Serene Skin Sage

For an active skin barrier

NAOLYS

NATURE EXPANDED


BALANCE

NAOLYS ACTIVE CELLS

Serene Skin
Sage

For an active skin barrier

Because our skin is our first defence against visible and invisible external threats, it is essential to keep its protective and repair mechanisms functions in optimal condition.
Skin imbalances can be caused by microbial or physico-chemical threats.

For soothed skin that radiates well-being.

A VEGETAL STORY

A key medicinal plant: the sage
salvia officinalis, Lamiaceae

Sage is a small herbaceous perennial from the dry regions around the Mediterranean. It is an aromatic plant that has been well-known since antiquity for its medicinal properties. Its name comes from the verb to save (salvare in Latin). It is said to be antiseptic, tonic, antiperspirant, soothing for the mucous membranes and to improve digestion. It is combined with other plants to create a range of remedies. Now cultivated in several European and American countries, it is also used as a flavouring in cooking, particularly in marinades and to season game.

BALANCE

PRODUCT BENEFITS

Balance

Enhances complexion
Unifies the complexion, increases radiance.

Reconstructing, lipid-replenishing
Helps to homogenize and restructure the composition of the stratum corneum.

Regenerating
Promotes cell renewal.

Protection and repair
Helps to rebuild, strengthen and unify the skin barrier. Strengthens immune anti-microbial defences.

Balancing
Rebalances the components of the skin flora.

Soothing, anti-inflammatory
Reduces inflammatory processes, calms red skin.

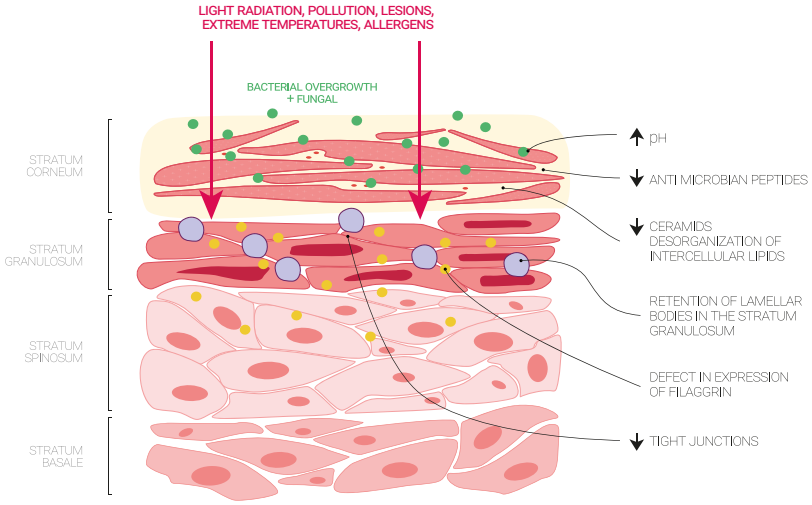
NAOLYS

HOW IT WORKS

Serene Skin Sage: a skin barrier in perpetual renewal

Our skin has two opposing characteristics: it is both open and closed to the external environment. Its primary role is to protect us against water loss, but it has many other roles: sensory, emotional, protection against external threats, temperature regulation and hormone synthesis. Because it is protective, the epidermis is referred to as a "skin barrier".

The epidermis is not an assembly of inert components; on the contrary, it is living and constantly renewed: bacteria proliferate on the surface, living and dying depending on external conditions and on our bodies. In the lower layers, a cellular differentiation process takes place: moving up to the surface, living cells called keratinocytes, gradually transform into corneocytes, dead keratinized cells, and then shed. Our skin is thus constantly shedding and secreting mucus. Paradoxically, it is this incessant renewal of its composition that enables the skin to retain its full functionality. It is a perpetually renewed balance.



THE SKIN BARRIER AND ITS EXTERNAL AGGRESSIONS

And it is essential to maintain it because in terms of threats, the skin has to face several types: physical (UV, temperatures, etc.), chemical and microbial (viruses, fungi, pollution, allergens, etc.), and internal imbalances (stress) that trigger oxidation and inflammation that ultimately damages cells. To combat them, the epidermis uses several defence mechanisms, ranging from simple to highly complex.

Serene Skin Sage: helps skin combat multiple external threats

Serene Skin Sage acts on three types of epidermal defence: physical, chemical and immune, which follow one another in the skin's lines of defence, from the surface into the living layers of the epidermis.

