

Skin Immunity

A total cooperation for skin homeostasis

SEPPIC

Ingredients that inspire

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A close-up photograph of human skin, showing the intricate texture of the epidermis. The skin is a warm, golden-brown color. A large, smooth, white curved shape overlaps the left side of the image, creating a clean, modern aesthetic. The lighting is soft and directional, highlighting the ridges and valleys of the skin's surface.

1. Skin Immunity

The cutaneous immune system: what is it ?

THE CUTANEOUS IMMUNE SYSTEM AND ITS 2 IMMUNE RESPONSES

One of the main functions of the skin is to **protect the body against external aggressions**, thanks to its structure, its biomolecules and a complex network of non-immune and immune cells. This set is called **the cutaneous immune system**.

The immune system is defined as all body defense mechanisms that **discriminate** between “**self**” and “**non-self**” and fight pathogens.

The immune system can triggers two types of responses: the **innate immune response** and the **adaptive immune response**.

The cutaneous immune system: what is it ?

THE INNATE IMMUNE RESPONSE

The innate immune response is the **first line of defense** against infectious agents and pathogens that surround us. It is **set immediately** and is functional for 4 days. It is **non specific** and independent to **immunologic memory**.

It involves different defense modules, such as the **skin barrier**, **phagocytic cells**, and **inflammatory response**.

The innate immune response is **induced by danger signal** emitted following the specific interaction between self receptors and non-self molecules. It determines **quality and quantity** of the immune adaptive response.

The cutaneous immune system: what is it ?

THE ADAPTIVE IMMUNE RESPONSE

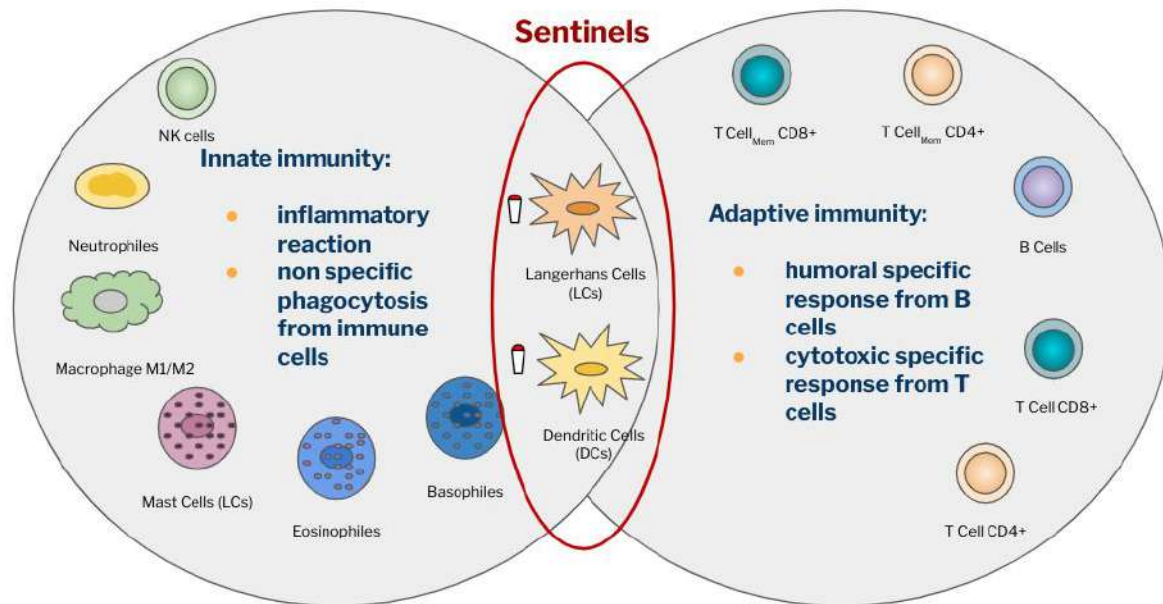
The adaptive immune response is the **second line of defense** against infectious agents. It is **specific** to a pathogen with **long lasting effect**.

It is set **after 4 days** and is characterized by the **participation of lymphatic cells** (lymphocytes, leukocytes or white blood cells).

