

# IMPORTANCE OF EPIDERMAL LIPIDS FOR PROPER FUNCTIONING OF THE STRATUM CORNEUM BARRIER

A. Kansky and J. Kristl

## SUMMARY

Proper structure of stratum corneum (SC) is important for regulation of vital biologic functions as are protection from penetration of foreign substances through the skin, protection from UV rays, abnormal transepidermal water loss (TEWL), protection from injuries, or smooth shedding of corneocytes. Two systems, the epidermal lipids (interstitial lipids of SC) and the corneocyte cell envelopes (CE) are primarily responsible for the so-called barrier function. Lipids reach the SC through the secretion of lamellar (Odland) bodies situated in the granular layer, while the CE are being formed from loricrin, involucrin as well as from other protein precursors. Barrier function is impaired in a number of skin disorders, e.g. chronic eczema, atopic dermatitis, ichthyoses, aged skin as well as in others. Clinical tests in humans and animal experiments are teaching us that the barrier function may be restored more quickly by applying ointments and creams containing adequate mixtures of lipids.

## KEY WORDS

*barrier function, stratum corneum, epidermal lipids, cornified cell envelope*

---

## INTRODUCTION

Dry skin and associated metabolic abnormalities are key symptoms in a number of skin disorders: cutis senilis, dermatitis atopica, contact dermatitis, ichthyoses, and others. A primary factor causing dry skin is the increased evaporation of water through the epidermis (transepidermal water loss, TEWL).

Proper functioning of stratum corneum (SC) is important for a number of processes, e.g. regulation of TEWL, inhibition of penetration of foreign substances through the skin, protection against UV irradiation,

cooperation in the normal process of keratinization as well as adhesion and physiologic desquamation of corneocytes. This so-called *barrier function* depends on the integrity of the SC, specially on its content of lipids and on a properly structured cornified cell envelope (CE). TEWL can be measured and thus represents a model for assessing the barrier function of the skin.

The present is a rather simplified attempt to explain shortly and in a way understandable to clinicians the essentially very complicated premises for an adequate barrier function.