Through an effective physical barrier
Healthy skin is first of all made up of a homogeneous, thick (100 microns), uniform stratum corneum, with a balanced lipid composition, which prevents penetration by foreign agents and retains moisture. However, skin ageing and other imbalances slow down epidermal differentiation and therefore cornification. By acting on cell differentiation, lipid synthesis and key proteins in cornification,

Serene Skin Sage strengthens the corneocyte structure at the skin's surface.

Through a high performance chemical barrier
The skin's surface has to maintain a balance of different kinds of bacteria and face pathogens: too frequent washing and lack of exposure to certain microbes or viruses can lower the level of our chemical defences, the presence of good bacteria then decreases, and the release of anti-microbial peptides is less effective.
By acting on the microbiota's key bacteria and stimulating the production of anti-microbial peptides,

Serene Skin Sage enhances the action of the skin's anti-microbial weapons.

By a controlled immunomodulatory and inflammatory barrier
The final line of defence is provided by immune function cells and the associated inflammatory mediators. They are the last resort in the fight against pathogens and stopping any damage. Several inflammatory mediators are markers of their action, such as TNF-alpha. Others signal the intrusion of the pathogens.
Through its action on key inflammatory mediators involved in the immune system defence mechanisms,

Serene Skin Sage strengthens the immune response and reduces skin inflammation.

Thanks to a triple reinforcement action of the cutaneous barrier, Serene Skin Sage helps to enhance radiance and soothe the skin.

CLINICAL TEST RESULTS

A more uniform, radiant complexion after 28 days

Declaration of the panel

→ **100%** of women reported that their skin looked purified
→ **95%** of women reported that and their complexion was radiant
→ **90%** of women reported that their skin was less sensitive

At the concentration of 0.5%

IN VITRO TEST RESULTS

Wide-ranging activation of the skin barrier

Reconstructing effect

→ By an increase of loricrine of **+21%**
→ By an increase in the synthesis of free fatty acids of **+20%** and of ceramides of **+22%**

Regenerating effect

→ By an increase of the cellular renewal, by an increase of Ki-67 of **+17%**

Balancing effect

→ By rebalancing the microbial environment – increase of Staphylococus epidermidis, decrease of Propionobacterium acnes, Staphylococus aureus and Corynebacterium xerosis

Protective effect

→ By an increase in the expression of anti-microbial peptides LL-37, and beta defensine 2 and psoriasine

Soothing and immuno-modulating effect

→ By a decrease in TNF-alpha of **17%**, in IL1-alpha of **20%**

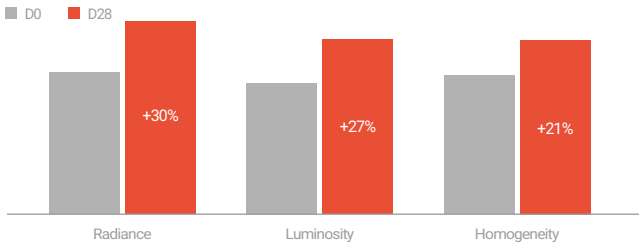
At the concentration of 0.5%

Clinical test results

Skin well-being is restored – radiance, evenness, reduced redness (2 applications a day) after 28 days

Improvement of the skin tone

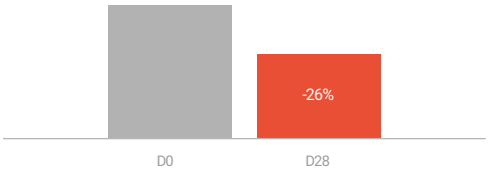
Effect on the complexion and cutaneous state by clinical scoring



Increased skin radiance of 30%
Increased brightness of 27%
Increased uniformity in skin tone of 21%
Increased soothing effect of 30%
Reduction of redness (cheeks) of 26%

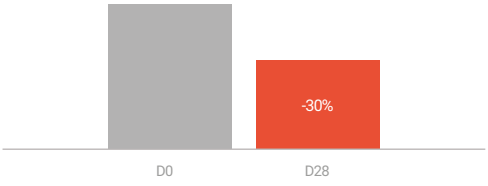
Reduction of redness

Measurement of the parameter (a*) on the cheeks on 20 volunteers



Reduction of irritation

Mean of the cumulative scores in 20 volunteers (stinging test)