These lymphocytes are of two types:

- **B lymphocytes** (B Cells) responsible for the humoral response, i.e. the production of **antibodies**,
- and **T lymphocytes** (T Cells), responsible for the cytotoxic response, i.e. the destruction of the target by **lysis**.

The cutaneous immune system: what is it ?



Langerhans cell, constitutively present in the epidermis where they form a dense network, play the role of **sentinels** of the cutaneous immune system, directing it towards an innate or adaptive response.

Figure: Immune and non-immune skin cells

The epidermis as an innate immune organ

Skin's biomolecules, structure, physico-chemical properties, immune and non-immune cells all act together to form the skin's immune system. Ultimately, the correct operation and equilibrium of these elements guarantee the skin homeostasis.

Cosmetic products can help to preserve skin innate immunity in the epidermis by:

- reinforcing the “brick & mortar” properties of the *stratum corneum*
- enhancing the antimicrobial peptides
- balancing the microbiota
- maintaining the skin acidic mantle
- decreasing the neuronal suractivation
- protecting the cutaneous sentinel cells



2. How to preserve skin immunity with cosmetics?



How to preserve skin immunity with cosmetics ?

Skin barrier reinforcement

The “brick & mortar” properties of the *stratum corneum*:

- Epidermal lipids ⇒ **impermeability**
- Corneocyte content (keratines and proteins of terminal differentiation) ⇒ **rigidity**
- Junction and adhesion proteins ⇒ **cohesion**

⇒ prevents exogenous substances entrance

⇒ prevents water loss

Seppic solutions

- AQUAXYL™
- CERAMOSIDES™
- MONTANOV™ 202

Marketing claims

- Epidermis strengthener
- Skin barrier reinforcer
- Film forming
- Impermeability enhancer
- *Stratum Corneum* cohesion enhancer



AQUAXYL™

Characteristics

INCI NAME: **Xylitylglucoside - Anhydroxylitol - Xylitol**

USE LEVEL: **1.5% - 3 %**

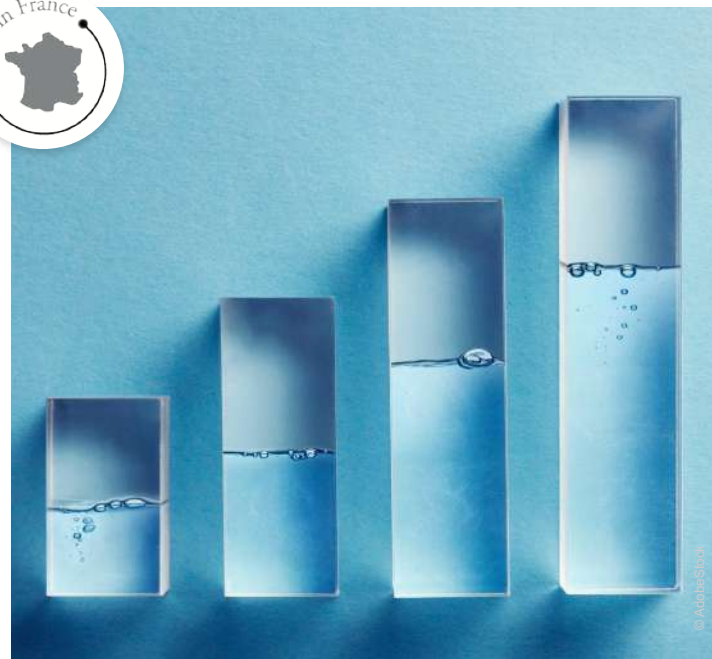
FORM: **Liquid**

SOLUBILITY: **Water soluble**

PRESERVATIVE: **None**

CLAIMS: **Moisturizing: NMF, ceramides, hyaluronic acid & aquaporins booster / Water reserves & circulation / Glycerin enhancer**


APPROVALS:



*CHINA Compliant: all INCI names are listed on the IECIC list dated April 2021. / ECOCERT Approved: raw material approved by ECOCERT GREENLIFE, in conformity with Ecocert natural and organic cosmetic standard. / COSMOS Approved: raw material approved by ECOCERT GREENLIFE, in conformity with Cosmos standard. / NATRUE Approved: raw material certified according to NATRUE standard. / HALAL Certified: raw material certified by HCS organism, officially recognized by the highest Halal authorities including MUI (Indonesia), JAKIM (Malaysia), MUIS (Singapore) and CICOT (Thailand). / VEGAN Suitable: Vegan suitability assessed according to Seppic Vegan criteria. Naturality Profile Available: naturality profile according to ISO 16128 norm, is available upon request (NOC=Natural Origin Content).

