New Caper Bud Active Targets Inflammation

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Introduction

Skin tissue is constantly submitted to aggressions of all types leading to the classical symptoms such as redness, pain, feeling of discomfort, dry tightness, itching, burning or swelling. As inflammation is the most commonly found disorder in dermatology, many products are now developed to treat sensitive or reactive skin. The soothing function has thus become inseparable from all claims put forward by cosmetic care today: anti-ageing, moisturising or even revitalizing or firming.

In order to respond to the increasing demand for efficient soothing ingredients, Researchers have carried out studies to discover precisely which vegetal fractions could activate the modulation mechanisms of the inflammatory process.

Among the numerous species of the genus Capparis (Capparaceae family), the floral buds of Capparis spinosa plant reveal excellent anti-inflammatory activity.

The aim of this article is to present Gatuline® Derma-Sensitive, a new caper bud extract, capable of limiting inflammation and reducing all clinical signs related to cutaneous hypersensitivity.

Sensitive skin and inflammation

A sensitive skin is an inflammation-prone skin. The inflammatory reaction is an adapted response, strictly controlled and protective, that contributes to the natural defence process and repair of damaged tissues. The skin, through its barrier role, plays a decisive part in this immune system.

The whole inflammatory response consists of three sequences of complex and overlapping events:

- a vascular-sanguine initiation phase in the attacked zone within seconds following the aggression, broken down into four known clinical signs: tumor (oedema), calor (burning), rubor (redness), dolor (pain).
- an amplification phase during which the inflammatory action is developed with the migration of the different type of cells within the inflammatory pocket to remove any foreign elements or cellular debris.
- and finally, a resolution phase aiming to restore the integrity of the aggressed tissue. The inflammatory response then leads to its “ad integrum” restoration.

Generally speaking, the inflammatory response is limited in time thanks to a system that controls the amplification phase (anti-inflammatory cytokines, anti-proteases, anti-free radicals).

However, if the inflammatory response is not adapted or poorly controlled, it can become aggressive.

Keratinocytes are the first line of defense in the skin immune system and the major mechanisms used by these cells to participate in immune and inflammatory events in skin are the production of cytokines.

While resting keratinocytes produce some cytokines, keratinocyte cytokine production is markedly enhanced following activation. Of all the cytokines produced by keratinocytes, only the primary cytokines activate a sufficient number of mechanisms to independently trigger cutaneous inflammation [1]. Epidermal production of cytokines have also been strongly described in the development of UVB-induced inflammation [2].

So-called primary cytokines, TNF⁄ and Interleukine 1 (IL-1), are non-specific to the inflammatory agent. These are capable of activating directly or indirectly all the cells of the epidermis (Langerhans cells, melanocytes, Merkel cells) and of the dermis (fibroblasts).

This is also the case of IL-8, a chemokine produced by practically all skin cells and induced under the action of various stimuli. IL-8 is specialized in polynuclear neutrophiles and T lymphocytes recruitment.

TNF⁄ and IL-8 were identified as the early biomarkers of inflammation [3]. TNF⁄ is a truly multifunctional cytokine as it can stimulate production of other pro-inflammatory mediators in the skin such as IL-1, IL-8, IL-6, PGE2... [4]

Researchers have therefore aimed to find and selectively extract vegetal fractions, which could efficiently reduce or inhibit the liberation of these non specific pro-inflammatory mediators.