

# Skin Immunity

A total cooperation for skin homeostasis

**SEPPIC**

Ingredients that inspire

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# 1. Skin Immunity

# The cutaneous immune system: what is it ?

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## 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 ?

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## 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 ?

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## THE ADAPTIVE IMMUNE RESPONSE

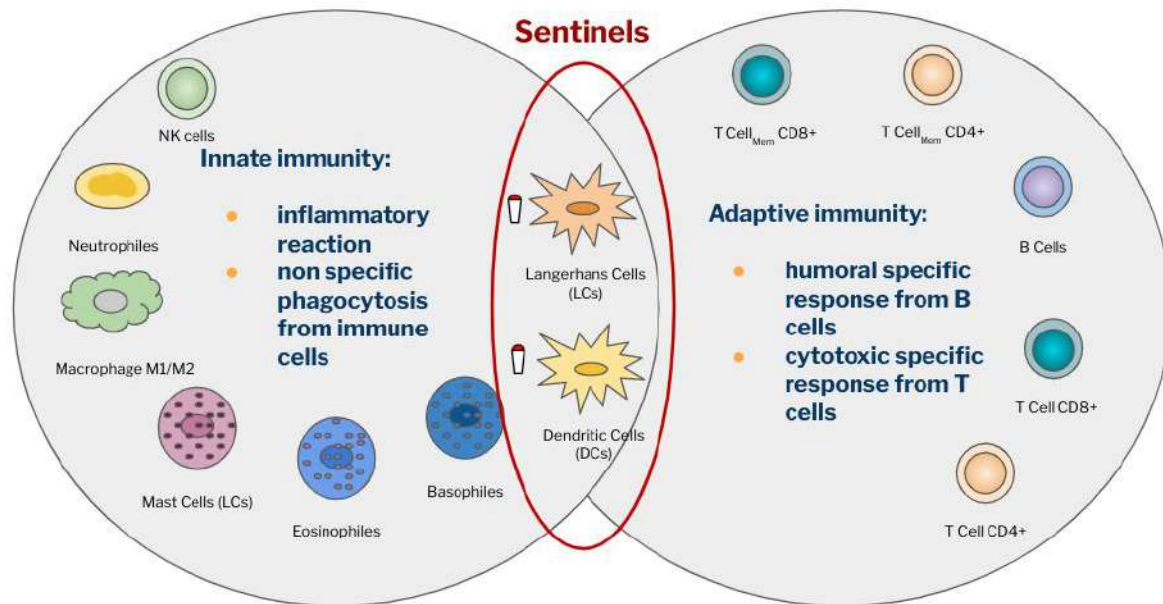
The adaptive immune response is the **second line of defense** against infectious agents. It is **specific** to a pathogen with **long lasting effect**.

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 activation
- 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 %**

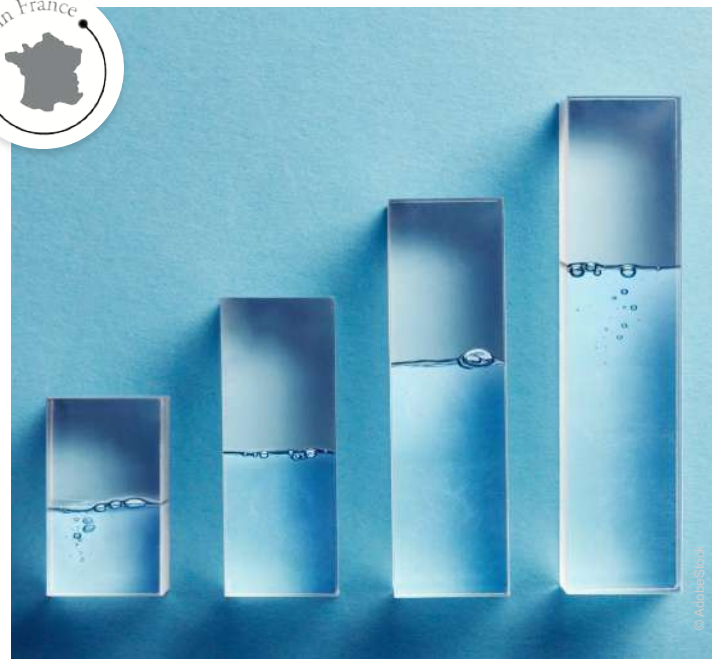
FORM: **Liquid**

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



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# MONTANOV™ 202

## Characteristics

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

### APPROVALS:



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How to preserve skin immunity with cosmetics ?