CERAMOSIDES™ HP

Characteristics

INCI NAME:	Glycosphingolipids - Glycolipids
USE LEVEL:	0.2 - 0.5%
FORM:	Powder
	 <p>From wheat grain from North East of France / Patented process for a unique ceramides & DGDG (Digalactosyl Diglyceride) complex: • Phytoceramides identical to those of the skin • Contains DGDG that act as a performance activator • Rich in natural antioxidant and in essential fatty acids (contains 77% of OMEGAS 3,6,9, essential to the skin).</p>
SOLUBILITY:	Oil & water dispersible (emulsifying properties)
PRESERVATIVE:	None
CLAIMS:	Anti-aging - Moisturizer - Improvement of skin complexion - Pore reducer - Positive emotions & self-esteem

APPROVALS:	 CHINA COMPLIANT*	 COSMOS APPROVED*	 VEGAN Suitable*	 NOC= 100%*	 GLUTEN Free	 Non GMO
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MONTANOV™ 202

Characteristics

INCI NAME:	Arachidyl Alcohol - Behenyl Alcohol - Arachidyl Glucoside
FORM:	solid pellets
FUNCTION:	O/W emulsifier
PRESERVATIVE:	None
CLAIMS:	Liquid crystal/lamellar phase promotor / Active emulsifier: moisturizing effect up to 5 hours & restructuring effect
SENSORY:	Soft, light & matte finish

APPROVALS:



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How to preserve skin immunity with cosmetics ?

Antimicrobial peptide enhancement

Antimicrobial peptides (AMPs) such as defensins (HBD2), cathelicidines (LL-37), alarmin or dermicidin

⇒ **modulation of immune response :**

- activation of immune cells,
- differentiation of monocytes in Langerhans cells or Dendritic cells
- keratinocytes migration & proliferation

Seppic solutions

- SEPICONTROL™ A5

Marketing claims

- Antimicrobial peptides enhancer against Gram - pathogenic bacteria.
- Defensins enhancer
- HBD2 enhancer



SEPICONTROL™ A5

Caractéristiques

INCI NAME:	Capryloyl Glycine - Sarcosine - Cinnamomum Zeylanicum Bark Extract
USE LEVEL:	4%
FORM:	Brown liquid
SOLUBILITY:	Hydrosoluble
PRESERVATIVES:	None
CLAIMS:	Sebum control / Purifying / Soothing

LABELS:



CHINA
Compliant*



MASSBALANCE
Certified*



HALAL
Certified*



VEGAN
Suitable*



NOC
> 50%*



*CHINA Compliant : tous les noms INCI sont répertoriés dans la liste IECIC d'avril 2021. / MassBalance Certified: supplied under MassBalance certification BVC-RSPO-1-1972708497. Contributes to the production of certified sustainable palm oil. / Profil de NATURALITÉ : selon la norme ISO 16128, disponible sur demande (CON = Contenu d'Origine Naturelle).

How to preserve skin immunity with cosmetics ?

