شبكة المعلومات الجامعية

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 الوثائـــــــق الاصليـــــة تالفـــة

بالرسالة صفحات لم ترد بالاصل

Zagazig University
Faculty of Science
Benha Branch
Chemistry Department

Physico-Chemical Studies and Analytical Application on the Microdetermination of Some Antihypertensive Compounds in Pure Form and in Pharmaceutical formulations

A Thesis

Presented to Faculty of Science
(Benha) Zagazig University

By

Hany Abd El-Kader Omara
(M. Sc. of Analytical Chemistry)
For Ph. D. Degree in Chemistry (Analytical Chemistry)

Supervised by

Prof. Dr.
El-Sayed Mahmoud Mabrouk
Professor of Physical Chemistry
Faculty of Science "Benha"
Zagazig University

Prof. Dr.
Alaa El- Sayed Ahmed Amin
Professor of Analytical Chemistry
Faculty of Science "Benha"
Zagazig University

Dr.
Sayed Ahmed Abd El-Aziz Shama
Ass. Professor of Analytical Chemistry
Faculty of Science "Benha"
Zagazig University

2004

بسم الله الرحمن الرحيم

"قالوا سبحانك لا علم لنا إلا ما علمتنا

إنك أنت العليم الحكيم"

صدق الله العظيم

ACKNOWLEDGEMENT

I am deeply thankful to Allah, by the grace that the progress and success of this work was possible.

I indebted with sincere gratitude to my supervisor **Prof. Dr. E. M. Mabrouk**, professor of physical chemistry, Faculty of Science "Benha", Zagazig University for his supervision encouragement "I wish him all the best in the future".

Also would like to express my sincere thanks deep gratitude to my supervisor **Prof. Dr. A. S. Amin**, professor of analytical chemistry, Faculty of Science "Benha", Zagazig University for his continuous help and guidance throughout the course of this research and for suggesting the problem, the critical and continuous control, discussion and help during the scope of the work and in preparing the thesis "I wish him all the best in the future".

I wish to express my deepest gratitude to my supervisor **Dr. S. A. Shama**, assistant professor of analytical chemistry, Faculty of Science "Benha", Zagazig University for his supervision, encouragement and helpful suggestions during this work "I wish him all the best in the future".

My hearty acknowledgement to my colleagues, to everyone in the Chemistry Department, for their continuous help and encouragement.

God bless them all.

Hany Abd El- Kader Omara

DEDICATION

To:

The light of my life:

Contents

Page

CHAPTER III: Results and discussion

List of Abbreviations

CAP	Captopril
ADB	Amlodipine besylate
DIL	Diltiazem HCl
ATL	Atenolol
LIS	Lisinopril dihydrate
ENM	Enalapril maleate
MB	Methylene blue (Basic blue 9)
AB	Acid blue 74 (Indigo carmine)
AR	Acid red 73 (Brilliant crocein MOO)
AM	Acid red 27 (Amaranth dye)
AO	Acid orange 7 (Orange II)
e.g.	(L) example gratia = for example
et. al.	(L) etalii = and other things
i.e.	(L) idest = that is
HPLC	High-Performance Liquid Chromatographic
GC	Gas Chromatography
TLC	Thin-Layer Chromatographic
ISE	Ion Selective Electrode
NMR	Nuclear Magnetic Resonance
PVC	Poly Vinyl Chloride
RE	Relative Error
RSD	Relative Standard Deviation
Vis	Visible
UV	Ultra violet
VIZ	(L) videlicet = namely
Vs	Versus
AAS	Atomic Absorption Spectrometry
FI	Flow-Injection
CL	Chemiluminescence
BDD	Boron-Doped Diamond Thin Film Electrode
SCE	Saturated Calomel Electrode
FLD	Fluorescence Detection
ϵ	Molar absorptivity
DMF	Dimethylformamide
TCQ	Tetrachloroquinone
ACE	Angiotensin-Converting Enzyme
SPE	Solid Phase Extraction

CHAPTER I
INTRODUCTION