# Antimicrobial peptide enhancement

**Antimicrobial peptides (AMPs)** such as defensines (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.
- Defensines 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

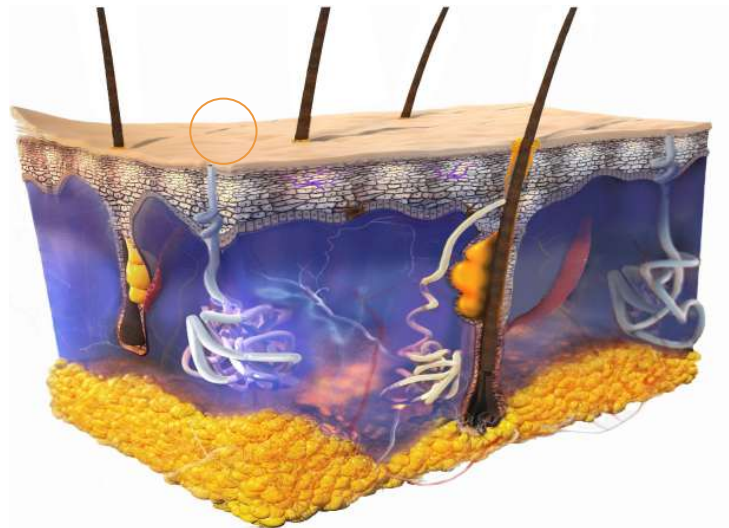
⇒ occupy accessible area **to avoid pathogens colonization**

## 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:	<b>Nothing to prove dermopurifier for all skin /</b> <b>Allow to reduce preservative level</b> (antimicrobial activity) / <b>Ideal for sensitive skin /</b>
FORMULATION:	Easy to formulate - Colourless in formulation

APPROVALS:			<b>MB</b>			
	CHINA Compliant*	QD Additive*	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%**

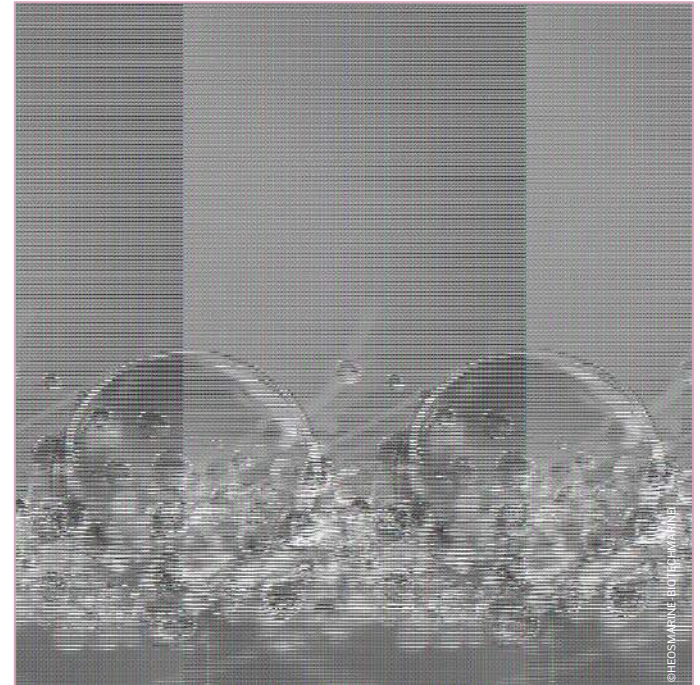
FORM: **Powder**

SOLUBILITY: **Water soluble at pH 7**

PRESERVATIVE: **None**

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

APPROVALS:



\*CHINA Compliant: all INCI names are listed on the IECIC list dated April 2021. / VEGAN Suitable: Vegan suitability assessed according to Seppic Vegan criteria. / Naturality Profile: naturality profile according to ISO 16128 norm, is available upon request (NOC=Natural Origin Content).

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:

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

⇒ 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:



*World's 1<sup>st</sup> technology  
of macroalgae  
culture*  
**CELEBRITY™**



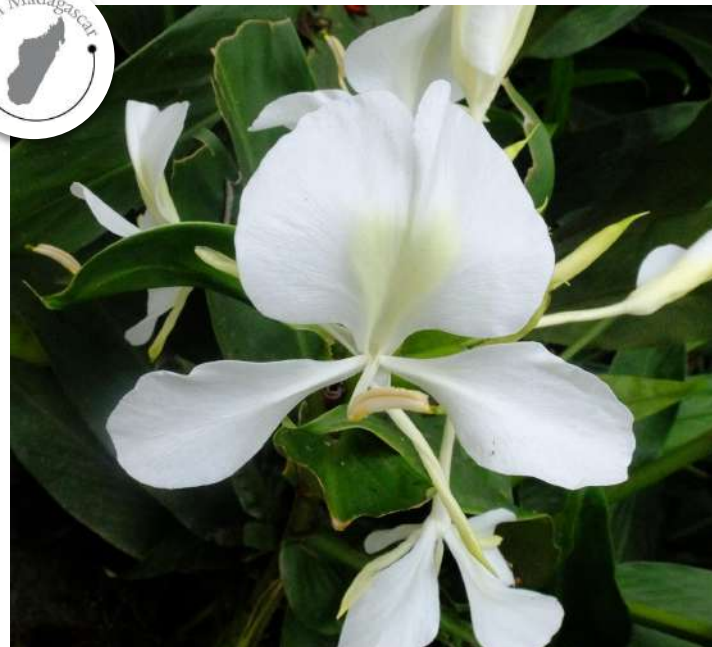
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# SAKADIKIUM™

## Characteristics

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

**APPROVALS:**



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# Conclusion

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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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