Balanced Skin Microbiota

Commensal bacteria

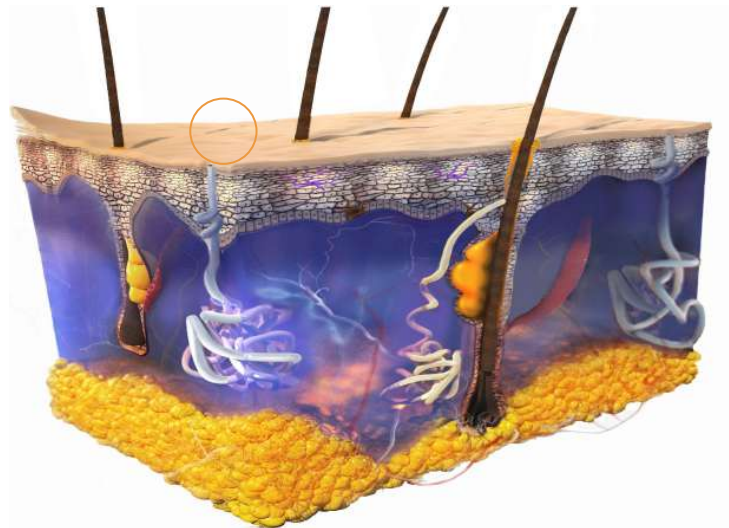
⇒ occupy accessible area **to avoid pathogens colonization**

Seppic solutions

- EQUIBIOME™

Marketing claims

- Commensal bacteria maintenance
- Pathogenic bacteria impediment



EQUIBIOME™

Characteristics

INCI NAME:

**Propylene Glycol* - Aqua/Water -
Arctium lappa Root Extract**

*Plant-based & Renewable

USE LEVEL:

1%

FORM:

Yellow liquid

SOLUBILITY:

Water soluble

PRESERVATIVE:

None

FORMULATION
ADVICE:

Easy to formulate.

CLAIMS:

**Microbiota balance / Skin comfort /
Anti-redness / Skin barrier protection**

APPROVALS:



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How to preserve skin immunity with cosmetics ?

Acidic Skin Surface pH

Skin surface pH 5.4-5.9, maintained thanks to:

- filaggrin degradation in histidine then in **trans-uronic acid**
- **acidic electrolytes and lactic acid** of sweat glands

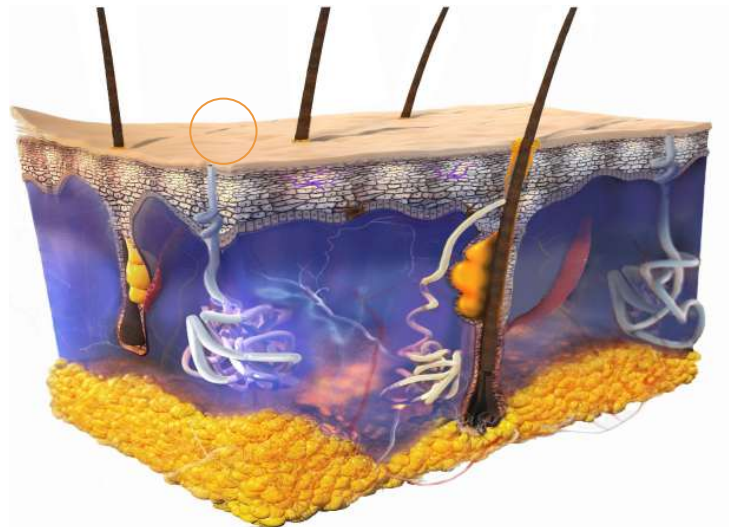
⇒ creating an **inhospitable environment for pathogens**

Seppic solutions

- LIPACIDE™ C8G
- LIPACIDE™ UG

Marketing claims

- Skin acidic mantle restorer



LIPACIDE™ C8G

Characteristics

INCI NAME:	Capryloyl Glycine
USE LEVEL:	0.5 to 1% at pH 5 / 1 to 2% at pH 6 / 2% at pH 7
FORM:	Powder
SOLUBILITY:	Amphiphilic structure (hydrophilic tendency)
PRESERVATIVE:	None
CLAIMS:	Nothing to prove dermopurifier for all skin / Allow to reduce preservative level (antimicrobial activity) / Ideal for sensitive skin /
FORMULATION:	Easy to formulate - Colourless in formulation

APPROVALS:



