

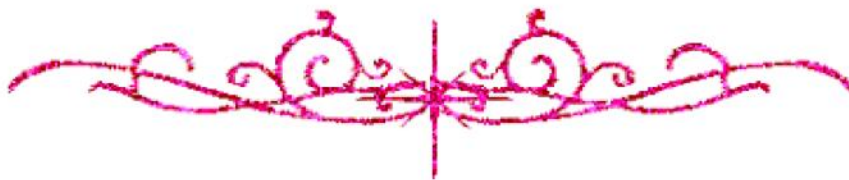
بسم الله الرحمن الرحيم



HOSSAM MAGHRABY



شبكة المعلومات الجامعية التوثيق الالكتروني والميكرو فيلم



HOSSAM MAGHRABY

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

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



يجب أن

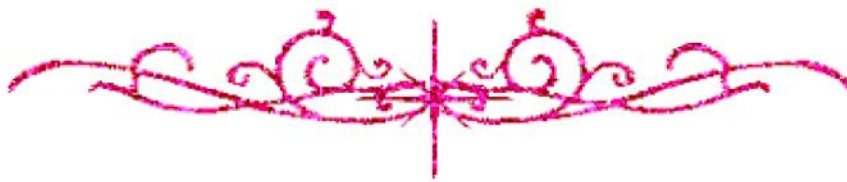
تحفظ هذه الأقراص المدمجة بعيدا عن الغبار



HOSSAM MAGHRABY



بعض الوثائق الأصلية تالفة



HOSSAM MAGHRABY



بالرسالة صفحات

لم ترد بالأصل



HOSSAM MAGHRABY

MENOUFIA UNIVERSITY

Faculty of Medicine

B16404

**UV - RADIATION THERAPY FOR
EXPERIMENTAL CORNEAL DISEASES
(INFECTION)**

THESIS

*Submitted for Partial Fulfillment of
The Requirement of M.D. Degree in
(OPHTHALMOLOGY)*

By

GALAL H.K. AHMED

M.B., B. Ch. - M.S.

SUPERVISED BY

Prof. Dr. SAYED SAIF EL DEAN HUSSAIN

*Prof. of Ophthalmology
Faculty of Medicine
Cairo University*

Prof. Dr. ABLA EL MASHAD

*Prof & Head of Microbiology Dept.
Faculty of Medicine
Cairo University*

Prof. Dr. FADEL MOHAMED ALI

*Prof. & Head of Biophysics Dept.
Faculty of Science
Cairo University*

(1992)



وَقَدْ أَعْمَلُوا فِى سِرِّى النَّاسِ أَحْمَدُ بْنُ مُحَمَّدٍ وَرَسُولُهُ وَرَأْسُ الْمَوْفِقِ
مَدَدَ اللَّهُ الْعَظِيمِ

سورة التوبة (٩٠)

TO MY FAMILY

ACKNOWLEDGEMENT

*I would like to express my deep gratitude and thanks to **Prof. Dr. SAYED SAIF EL DEAN HUSSAIN**, Prof. of Ophthalmology, Faculty of Medicine, Cairo University, for suggesting the subject of this research, for his meticulous supervision, encouragement and continuous guidance throughout the course of this work.*

*I am sincerely grateful to **Prof. Dr. ABLA EL MASHAD**, Prof. and Head of Microbiology Department, Faculty of Medicine, Cairo University for her kind, sincere effort and help throughout this research.*

*I am deeply indebted to **Prof. Dr. FADEL MOHAMED ALI**, Prof. and Head of Biophysics Department, Faculty of Science, Cairo University for his effort and valuable suggestions throughout this research.*

*I am also grateful to **Prof. Dr. KOKA SAAD ELDEAN**, Prof. and Head of Bacteriology Department, Faculty of Medicine, Al Azhar University - Branch of Girls, for her great assistance in the preparation and follow up of the virus work in the experimental study.*

*I am also grateful to **Dr. TARIK HAMMOUDA**, Lecturer of Microbiology, Faculty of Medicine, Cairo University and **Dr. LAILA EL ATTAR**, Lecturer of Microbiology, Faculty of Medicine, Al Azhar University-Branch of Girls, for their expert help and advice throughout this research.*

Lastly I would like to thank the team of the Optical Department at National Institute for Researches, Cairo for their kind in supplying the necessary apparatuses that helped in reaching the most effective UVR wavelengths on microorganisms.

