

# **Recent Therapeutic Modalities In Atopic Dermatitis**

*Essay*

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Dermatology, Venerology and Andrology

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

﴿ اقْرَأْ بِاسْمِ رَبِّكَ الَّذِي خَلَقَ (١) ﴾

خَلَقَ الْإِنْسَانَ مِنْ عَلَقٍ (٢)

اقْرَأْ وَرَبُّكَ الْأَكْرَمُ (٣)

الَّذِي عَلَّمَ بِالْقَلَمِ (٤)

عَلَّمَ الْإِنْسَانَ مَا لَمْ يَعْلَمْ (٥) ﴾

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

سورة العلق

آية ١ - ٥

## إهداء

أهدى عملى ومجهدى هذا إلى روح أبى الحبيب  
ومعلمى الأول، راجيةً من الله أن يجعله فى ميزان  
حسناته.

هبة الله عبدالمنعم عودة

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## LIST OF ABBREVIATIONS

<b>8-MOP</b>	: 8- methoxypsoralen
<b>AAAAI</b>	: American Academy of Allergy, Asthma and Immunology
<b>ACAAI</b>	: American College of Allergy, Asthma and Immunology
<b>AD</b>	: Atopic dermatitis
<b>APCs</b>	: Antigen presenting cells
<b>BMV</b>	: Betamethasone valerate
<b>cAMP</b>	: Cyclic AMP
<b>CAM</b>	: Complementary alternative medicine
<b>CD</b>	: Cluster of differentiation
<b>CE</b>	: Cornified envelope
<b>Chromosome 5q31</b>	: The 31 <sup>st</sup> band of the long arm of chromosome number5
<b>CLA</b>	: Cutaneous lymphocyte-associated antigen
<b>CTACK</b>	: Cutaneous T-cell-attracting chemokine
<b>CTCL</b>	: Cutaneous T-cell lymphoma
<b>DBPCFC</b>	: Double-blind, placebo-controlled oral food challenge
<b>DC</b>	: Dendritic cells
<b>EASI</b>	: Eczema area and severity index
<b>ECP</b>	: Eosinophil cationic protein
<b>ECP</b>	: Extracorporeal photopheresis
<b>EDC</b>	: Epidermal differentiation complex
<b>EDN</b>	: Eosinophil-derived neurotoxin
<b>EPX</b>	: Eosinophil protein X
<b>FcεR1</b>	: the β chain of the high affinity IgE receptor
<b>FDA</b>	: Food and Drug Administration
<b>FKBP</b>	: FK binding protein

<b>FLG</b>	: filaggrin gene ; filament-aggregating protein gene
<b>FTU</b>	: Fingertip unit
<b>Glu</b>	: Glutamine amino acid
<b>GM-CSF</b>	: Granulocyte-macrophage colony-stimulating factor
<b>GRA</b>	: Glycyrrhetic acid
<b>H<math>\beta</math>D</b>	: Human beta defensins
<b>ICAM-1</b>	: Intercellular adhesion molecule -1
<b>IDEC</b>	: Inflammatory dendritic epidermal cells
<b>IFN-<math>\gamma</math></b>	: Interferon- $\gamma$
<b>IgE</b>	: Immunoglobulin E
<b>IL</b>	: Interleukin
<b>IL-4R</b>	: Interleukin-4 receptor
<b>IP3</b>	: Inositol triphosphate
<b>IV</b>	: Ichthyosis vulgaris
<b>KC</b>	: Keratinocytes
<b>LC</b>	: Langerhans cells
<b>LEP</b>	: Late envelope proteins
<b>LPR</b>	: Late phase reaction
<b>LPS</b>	: Lipopolysaccharides
<b>LTC 4</b>	: Leukotriene C4
<b>LTRAs</b>	: Leukotriene receptor antagonists
<b>Lys</b>	: Lysine amino acid
<b>m RNA</b>	: Messenger RNA
<b>MBP</b>	: Major basic protein
<b>MC</b>	: Mast cells
<b>MCP</b>	: Monocyte chemotactic protein
<b>mDC</b>	: Myeloid Dendritic cells