CHINA
Compliant*



QD
Additive*

MB

MASSBALANCE
Certified*



HALAL
Certified*



VEGAN
Suitable*



NOC
> 50%*



*CHINA Compliant: all INCI names are listed on the 2021 IECIC list. / QD Additive: approved as QD additive in Japan. / MASSBALANCE Certified: supplied under MassBalance certification BVC-RSPO-1-1972708497. Contributes to the production of certified sustainable palm oil. / HALAL Certified: raw material certified by HCS organism, officially recognized by the highest Halal authorities including MUI (Indonesia), JAKIM (Malaysia), MUIS (Singapore) and CICOT (Thailand). / VEGAN Suitable: Vegan suitability assessed according to Seppic Vegan criteria. / NATURALITY Profile: naturalness profile according to ISO 16128 norm, is available upon request (NOC=Natural Origin Content).

LIPACIDE™ UG

Characteristics

INCI NAME: **Undecylenoyl Glycine**

USE LEVEL: **1%**

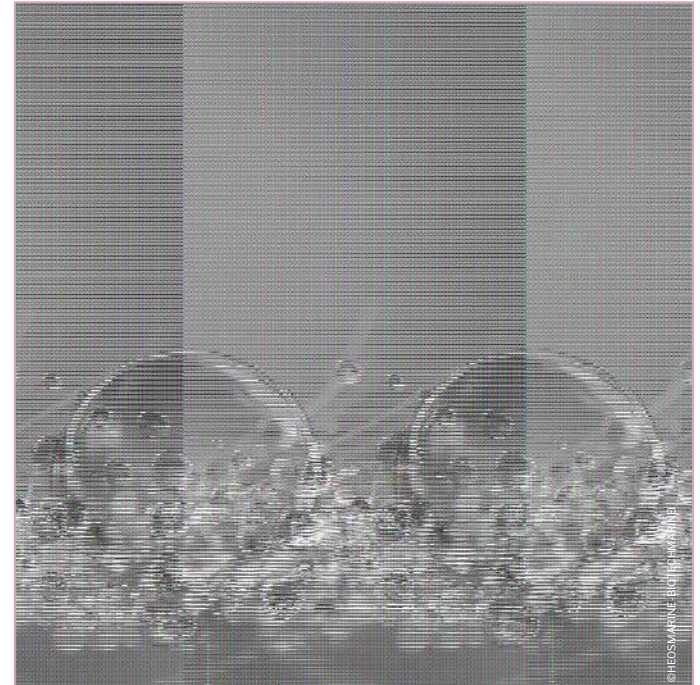
FORM: **Powder**

SOLUBILITY: **Water soluble at pH 7**

PRESERVATIVE: **None**

CLAIMS: **Dermoprotector - Dandruff control - Regulator of oily scalp and acne prone skin - Deodorant**

APPROVALS:



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How to preserve skin immunity with cosmetics ?

Relaxing effect against neuronal suractivation

Neurogenic inflammation is mediated by the release of **CGRP (Calcitonin Gene-Related Protein)**:

- epidermis closely interact with nerve endings
- stimulation of sensory nerves by certain stimuli ⇒ release of active neuropeptides to transfer signals.

⇒ modulation of **immune system**

Seppic solutions

- ANTILEUKINE™ 6
- SEPICALM™ S WP

Marketing claims

- Relaxing effect
- Stress less



ANTILEUKINE 6™

Characteristics

INCI NAME: *Caprylic/Capric Triglyceride, Laminaria Ochroleuca Extract*

RECOMMENDED USE: 2%

ASPECT: *Oily limpid liquid*

COLOR: *Yellow*

SOLUBILITY: *Oil*

PRESERVATIVE: *None*

CLAIMS: *Soothing and moisturizing effect / Protection against UV, neurogenic stress and blue light / Calms, comforts and moisturizes*

APPROVALS:



CHINA
Compliant*



Verified by
ECOCERT*



COSMOS
APPROVED*



NATRUE
Approved*

MB

MASSBALANCE
Certified*



HALAL
Certified*



VEGAN
Suitable*



NOC=
100%*



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SEPICALM™ S WP

Characteristics

INCI NAME:

Sodium Cocoyl Amino Acids - Sarcosine -
Potassium Aspartate - Magnesium Aspartate

USE LEVEL:

1% - 3 %

FORM:

Colorless clear to slightly turbid liquid

SOLUBILITY:

Water soluble

PRESERVATIVE:

None

CLAIMS:

Soothing / Skin comfort / Neurocosmetics /
Happy skin / Mineral concept

APPROVALS:



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How to preserve skin immunity with cosmetics ?