DAY 0 DAY 28

Conditions of the study:

→ Test carried out for 28 days on a sample of 20 women aged 20 years to 65 years
→ Application twice a day
→ Emulsion with 0.5% de Serene Skin Sage (20% cells)

Technical information on the formulation of Serene Skin Sage

INCI name of cells	**form**	**aspect**	**concentration**	**dispersible**
Salvia officinalis callus extract (in progress)	cells (20%) in glycerin or sunflower oil (80%)	liquid	starting at 0.5%	in any formulation (emulsion, lotion, fluid)

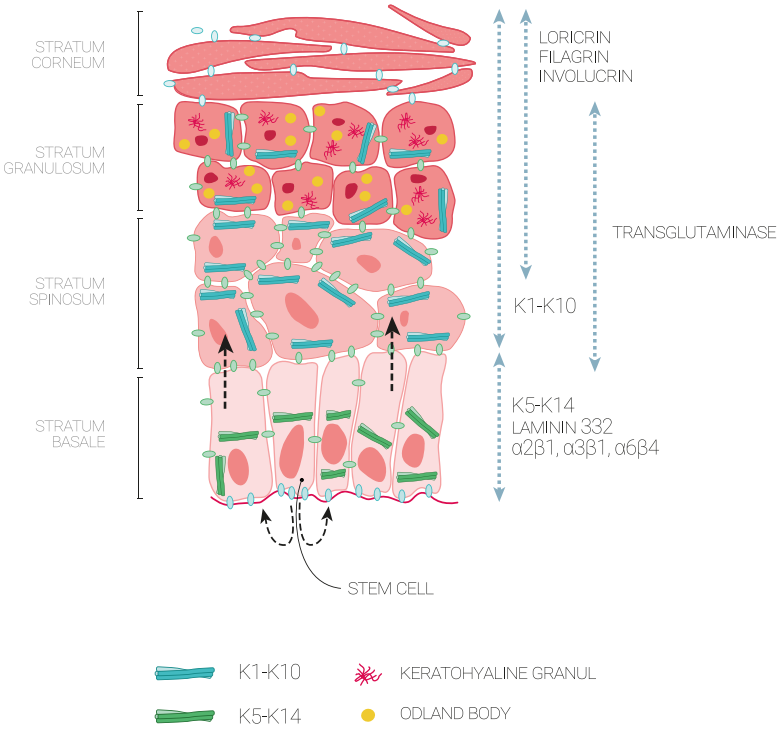
In vitro tests results

Maintaining an effective physical barrier

The first line of defence against threats is the stratum corneum. Its thickness and integrity are fundamental to robust physical protection of the skin. Serene Skin Sage reinforces these two aspects by encouraging the cellular differentiation process at three levels, from the start to the finish of the epidermal renewal cycle, thus from the basal layer to the stratum corneum: cellular renewal, cornification, lipidization to achieve a thick, homogeneous lipid layer.

Cellular differentiation, from the basal lamina to the stratum corneum

The regeneration of the epidermis takes place from the stem cells in the basal layer. After a few division cycles, the "transiently amplified cells" begin a process of differentiation, known as keratinization or cornification, i.e. they leave the cell cycle and gradually differentiate into corneocytes in the stratum corneum. During the passage from the stratum granulosum to the stratum corneum, the cells die, and their constituents are significantly modified: the keratohyalin granules disperse their contents into the cytoplasm, filaggrin then induces the aggregation of keratin filaments to form the cytoplasmic matrix of the corneocytes, its catabolism produces important molecules for hydrating the stratum corneum (the natural moisturizing factor NMF). The cells' membranes becomes a corneous envelope through chemical reactions involving transglutaminases and various precursors, such as involucrin and loricrin.
Finally, at the junction of the two layers, the lamellar bodies fuse with the plasma membrane and disperse their lipid content into the intercorneocyte spaces. Once released, these lipids fuse to form the intercorneocyte "cement" and after modification by specialized enzymes, they become ceramides (50%), cholesterol (25%) and free fatty acids (10-20%).