<b>MDC</b>	: Macrophage-derived chemokine
<b>MHC</b>	: Major histocompatibility complex
<b>MIP</b>	: Macrophage inflammatory protein
<b>MMP</b>	: Matrix metalloproteinase
<b>Mo</b>	: Monocytes
<b>NFATc</b>	: Nuclear factors of activated T cells cytoplasmic
<b>NFATp</b>	: Nuclear factors of activated T cells phosphorylated
<b>NK</b>	: Natural killer cell
<b>NMF</b>	: Natural moisturizing factor
<b>PAD</b>	: Peptidyl arginine deaminase
<b>PAF</b>	: Platelet-activating factor
<b>PBMC</b>	: Peripheral blood mononuclear cells
<b>pDC</b>	: Plasmacytoid Dendritic cells
<b>PDEIs</b>	: Phosphodiesterase enzyme inhibitors
<b>PGE2</b>	: Prostaglandin E2
<b>PPARs</b>	: Peroxisome proliferator-activated receptors
<b>PPAR-<math>\gamma</math></b>	: $\gamma$ subtype of Peroxisome proliferator-activated receptors
<b>PUVA</b>	: Psoralen + ultraviolet A
<b>RANTES</b>	: Regulated upon activation normal T-cell expressed and secreted
<b>S.aureus</b>	: Staphylococcus aureus
<b>SCIT</b>	: Subcutaneous specific immunotherapy
<b>SCORAD</b>	: Scoring Atopic Dermatitis
<b>SEB</b>	: Staphylococcal enterotoxin B
<b>SIT</b>	: Specific immunotherapy
<b>SLIT</b>	: Sublingual immunotherapy
<b>SPINK5</b>	: serine protease inhibitors, Kazal type 5
<b>SPRs</b>	: Small proline-rich proteins

<b>STAT</b>	: signal transducer and activator of transcription
<b>T reg cells</b>	: T regulatory cells
<b>TARC</b>	: Thymus and activation- regulated chemokine
<b>Tc cells</b>	: T cytotoxic cells
<b>TCIs</b>	: Topical calcineurin inhibitors
<b>TCM</b>	: Traditional Chinese medicine
<b>TCR</b>	: T cell receptor
<b>tel</b>	: telmestine
<b>TGF-<math>\beta</math></b>	: Transforming growth factor- $\beta$
<b>Th</b>	: T helper cells
<b>Th0</b>	: T helper type zero cells
<b>TIMs</b>	: Topical immunomodulators
<b>TLRs</b>	: Toll-like receptors
<b>TNF</b>	: Tumor necrosis factor
<b>UV</b>	: Ultraviolet
<b>VCAM-1</b>	: Vascular cell adhesion molecule-1
<b>VLA-4</b>	: Very late antigen 4
<b>Vv</b>	: Vitis vinifera extract
<b>WAPs</b>	: Written action plans

## **INTRODUCTION**

Atopic dermatitis (AD) is a chronic inflammatory skin disorder usually presenting with severe pruritus and flaring eczematous lesions in varying localizations depending on the age of the patient. It is considered the most common chronic skin disease of young children (**Boguniewicz , 2005**).

The disease is based on both, a disturbance of the epidermal barrier and increased tendency to immunoglobulin E (IgE) production, partly on a genetic predisposition, upon being triggered by various environmental factors (**Bieber, 2008**).

Skin lesions are assumed to result from complex interactions between IgE-bearing antigen-presenting cells, T cell activation, mast cell degranulation, keratinocytes, eosinophils, and the combination of immediate and cellular immune responses (**Novak and Bieber, 2005**), fostered by defects of the physical barrier, such as stratum corneum lipid-protein disturbances resulting, among others, from filaggrin gene mutations (**Weidinger et al., 2008**).

Treatments for AD are aimed at controlling inflammation with emollients, topical corticosteroids, and topical immune-