THE EPIDERMAL MELANIN UNIT IN MALIGNANT MELANOMA

Essay Submitted for Partial Fulfillment of Master Degree in
DERMATOLOGY & VENEREOLOGY

By

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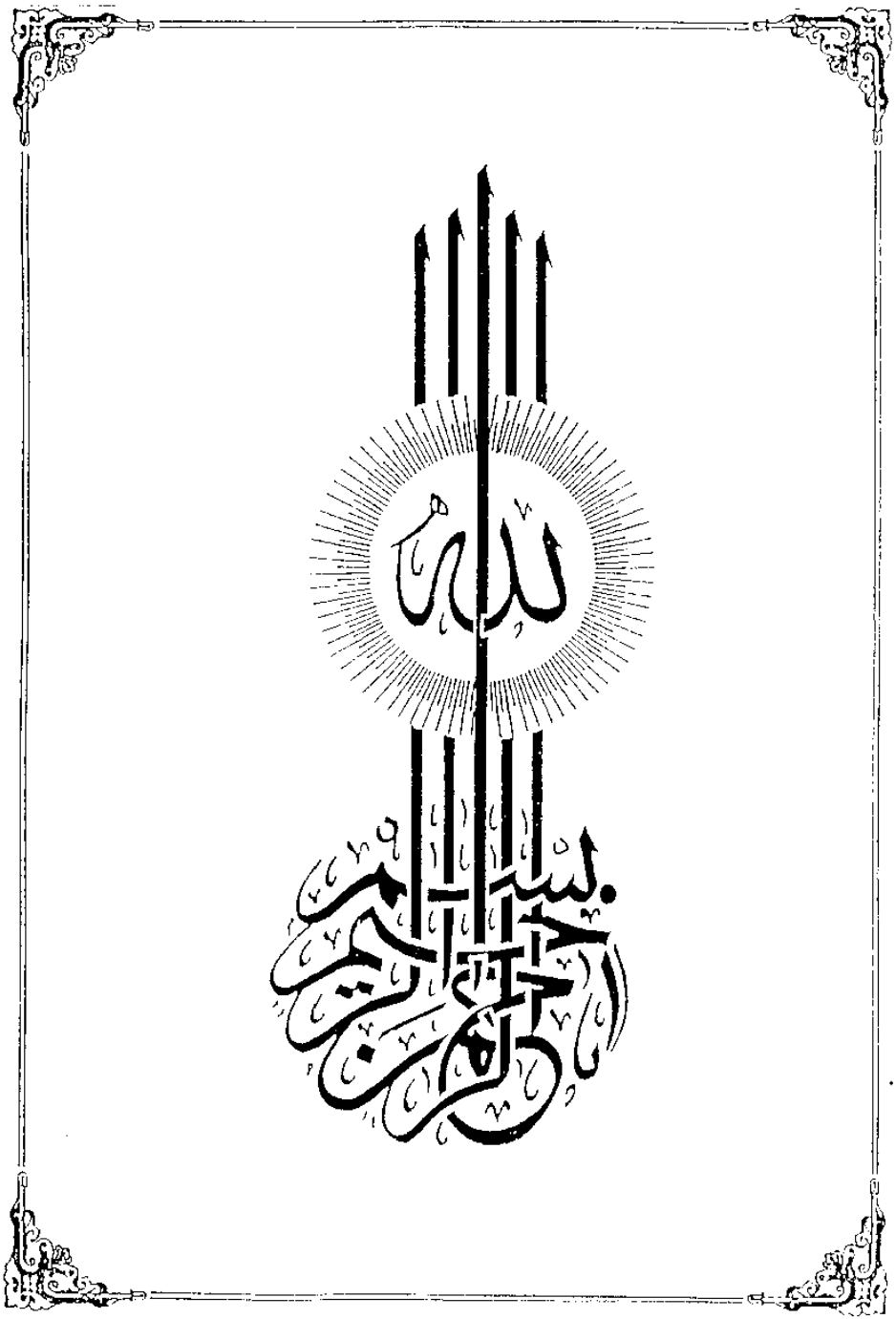
FACULTY OF MEDICINE
AIN SHAMS UNIVERSITY
1997



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To the Tender Heart

of My Beloved Mother...