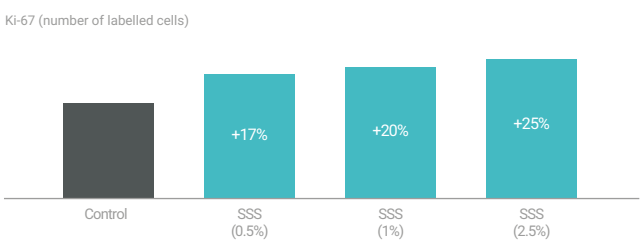


THE CELL DIFFERENCIATION IN THE EPIDERMIS

Nine ceramides (numbered from 1 to 9 according to their polarity) have been identified in the stratum corneum. Ceramides in the intercellular spaces of the stratum corneum are not capable of forming bilayers on their own. However, in the presence of cholesterol sulphate and free fatty acids, ionized at physiological pH,they form ordered structures. Subtle self-regulation mechanisms control the synthesis of ceramides by the keratinocytes, depending on the epidermis's instantaneous requirements. Free fatty acids are synthesized de novo by the epidermis and are mainly saturated. The two types of lipid are therefore interdependent: linoleic acid, an essential fatty acid, plays an important role in the barrier function of the epidermis as a component of Ceramide 1.
The desquamation resulting from the release of the corneocytes then occurs due to the action of specialized enzymes.

Naolys studied the effects of Serene Skin Sage at three stages of cell differentiation: in the basal layer by studying the differentiation markers Ki-67 ; in the stratum granulosum and stratum corneum, by studying loricrin, another of cell differentiation marker. Then in the stratum corneum, particularly the intercorneocyte cement, by studying the lipids formed: ceramides and free fatty acids. The results show that Serene Skin Sage enhances epidermal differentiation to make the physical skin barrier stronger.

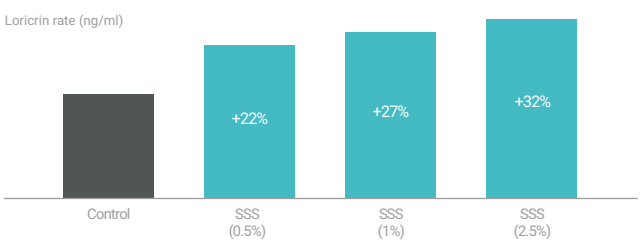
Study of the cell renewal



Increase of proliferation of keratinocytes

→ At concentrations of 0.5%,1% and 2.5%, stimulation of the proliferation of keratinocytes at le level of the basal layer, respectively of 17%, 20% and 25%.

Study of the synthesis of loricrine, a key corneification protein

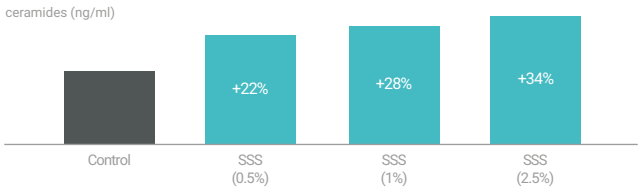


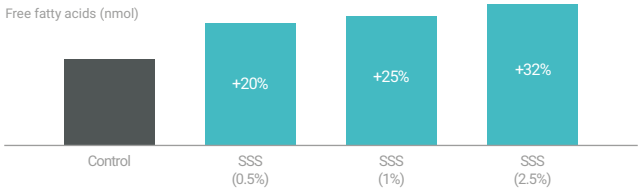
Increase of loricrine

→ At concentrations of 0.5%,1% and 2.5%, increase of loricrin respectively of 21%, 27% and 32%.

Increase in the synthesis of free fatty acids and of ceramides

Study of the synthesis of lipids at the origin of corneocyte cohesion





Increase of ceramides

→ At concentrations of 0.5%,1% and 2.5%, increase in the synthesis of ceramides respectively of 22%, 28% and 34%.

Increase of free fatty acids

→ At concentrations of 0.5%,1% and 2.5%, increase in the synthesis of free fatty acids respectively of 20%, 25% and 32%.

Thanks to this better controlled differentiation process, the skin is more resistant to physical attacks and more easily maintains its water circulation, and therefore its level of hydration. However, as pathogens can still penetrate the skin, there is also a chemical skin defence.