Cutaneous sentinel cell protection

Skin sentinel cells such as **Langerhans cells**:

⇒ orientates immunity toward **an innate response or an adaptive response.**

⇒ Also induce tolerogenicity against self molecules.

Seppic solutions

- CONTACTICEL™
- SAKADIKIUM™

Marketing claims

- Maintain skin vigilance
- Protection of sentinel cells



CONTACTICEL™

Characteristics

INCI NAME:

**Aqua/Water - Butylene Glycol -
Hydrolyzed Rhodophyceae Extract**

ORIGIN OF
THE EXCIPIENT:

Vegetal Butylene Glycol

USE LEVEL:

1%

FORM:

Liquid

SOLUBILITY:

Water soluble

PRESERVATIVE:

None

FORMULATION
ADVICES:

Easy to formulate in any type of formula.

CLAIMS:

Anti-pollution dermopurifier: Urban oily skin sebum
production regulation / Reduction of ozonolyzed squalene /
Protection of epidermal cells against pollution.

APPROVALS:



CHINA
Compliant*



Verified by
ECOCERT



COSMOS
APPROVED



NATRUE
Approved*



HALAL
Certified*



VEGAN
Suitable*



NOC=
100%*



World's 1st technology
of macroalgae
culture
CELEBRITY™



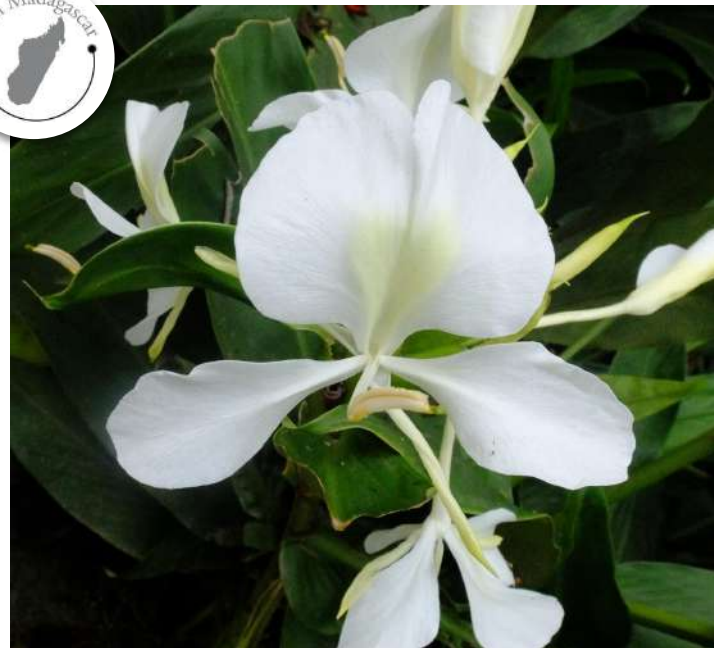
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SAKADIKIUM™

Characteristics

- INCI NAME:** Glycerin - Aqua/Water - Hedychium Coronarium Root Extract
- USE LEVEL:** 3%
- FORM:** Liquid (yellow)
- SOLUBILITY:** Water soluble
- PRESERVATIVE:** None
- CLAIMS:** Exposome protection / Protection of epidermal cells against pollution / Luminous complexion

APPROVALS:



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Conclusion

To fight against external aggressions, the skin has two lines of defense:

- the **innate immune response** which is fast but non specific to an antigen. This kind of response is the main target to address for cosmetic purposes.
- the **adaptive immune response**.

In both case, at skin level, Langerhans cells are indispensable as skin sentinel, orienting the answer toward an innate or adaptive process.





Thank you!

To know more about our solutions, contact us.

SEPPIC

 **Air Liquide**
HEALTHCARE

Contacts

Nota

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