CONTENTS

	Page
- INTRODUCTION AND AIM OF THE WORK	1
- REVIEW OF LITERATURE	
- Physical aspects of ultraviolet radiation.....	6
- Biological aspects of ultraviolet radiation.....	12
- Effects of ultraviolet radiation on the eye	24
- Microbiology.....	49
- Pathology of the corneal ulcers.....	76
- EXPERIMENTAL STUDY	
<i>IN VITRO</i>	
- Effective intensities of UVR.....	
- Material and methods	81
- Results	90
- Effective wavelengths of UVR.....	
- Material and methods	122
- Results	126
<i>IN VIVO</i>	
- Material and Methods	156
- Results	159
- DISCUSSION AND CONCLUSION.....	179
- SUMMARY.....	183
- REFERENCES	189
- ARABIC SUMMARY	---

LIST OF FIGURES

	Page
Fig. (1) Fairly pure spectrum	7
Fig. (2) Cyclobutane type of thymine dimer following UVR exposure	19
Fig. (3) Photochemical reaction between cysteine and thymine	19
Fig. (4) Outline of photochemical reactions	23
Fig. (5) Colony count in the control plate of staphylococcus aureus (Strain 1)	106
Fig. (6) Colony count in the plate of staphylococcus aureus (strain 1) after 15 minutes exposure to UVR from source (A)	106
Fig. (7) Colony count in the plate of staphylococcus aureus (strain 1) after 15 minutes exposure to UVR from source (B)	107
Fig. (8) Colony count in the plate of staphylococcus aureus (strain 1) after 15 minutes exposure to UVR from source (C)	107

	Page
Fig. (9) Colony count in the control plate of <i>pseudomonas aeruginosa</i> (strain 1)	112
Fig.(10) Colony count in the plate of <i>pseudomonas aeruginosa</i> (strain 1) after 30 minutes exposure to UVR from source (A)	112
Fig. (11) Colony count in the plate of <i>staphylococcus aureus</i> (strain 1) after 15 minutes exposure to UVR from source (B)	113
Fig. (12) Colony count in the plate of <i>staphylococcus aureus</i> (strain 1) after 15 minutes exposure to UVR from source (C).....	113
Fig. (13) Colony count in the control plate of <i>candida albicans</i> (strain 3)	118
Fig. (14) Colony count in the plate of <i>candida albicans</i> (strain 3) after 45 minutes exposure to UVR from source (A).....	118
Fig. (15) Colony count in the plate of <i>candida albicans</i> (strain 3) after 45 minutes exposure to UVR from source (B)	119

	Page
Fig. (16) Colony count in the plate of candida albicans (strain 3) after 45 minutes exposure to UVR from source (C).....	119
Fig. (17) Cytopathologic effect of herpes simplex virus (type 1) in the control well.....	121
Fig. (18) Cytopathologic effect of herpes simplex virus (type 1) after 60 minutes exposure to UVR from source (C).....	121
Fig. (19) Colony count in the plate of staphylococcus aureus (strain 1) after exposure to UVR of wavelength 200 nm $\pm$ 10.....	143
Fig. (20) Colony count in the plate of staphylococcus aureus (strain 1) after exposure to UVR of wavelength 220 nm $\pm$ 10.....	143
Fig. (21) Colony count in the plate of staphylococcus aureus (strain 1) after exposure to UVR of wavelength 240 nm $\pm$ 10.....	144
Fig. (22) Colony count in the plate of staphylococcus aureus (strain 1) after exposure to UVR of wavelength 260 nm $\pm$ 10.....	144

	Page
Fig. (23) Colony count in the plate of staphylococcus aureus (strain 1) after exposure to UVR of wavelength 280 nm $\pm$ 10.....	145
Fig. (24) Colony count in the plate of staphylococcus aureus (strain 1) after exposure to UVR of wavelength 300 nm $\pm$ 10.....	145
Fig. (25) Colony count in the plate of pseudomonas aeruginosa (strain 1) after exposure to UVR of wavelength 200 nm $\pm$ 10	146
Fig. (26) Colony count in the plate of pseudomonas aeruginosa (strain 1) after exposure to UVR of wavelength 220 nm $\pm$ 10	146
Fig. (27) Colony count in the plate of pseudomonas aeruginosa (strain 1) after exposure to UVR of wavelength 240 nm $\pm$ 10	147
Fig. (28) Colony count in the plate of pseudomonas aeruginosa (strain 1) after exposure to UVR of wavelength 260 nm $\pm$ 10	147
Fig. (29) Colony count in the plate of pseudomonas aeruginosa (strain 1) after exposure to UVR of wavelength 280 nm $\pm$ 10	148