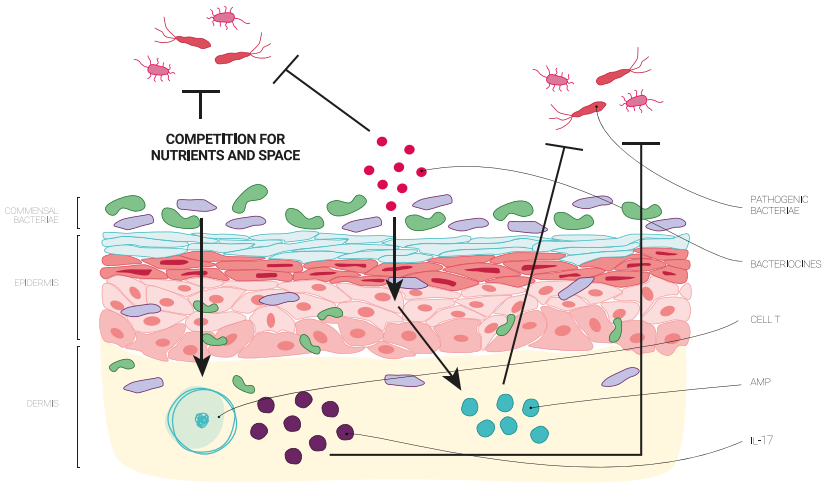
Maintaining an effective chemical barrier

The skin's chemical defence weapons can be found at the surface of the epidermis and through its living layers; they include an acidic pH, bacteria and anti-microbial peptides that prevent the penetration of infectious agents such as viruses, fungi, etc. Serene Skin Sage acts first on the skin's flora, the surface of the skin where numerous bacteria coexist, and then reinforces the presence of three anti-microbial peptides.

The role of the skin microbiota

Of the more than 1000 identified bacterial species that make up the human microbiota, the classic skin microbiota includes bacteria such as Staphylococcus epidermidis, Staphylococcus hominis (common commensal bacteria), Streptococcus mitis, Propionibacterium acnes, Corynebacterium spp., Acinetobacter johnsoni (common commensal bacteria), and Staphylococcus aureus; new techniques have revealed that the skin contains over 300 commensal bacterial subspecies.

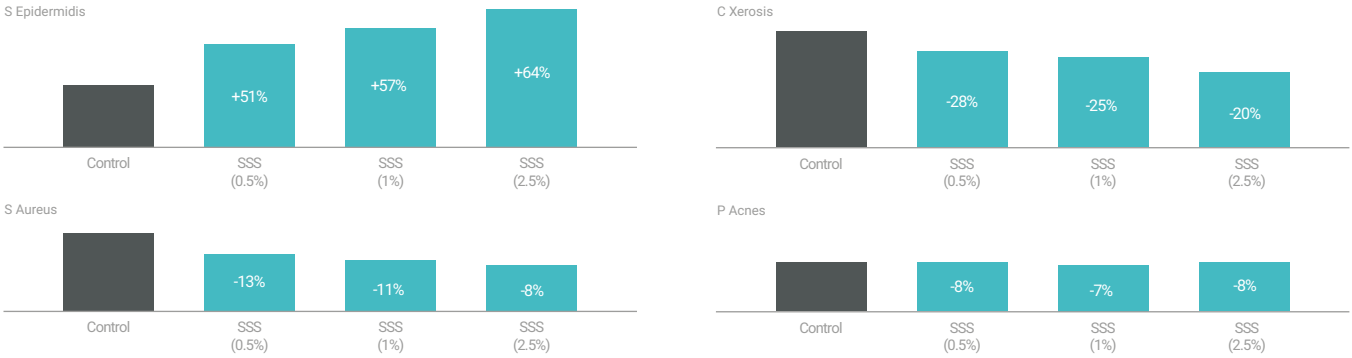
Previously, it was thought that commensals exploited the human host for their own benefit. More recent findings have revealed that the host actually takes advantage of commensalism to protect itself from infection by pathogenic microbes. The presence of commensal bacteria protects against pathogenic bacteria via two mechanisms. On the one hand, they compete for nutrients and space, which reduces the risk that pathogenic bacteria will proliferate. On the other hand, they can also produce bacteriocins, compounds that can kill other bacterial species. The commensal bacterium S epidermidis thus has an antimicrobial action similar to the production of antimicrobial peptides (AMP) by keratinocytes during the immunocyte reaction. Corynebacterium spp. modifies the composition of the sebum and lipids of the stratum corneum, thus strengthening the physical barrier. The role of the skin microbiota is therefore multiple.



