An Efficient Relief for Sensitive Skin

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Abstract

A large part of the population suffers from sensitive skin, which may worsen and give rise to inflammatory and/or pruritic chronic skin disorders such as atopic dermatitis (AD), dry skin and acne.

Stimulation of proteinase activated receptor 2 (PAR-2) on keratinocytes augments the secretion of inflammatory cytokines such as interleukin (IL)-6 and IL-8, while PAR-2 activation in sensory neurons increases their excitability and may sensitise their responses to agonists of other receptors. It results in exacerbated inflammation and amplifying pain and itching.

Proteases and PAR-2 play an important role in the maintenance of epidermal permeability barrier homeostasis. PAR-2 activation inhibits lamellar bodies (LB) secretion during the repair response after barrier disruption.

Furthermore, allergens induce allergic inflammation and directly affect the structure and function of the epidermal barrier. They could break down the skin barrier via PAR-2 propagating the vicious cycle of protease-mediated permeability barrier defect.

Delisens™ is a novel hexapeptide (INCI name: Acetyl Hexapeptide-49) that diminishes PAR-2 induced release of pro-inflammatory mediators, attenuating skin disorders of sensitive skin and itching related to neurogenic inflammation, as well as helping to restore the barrier function.

Introduction

Every day more and more people realise that they have sensitive skin, although a high percentage continues suffering from it without being fully aware. This special skin condition includes disturbing manifestations such as prickling, burning, tingling, pain or itching and occasional erythema and flushing, which negatively affect the quality of personal life. These alterations can be induced by several environmental agents (pollution, UV radiation, dryness, heat and others), psychological conditions (such as stress), hormonal factors and lifestyle substances (cosmetics, soaps)[1]. Moisturisers, shampoos, deodorants, make-up, perfumes and other cosmetics have become part of our daily grooming habits. They can help us feel more beautiful but can also cause skin irritation or allergic reactions. Minimising exposure to such irritants is recommended but is often not practical since exposure is unavoidable.

Sensitive skin and inflammatory and/or pruritic chronic disorders such as AD, dry skin and acne share a common pattern of barrier impairment and increased vascular reactivity. Additionally, the threshold for pruritic stimuli, which causes a peripheral itch sensation, is lowered.

Proteases are a group of mediators that act as signalling molecules for pruritus and/or inflammation. They cleave the members of the family of G-protein coupled proteinase-activated receptors (PARs), which significantly take part in the processes of inflammation and repair. PAR-2 is a key element and it is abundantly expressed by almost all skin cell types, especially by keratinocytes but also in sensory neurons and inflammatory cells. PAR-2 can be activated by trypsin-like serine proteases[2] during inflammation or hypersensitivity, mediating neurogenic inflammation and triggering the sensation of pruritus and/or pain.

In keratinocytes, PAR-2 participates in the release of some cytokines, such as IL-6 and IL-8. When activated in nociceptive neurons, PAR-2 may sensitise their responses to agonists of other receptors involved in inflammatory processes, such as the transient receptor potential vanilloid-1 (TRPV1), resulting in exacerbated inflammation and amplifying pain and itching.

TRPV1 is a non-selective plasma-membrane cationic and heat-sensitive ion-channel that mediates responses to stimuli, including heat, protons and chemical irritants, such as capsaicin, which cause burning, pain or pruritus[3]. Its