



Book Reviews

Skin barrier function, T. Agner, editor (Karger, Basel, Switzerland) 2016. 164 pages. Price: US\$ 211.00/CHF 179.00/EUR 167.00

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This book is the 49th volume in the ongoing series, “Current Problems in Dermatology”. The importance of skin barrier cannot be overemphasized. The skin barrier is important to human life. Physically, it protects from external threats such as infectious agents, chemicals, systemic toxicity and allergens. Internally, the skin helps to maintain homeostasis and protects from enhanced loss of water from the body.

This book is divided into four sections. Section I deals with basic parameters involved in skin barrier function, section II describes the external factors influencing skin barrier while the third section discusses the treatments improving the skin barrier. The final section highlights the clinical aspects of the skin barrier function.

The first chapter in section I discusses in detail the role of filaggrin in skin barrier function. Other chapters in this section describe the importance of stratum corneum lipids, tight junctions, antimicrobial peptides and biological variation in skin barrier function. Besides going into depth of the subject matter, the lucid reading makes understanding of a rather difficult and dry subject interesting.

The lipid matrix in the outermost layer of the skin is crucial for the skin barrier function: cholesterol, free fatty acids and ceramides are important components of this lipid matrix. The stratum corneum lipid barrier is affected in atopic dermatitis. In the chapter on stratum corneum lipids, authors elaborate on how the composition of stratum corneum lipids is changed in lesional and non-lesional skin of patients with atopic dermatitis. The effect of filaggrin and mutations in filaggrin gene on the stratum corneum lipid matrix is critically discussed.

The localization of typical tight junction structures goes along with a barrier function of tight junctions in the granular layer. These tight junctions are bidirectional which means these form a barrier to both sides. If a molecule reaches the tight junctions from outside to inside in case the stratum corneum barrier is impaired, it is likely to be stopped. The one important thing which one learns from this chapter is that epidermal barrier defects found in several skin diseases due to genetic or environmental influences are in all likelihood not restricted to one barrier but are a consequence of the interaction between various barriers. There are two possible scenarios: impairment of one barrier can lead to a deterioration of other barriers or it can be partly compensated by the upregulation of other barriers.

Besides the stratum corneum lipids and the tight junctions, antimicrobial peptides expressed abundantly in the skin contribute immensely to barrier function. Antimicrobial peptides are produced in the deeper layers of the epidermis and are transported to the stratum corneum where they play a vital role in the first line of defence against potential pathogens. The chapter on antimicrobial peptides discusses their role in detail. These not only directly kill the pathogens but also help by balancing immune responses and interfering in wound healing, cell differentiation, reepithelization and their synergistic interplay with the skin microflora.

The last chapter in the first section discusses the variation in skin barrier function. It is important to understand how the skin barrier varies between individuals, how it differs based on clinical presentation and how it alters with age. All these factors are important to understand in developing optimal therapies to maintain healthy skin that provides best protection.

The permeability of the skin barrier is of utmost importance for the penetration of toxic chemicals and also for pharmacological treatment. The second section discusses the external factors influencing the skin

barrier. These discuss in detail the effect of irritants and allergens on skin barrier function, the penetration through the skin barrier and the methods for the assessment of barrier function.

Treatments improving skin barrier function have been mentioned in section III. It discusses the effects of moisturizing creams; how these influence the desquamatory proteases and alter the thickness of the stratum corneum. It is important to understand that finding the most suitable moisturizer for the individual patient is a matter of trial and error. Choice of a suitable moisturizer is very important. Certain moisturizers have been found to reduce the cumulative incidence of atopic eczema in childhood. It is interesting to know that in a worst-case scenario, treatment with a moisturizing cream may increase the risk for eczema and asthma.

The last four chapters in section IV describe the clinical aspects of skin barrier function. These include the standards for the protection of skin barrier function, the role of skin barrier in occupational skin diseases, wet work and how to save the barrier by prevention.

This book is an interdisciplinary update and offers information ranging from basics to clinical aspects of skin barrier function. It covers new basic research on skin markers including results on filaggrin and methods for the assessment of the barrier function. Overall, this book provides a comprehensive overview of the skin barrier function. It is a must read for both the basic research workers as well as clinical dermatologists.

A. J. Kanwar

Department of Dermatology,
School of Medical Sciences and Research,
Sharda Hospital, Sharda University
Greater Noida 201 306, Uttar Pradesh, India
ajkanwar1948@gmail.com