BACTERIAE AND THE SKIN CHEMICAL BARRIER

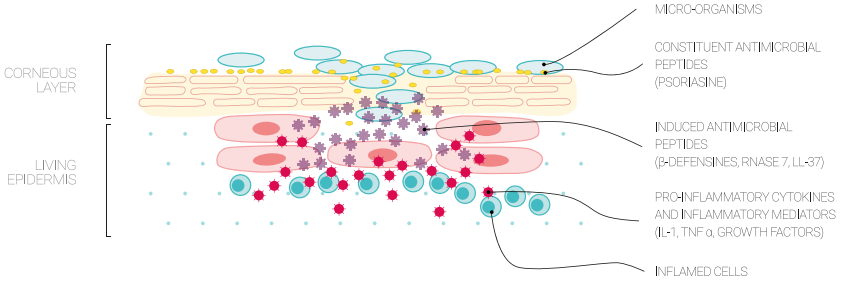
Rebalancing in favour of S Epidermidis

Study of the microbial balance



Rebalancing in favour of S Epidermidis

→ At concentrations of 0.5%, 1% and 2.5%, the microbial balance is rebalanced in favour of S Epidermidis and C Xerosis to the detriment of S Aureus. P Acnes remains stable.



THE SKIN CHEMICAL BARRIER

The role of antimicrobial peptides

AMPs, or anti-microbial peptides, are numerous in the epidermis, particularly in the stratum corneum. Naolys studied the action of Serene Skin Sage on psoriasin, hBD-2 (human beta defensin 2) and human cathelicidin hCAP-18 / LL-37.

Psoriasin

Psoriasin is a peptide with antimicrobial activity primarily against E. coli. It is probably the main bactericidal component of the skin, produced in areas where bacterial colonisation is abundant, as well as in the sebaceous glands, suggesting that it may be co-secreted with lipids. It is therefore secreted throughout the epidermis.

hBD-2 (human beta defensin 2)

Beta defensin 2 (HBD-2) is a peptide, and is the first human defensin produced by epithelial cells in contact with microorganisms or cytokines such as TNF-alpha and IL1-alpha. The HBD-2 gene and protein are expressed locally in keratinocytes associated with skin lesions for example. It is active against candida and gram-negative bacteria.

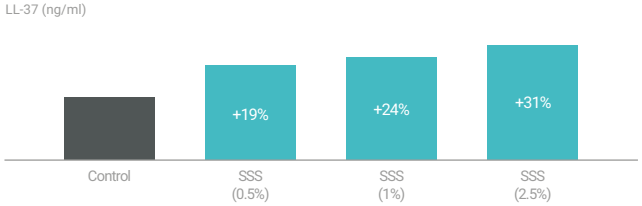
Human cathelicidin hCAP-18 / LL-37

LL-37 is a peptide derived from the proteolysis of hCAP18 (human cathelicidin antimicrobial protein), a protein that is not expressed in healthy skin but induced in keratinocytes located in inflammatory skin areas. Once released from hCAP18, LL-37 is fast acting. It has broad-spectrum antibacterial properties (especially against staphylococcus aureus).

Increase in Beta-defensin 2 (HBD-2), LL-37 and psoriasin

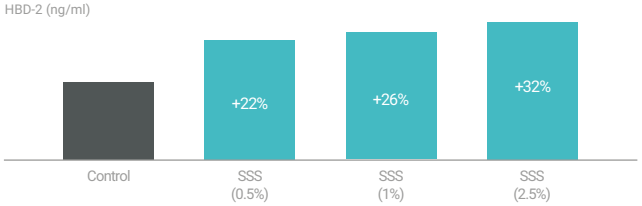
Study of the expression of antimicrobial peptides

Physiological conditions



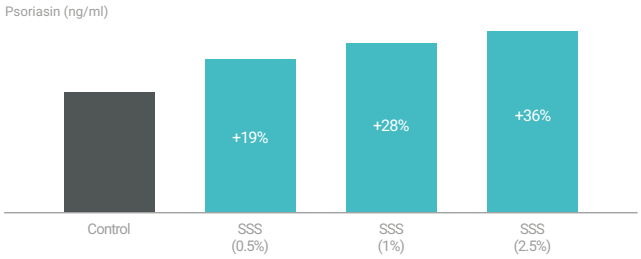
Increase of LL-37

→ At concentrations of 0.5%, 1% and 2.5%, increase of the expression of peptide LL-37 respectively of 19%, 24% and 31%.



