بسم الله الرحمن الرحيم

شبكة المعلومـــــات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

﴿ قـــسـم ﴾

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
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بعض الوثائق الأصلية تالفة

بالرسالة صفحات

لم ترد بالأصـــل

Ultrastructural and Immunohistological Characterization of Cultured Human Corneal Epithelium

Thesis

Submitted in Partial Fulfillment of

M.D. Degree in Histology

Presented By

Hala M. Fouad El-Mazar

(M.B.B.Ch., M.Sc.)

Supervisors

Prof. Dr.

Bothina Labib Mahmoud

Professor and Head of Histology Dept.

Faculty of Medicine

Menofiya University

Prof. Dr.

Salwa Metwally Aly

Professor of Histology

Faculty of Medicine

Cairo University

***Dr.* Samy El-Hussini Attia**

Assistant Professor of Histology

Faculty of Medicine

Menofiya University

***Dr.* Ahmed Abo-Zaid Aly**

Lecturer of Histology

Faculty of Medicine

Menofiya University

Faculty of Medicine

Menofiya University

1998

بسم ا لله الرحمن الرحيم

﴿وقل ربِ زدنى علمـاً﴾

صدق ا لله العظيم

سورة طه – الآية ١١٤

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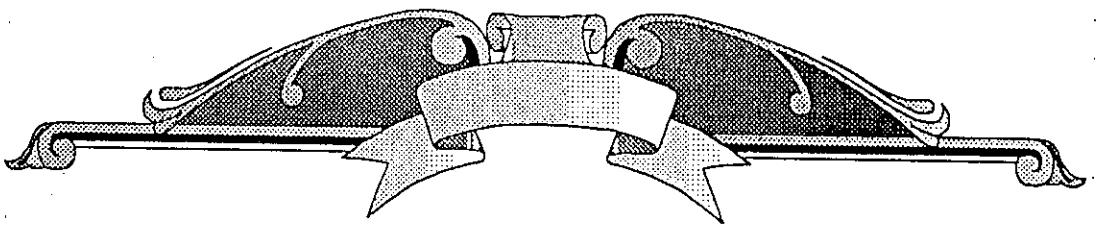
LIST OF ABBREVIATIONS

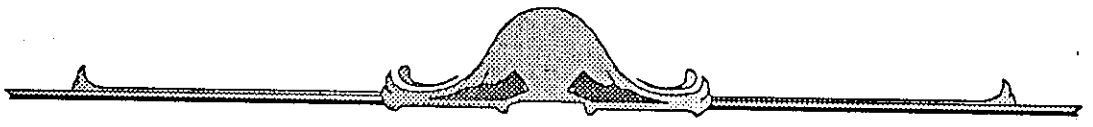
Ad12-Sv40	adenovirus 12 and simian virus-40
AE-5	antiepithelial-5
AIDS	acquired immune deficiency syndrome
BPE	bovine pituitary extract
c-AMP	cyclic-adenosine monophosphate
c-DNA	cyclic-deoxyribonucleic acid
DMSO	dimethyl-sulfoxide
EDTA	ethylene diamine tetra-acetic acid
EGF	epidermal growth factors
ELISA	enzyme linked immunosorbent assay
FBS	fetal bovine serum
FNC	fibronectin and collagen
GFAP	glial fibrillar acidic protein
IF	intermediate filament
IFM	immunofluorescence microscopy
K	keratin
KCl	potassium chloride
KGF	keratinocyte growth factor
KGF-R	keratinocyte growth factor receptors
KGM	keratinocyte growth medium
m-RNA	messenger-ribonucleic acid
NaCl	sodium chloride
NFP	neurofilament proteins
NGSL	neutral glycosphingolipid
pAb-55	polyclonal antiboy-55
PBS	phosphate-buffered saline
PhCM	phase-contrast microscopy
RNA	ribonucleic acid
RT-PCR	reverse transcription polymerase chain reaction
SDS	sodium dodecyl sulfate
SDS-PAGE	sodium dodecyl sulfate polyacrylamid gel electrophoresis
SIRC	serial immortalized rabbit cells
T.E.M	transmission electron microscopy

LIST OF TABLES

Page



Introduction



INTRODUCTION

The cornea is the circular clear tissue at the anterior part of the outer fibrous layer of the eyeball. It is both transparent and avascular. The cornea has two major functions; protection of the intraocular contents and refraction of light; to accomplish these two functions the cornea must maintain its strength and transparency.

Microscopically, the cornea is composed of five layers; from front to back they are: (1) the epithelium, (2) Bowman's membrane, (3) the substantia propria, (4) the Descemet's membrane and (5) the Descemet's endothelium *(Cormack, 1993)*.

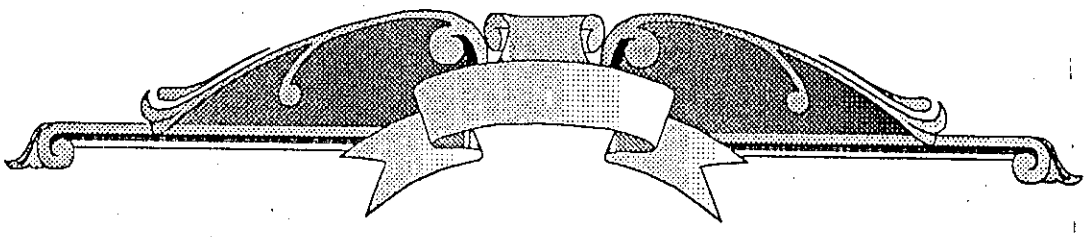
The human corneal epithelium is nonkeratinized stratified squamous epithelium that consists of five to seven layers of cells. It has several unique characteristics among other stratified squamous epithelia of the body. It is extraordinarily regular in thickness over the entire cornea and it has absolutely smooth, wet, apical surface that serves as the major refractive surface of the eye. Its location on the surface of transparent cornea requires that it be transparent also. In addition to that, the epithelium carries out "routine" housekeeping functions of an epithelium that borders the external environment. These include provision of a barrier to fluid loss and pathogen entrance and resistance to abrasive pressure *(Smolin and Thoft, 1994)*.

Because the cornea is exposed the corneal epithelium is vulnerable to various kinds of trauma such as chemical, radiation and irritation.

Injury of the corneal epithelium may result in loss of sight *(Bruner, 1992)*.

Previous and current studies had employed experimental animals such as rabbits, rats and animal-derived tissue cultures as alternative models, to test the ocular irritancy. These techniques are simple to perform, allow a quick economical results and use of laboratory animals that are easy to breed and maintain. Yet there are morphological and histochemical differences between the rabbit eye and the human eye that have led the animal model to be challenged almost since its inception *(Kahn et al., 1993)*.

Alternatives to animal models have been proposed. Human corneal organ culture techniques have been developed *(Doughman, 1980 and Richar et al., 1991)* whereas tissue culture of human corneal epithelium has been used to model the ocular surface in vitro *(Hainsowrth, 1991)*. Such a model may be useful as an adjunct in studying the mechanisms underlying human ocular irritancy by producing cells, living in a controlled environment, free from the disturbing influences of other parts of the body and species-specific *(Kahn et al., 1993)*.



Aim of the Work