ALGISIUM

Overview

Update May 2021

ALGISIUM is an unique cosmetic solution to reload skin with Silicium which is one of the three cosmetic star ingredients (HA, collagen, Silicium).
ALGISIUM ensures an optimal adaptation of the skin and preserves its viscoelasticity by awakening its natural intelligence (N.I.)

POSITIONINGS


FLASH MOISTURIZER


WELL AGING


ANTI-GRAVITY

FORMULATION

TECHNOLOGY INFORMATION

ADDITIONAL POSITIONINGS (Source Mintel)

Moisturizing
Firming
Slimming

Stretch mark prevention
Optimized healing

Eye contour

All data

ALGISIUM

FLASH MOISTURIZING

Architect

CLAIMS

BIOLOGY

DATAS

Even **healthy and young skins can be impacted** when exposed to different types of exposome. Although their metabolism and structure are optimal, the skin **can shrivel, appearing dry and thin**.

ALGISIUM **rearranges the aggregated fibers like an architect, for an instant well being feeling** and prevents withering The skin is **instantaneously plumped and hydrated** (**sponge effect**), thanks to unique architectural benefits in the epidermis and the dermis.

ALGISIUM delivers to the skin a **biomimetic species of silicium found in our body**, and developped according to a patented process.

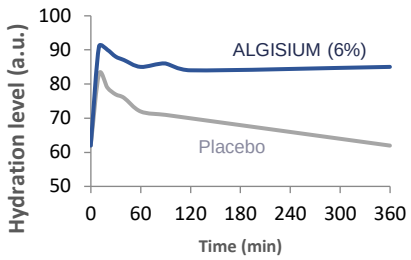
MECHANISM OF ACTION

Skin ARCHITECT

Restructuring: avoid collagen aggregation
- optimization of the 3D structure of proteins

COSMETIC BENEFITS

Flash moisturizing



Skin is hydrated in 20 min and for more than 6h.

ALGISIUM

CLAIMS

Architect

LEARN MORE ABOUT:

Silicium and hydration spheres

Silicium, the shield of cell membranes

Mechanism of protection of silicium against glycation

Spontaneous junction between silicium and collagen

SLEEPY SKINS ARE AFFECTED BY :

- Disorganization
- Whitered appearance
- Lack of hydration and sagging due to aggregation of its structural macromolecules

Skin architect - flash effect (freshed and plumped) « Rises the skin awareness »

Reloading the skin with EXSYMOL's silicium that acts as an architect for skin: brings a rapid relief of uncomfort and gives a fresh look.

Awaken your skin

-58%
Collagen aggregation

Sponge effect

From 20min to more than 6h

Instant and remanent moisturizing

+58,8%
Filopodia length

Extented resistance against toxic forms generated by the exposome

ALGISIUM

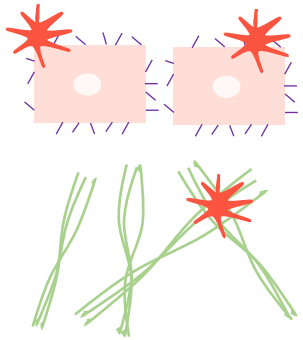
BIOLOGY

Architect

LEGEND

- Keratinocyte
- Filopodia
- Triple collagen helix
- Toxic forms
- Hydration sphere
- Shield effect
- EXSYMOL's silicium

SLEEPY SKIN



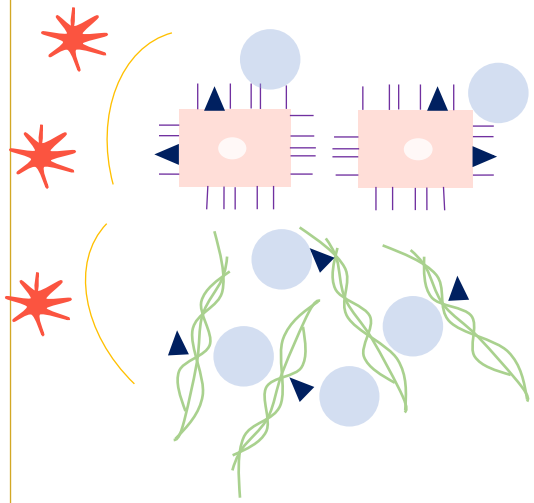
Toxic forms aggregate proteins and

Structural disorganization = **dehydration** and cells and structural molecules **sensitivity** to toxic forms

Atrophied keratinocytes filopodia
→ **Cells are more vulnerable**

Aggregated structural proteins (collagen) and glycanes
→ **Loss of visco-elasticity**

SKIN AWAKEN BY EXSYMOL's silicium ▲



1. EXSYMOL's silicium reorganizes skin proteins

Prevents and removes fiber aggregation

Favors creation of hydration spheres (deaggregated proteins (NMF, collagen...) display sites for H_2O connection.