Increase of Beta-defensine 2 (HBD-2)

→ At concentrations of 0.5%, 1% and 2.5%, increase of the expression of Beta-defensine 2 (HBD-2) respectively of 22%, 26% and 32%.



Increase of psoriasin

→ At concentrations of 0.5%, 1% and 2.5%, increase of the expression of psoriasin of 19%, 28% and 36%.

Due to the rebalancing of the microbial environment and an increase in the release of essential anti-microbial peptides from the skin, the skin is better defended against pathogen attacks.
But if this second line is crossed, it is the cells of the immune defence system that come into play in association with inflammatory mediators also induced also by other cells.

Maintaining a reactive immunomodulatory barrier

In the epidermis, initial immunity is represented by the Langerhans cells, which present the antigens, but there are other non-specific immune cells such as lymphocytes, monophagous macrocytes, etc.

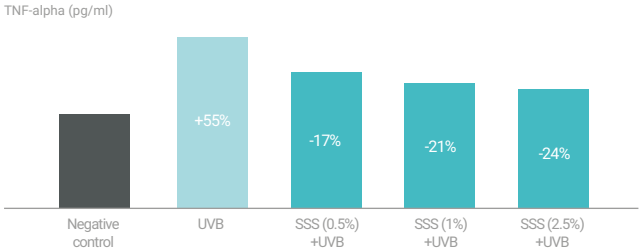
And above all the keratinocytes which are involved in the immune response, not only with anti-microbial peptides, but also by synthesizing pro-inflammatory cytokines, such as IL1 (alpha and beta), IL8, IL6 and TNF-alpha. Cytokines are mediators, and their production occurs primarily in response to the presence of an infectious agent such as a virus or bacteria, or one of their components. The production of pro-inflammatory cytokines will, in particular, allow the immune response to be directed according to the nature of the signal detected.

TNF-alpha
Tumour necrosis factor alpha is a cytokine with pro-inflammatory properties and immunoregulatory functions. Formed from a precursor expressed on the surface of macrophages, lymphocytes and other cell types, such as keratinocytes, it is released in response to infection in the presence of tumour cells, i.e. by antigenic danger signals present on the surface of bacterial, fungal, and tumour cell membranes, but also by mediators such as IL1, IL2 and interferon gamma.

IL1-alpha
IL1-alpha (interleukin alpha), a variant of IL-1, is an essential cytokine in innate immune responses. Formed in several cell types, macrophages and monocytes and keratinocytes, and released in the presence of pathogens, it facilitates the transmigration of leukocytes (white blood cells) to the site of infection. It is responsible for fever, cortisol production and stimulation of immune cells.

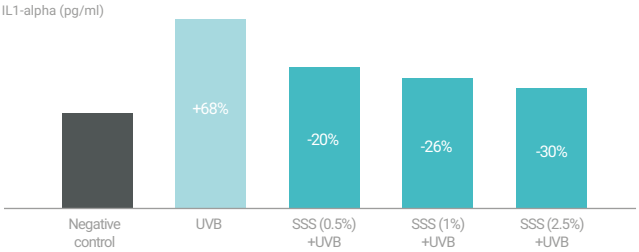
Decrease in inflammatory mediators, TNF-alpha and IL1-alpha

Study of inflammatory mediators



Decrease of TNF-alpha

→ At concentrations of 0.5%, 1% and 2.5%, after exposition to UVB, decrease of the expression of TNF-alpha respectively of 17%, 21% and 24%.



Decrease of IL1-alpha

→ At concentrations of 0.5%, 1% and 2.5%, after exposition to UVB, decrease of the expression of IL1-alpha respectively of 20%, 26% and 30%.

By decreasing the synthesis of pro-inflammatory cytokines expressed in the presence of a pathogen, Serene Skin Sage participates in the cutaneous immune response. Reducing inflammation enables cell damage to be reduced while maintaining the skin's defence level.

See also

Essential Bieng Indian jasmine

First Light Snow lotus

Full Detox Ylang Ylang

Healthy Perfection (Vitis flower)[2]

Pure Light Chinese peony

Purify Apothecary's rose

Purify Aloe vera

Refine Ginger

Unwind Sacred lotus


BRIGHTENING
ANTI-AGEING
PROTECTION
BALANCE
SENSITIVE SKINS
HYDRATION
ENERGY
BODY
HAIR