بسم الله الرحمن الرحيم

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

علي هذه الأفلام قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأفلام بعيدا عن الغبار

في درجة حرارة من ١٥-٢٥ مئوية ورطوبة نسبية من ٢٠-٤٠%

To be Kept away from Dust in Dry Cool place of 15-25- c and relative humidity 20-40%

بعض الوثائق الأصلية تالفه

بالرسالة صفحات
لم ترد بالاصل

Biochemical Studies on Chitinase and Laminarinase from Higher Plants

A THESIS

Submitted to Faculty of Science
Ain Shams University

In Partial Fulfillment of the Requirements for the
Degree of Master of Science in Biochemistry
By

ABEER NASR SHEHATA
B.Sc. Biochemistry, 1990
Biochemistry Department
National Research Center

SUPERVISORS

Professor Dr. Ahmed M. Salem
Biochemistry Department
Faculty of Science
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Ass. Professor Dr. Sanaa T. El-Sayed
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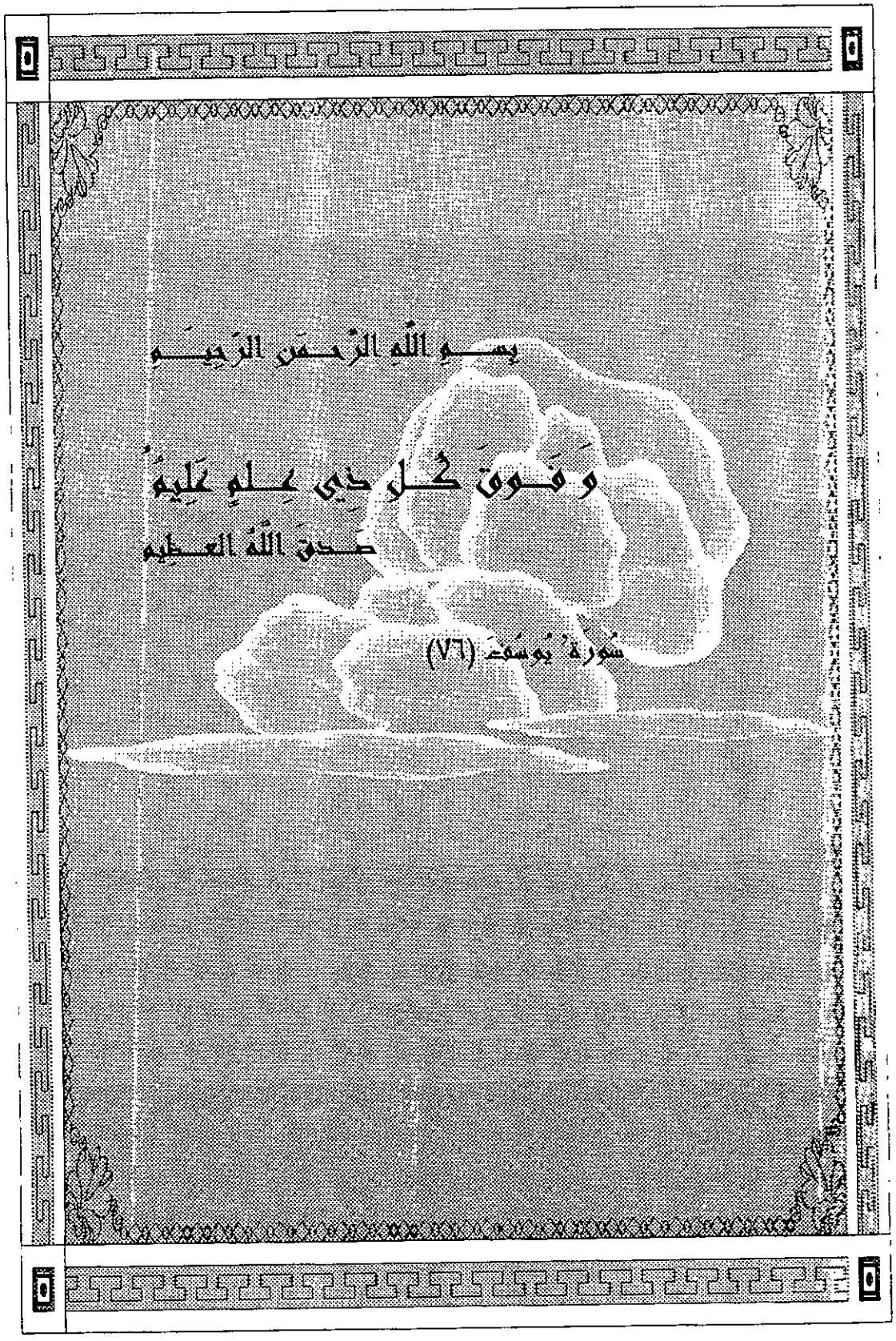
بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ
وَفَوْقَ كُلِّ ذِي عِلْمٍ عَلِيمٌ
صَدَقَ اللَّهُ العَظِيم
سُورَةُ يُوسُفَ (٧٦)

APPROVAL SHEET

Name: Abeer Nasr Shehata

Title: Biochemical Studies on Chitinase and Laminarinase from Higher Plants.

M. Sc. Thesis approved by:

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Committee in charge

Date : / / **1998**

I declare that this thesis has been composed by myself and the work of which it is record has been done by myself. It has not been submitted for a degree at this or any other University .

Abeer Nasr Shehata

Contents

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Abstract

Abeer Nasr Shehata

Biochemical Studies on Chitinase and Laminarinase from Higher Plants.

National Research Center

Chitinase and laminarinases (A and B) were qualitatively and quantitatively determined in vegetative parts and seeds (dry and germinated) of some plants representing eleven families. Sugar beet leaves were found to be the most considerable source for these enzymes as demonstrated from the screening studies, and so these leaves were used for extraction and purification of the three enzymes. The three enzymes were extracted with water and purified by using $(NH_4)_2 SO_4$ then gel filtration on Sephadex G-120 followed by Sephadex G-200 columns. The molecular weights of the purified chitinase and laminarinases (A and B) as determined by gel filtration on Sephadex G-200 column were 64, 24 and 10 kDa, respectively. The effect of different temperatures and buffers on the activity and stability of the three enzymes have been studied. The effect of different activators and inhibitors were also tested. The K_m values of chitinase and laminarinases (A and B) were 0.2, 0.27 and 0.074 %, respectively. The purified chitinase and laminarinases (A and B) were found to have specific hydrolytic effect on β-1,4; β-1,3 and β-1,3 glycosidic linkages, respectively. The three enzymes were able to inhibit the growth and to lyse the cell walls of pathogenic fungi such as *Aspergillus* species .

Key words: Chitinase – Laminarinases (A and B) – Sugar beet leaves- Antifungal.