Abstract

Nader Habib Ishak: The epidermal melanin unit in malignant melanoma. Master degree in Dermatology and Venereology. Faculty of Medicine, Ain Shams University, 1997.

The epidermal melanin unit denotes the symbiotic relationship between a melanocyte [MC] and a pool of associated keratinocytes [KCs]. The MC produces melanin and transfers it to the surrounding KCs which, in turn, synthesize and release several growth factors, inflammatory mediators and other cytokines to regulate MC growth, morphology and function. In malignant melanoma, the MC/KC relationship is disrupted as the melanoma cells produce growth factors and cytokines by means of which they attain growth autonomy uncontrolled by the neighbouring cells. The epidermal-melanin unit remains as a useful model not only for interpreting the pathophysiology of malignant melanocytes, but also for enhancing our understanding of the histogenesis and pathogenesis of melanoma.

Keywords: dermatovenereol,

epidermal-melanin unit,

malignant melanoma.

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Thank You my Lord for making this dream come true.

No matter what I say or do, I can never express my sincere gratitude to **Professor Doctor, Zenab El-Gothamy**, Professor and Head of Department of Dermatology and Venereology, Faculty of Medicine, Ain Shams University, for allowing me the great honour of supervising this work, and for dedicating a lot of her precious time and knowledge in order to establish harmony and credibility of such a research.

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To every person who shared in developing this work by any means, may God bless them all and repay them for all they have done.

LIST OF ABBREVIATIONS

α-MSH	alpha melanocyte stimulating hormone
AA	arachidonic acid
ALM	acral lentiginous melanoma
AMF	autocrine motility factor
bFGF	basic fibroblast growth factor
bKC:MC	basal keratinocytes to melanocyte ratio
cAMP	cyclic adenosine monophosphate
CSF	colony stimulating factor
CT-scan	computerized tomography scan
Da	Dalton
DOPA	dihydroxy phenyl alanine
ECM	extracellular matrix
EGA	estimated gestational age
EGF; EGF-R	epidermal growth factor and its receptor
EMU	epidermal melanin unit
ETs	endothelins
FGF	fibroblast growth factor
G-CSF	granulocyte colony stimulating factor
GF	growth factor
GH; GH-R	growth hormone and its receptor

GM-CSF	granulocyte macrophage colony stimulating factor
HETE	hydroxy eicosatetraenoic acid
IC	intracellular
ICAM-I	intercellular adhesion molecule I
IGF; IGF-R	insulin like growth factor and its receptor
IL	interleukin
INF-γ	interferon gamma
KC-ECM	keratinocyte derived extracellular matrix
KC-GF	keratinocyte growth factor
KCM	keratinocyte conditioned media
KCs	keratinocytes
kDa	kilo Dalton
LCs	Langerhans cells
LMM	lentigo maligna melanoma
LTs	leukotrienes
M-CSF	macrophage colony stimulating factor
MCAF	monocyte chemotactic and activating factor
MCs	melanocytes
MGSA	melanoma growth stimulatory activity
MM	malignant melanoma
MoAb	monoclonal antibody
MRI	magnetic resonnance imaging
mRNA	messenger ribonucleic acid

MW	molecular weight
NGF; NGF-R	nerve growth factor and its receptor
NM	nodular melanoma
PDGF	platelet derived growth factor
PGs	prostaglandins
PKA	protein kinase A
PKC	protein kinase C
SSMM	superficially spreading malignant melanoma
TGF-α	transforming growth factor alpha
TGF-β	transforming growth factor beta
TNF-α	tumor necrosis factor alpha
TSP; TSP-R	thrombospondin and its receptor
UV-KCM	conditioned media by extracts from ultraviolet irradiated keratinocytes
UVB	ultraviolet light type B (short wave 290-320 nm)
UVR	ultraviolet radiation
VLA	very late antigens