  
continuous support.*



بسم الله الرحمن الرحيم



صدق الله العظيم  
(سورة طه آية ١١٤)



## **ACKNOWLEDGMENT**

All the praise and thanks to "*Allah*" almighty for guiding and assisting me to finish this work. "*His Majesty*" enables me to overcome all difficulties facing me throughout my work and without whose mercy and guidance, this work would neither has been started nor completed.

I would like to express my deep thanks and sincere appreciation to my advisor *Prof. Dr. Abdel-Mohsen Saber Ismail*, Professor of the Natural and Microbial Products Chemistry, National Research Centre, Cairo, for suggesting the search point, drawing the successful stepwise experiments and careful monitoring to efficiently achieve the thesis goal. His everlasting cooperation, motivation, continuous supports throughout the work and guidance the writing all the parts of the thesis will never be forgotten. I could not have imagined having a better advisor and mentor for my Master thesis than him.

I wish to express my sincere appreciation to *Prof. Dr. Saadia Mohamed Easa*, Professor of Microbiology, Microbiology Department, Faculty of Science, Ain Shams University, for her continuous guidance and discussion to widen my search from various perspectives, continuous encouragement, supervision and unlimited support during this work.

Also indebted thankful for *Dr. Fatma Abd EL-*

*Kareem Alzaki Abu Zahra* Microbiological Fellow in Molecular Biology, Medical Research Centre, Ain Shams University Hospitals for her supervision on my thesis.

My sincere thanks, with special appreciation, go to *Dr. Amira Ali Hassan*, researcher of the National Research Centre, Cairo, for her continuous support, generously providing the required facilities as much as possible. I will be grateful forever for her kind help and support.

I am very grateful to *Prof. Dr. Hassan Mohamed Awad*, Professor in Chemistry of Natural and Microbial Products Dept. Pharmaceutical and Drug Industries. National Research Centre, Cairo, for his valuable efforts with following up in all biological activities. I am very appreciative towards him for his kindness and generous efforts.

I would also like to express my grateful thanks to Microbiology Department, Faculty of Science, Ain Shams University, for the help and support during the progress of this thesis.

Acknowledgment with special integrity also goes to *My family* and as ever, to *my beloved dead father, my mother, my sisters, my brothers* and all my family for all the support they lovingly offered during my studies.

I wish also, to express my cordial greetings to my husband *Mr. Mohamed Mohamed Rezk* for all his kind and warm support, encouraging and fruitful helps throughout the thesis preparation to finishing. All my good wishes and best