2. EXSYMOL's silicium acts like a shield

Prevents effects of toxic forms

ALGISIUM

NO IMPACT ISO 16128

CHINA COMPLIANT

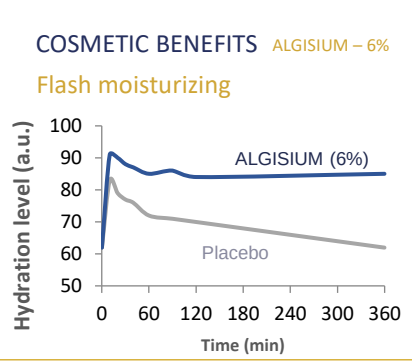
DATA

Architect

COSMETIC BENEFITS ALGISIUM – 6%

Flash moisturizing

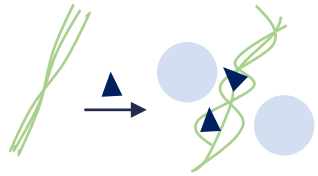
1 day



Skin is hydrated in 20 min and stays that way for 6h.

1. INSTANT HYDRATION

ALGISIUM initiates the generation of sphere of hydration



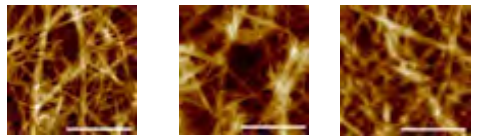
The silicium core of ALGISIUM has specific affinity with hydroxyles of proteins enabling optimal 3D organization.
This optimal 3D organization generates more sites for H2O connection (hydratation spheres).
--> sponge effect

2. ANTI-AGGREGATE

Homogenous distribution of structural molecules

INNOVATION

Young condition | Sleepy skin | + ALGISIUM



-58% aggregates

3D protein structures, like collagen, are optimized: sponge effect.

3. SHIELD EFFECT

- against free radicals

-77% cellular death
(LDH activity)

- against glycation

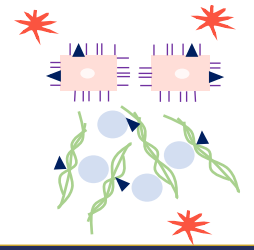
-50% reticulated proteins

- against stress: cortisol

100% protection of filopodia lenght

ALGISIUM acts as a shield once connected to ECM.

ALGISIUM



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WELL AGING

Conductor

Skin's visible signs of **premature aging** are mainly due to 2 factors:
- a **collapse** of the skin as skin's **viscoelasticity** does not fight gravity anymore
- a **lack of communication** between skin compartments

ALGISIUM acts like a **conductor for** harmonizing skin **adaptative response for a bloom effect**. The skin thus counteracts in a organized way the consequences of exposome so that your skin will not look tired and dull anymore.

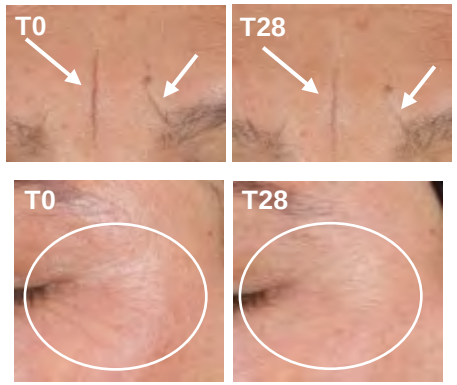
ALGISIUM delivers in the skin a biomimetic species of silcium found in our body, and developped according to a patented process.

MECHANISM OF ACTION

Skin CONDUCTOR

- Keratinocyte activity normalization (**KI67, HA**)
- Optimization of interactions between the different players in the dermis (**anisotropy, AFM**)
- Reestablishment of the functions of the JDE (**collagen IV, perlecan**)

COSMETIC BENEFITS 6%



Up to **-38,1%** Wrinkles depth

+52,7% Firmness

Up to **+31,3%** Softness

CLAIMS

BIOLOGY

DATAS

ALGISIUM

CLAIMS

Conductor

LEARN MORE ABOUT:

Anisotropy

Importance of the papillary dermis

Optimization of collagen assembly

The structural and functional link between Silicium, collagen and HA

MATURE AND EXPOSED SKINS ARE AFFECTED BY :

- Wrinkles
- Dull skin
- A loss of skin firmness
- Dryness
- Roughness

+24,1%

Hydration

+25,9%

+22,2%

Luminosity – Radiance

+52,4%

Firmness

-15,1%

Wrinkles

Up to 42,6%

Softens the skin

ALGISIUM

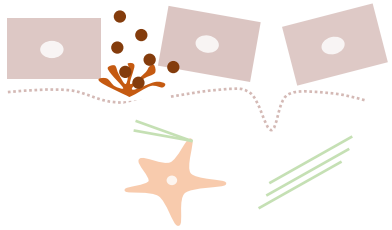
BIOLOGY

Conductor

LEGEND

- Keratinocyte
- Fibroblast
- DEJ
- Perlecan
- Collagen I fibers
- Melanocyte
- Melanin
- HA
- ALGISIUM

AGING SKIN

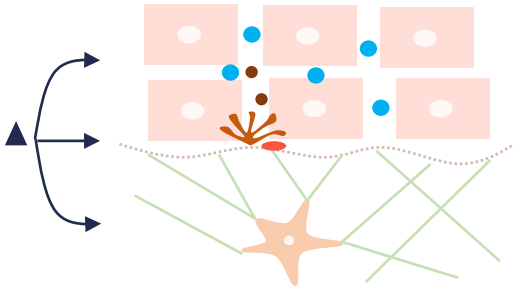


Dehydrated epidermis

Melanocyte overactivity
Porous DEJ

Collagen fibers aggregated and orientated in the same direction

BLOOMING SKIN (REJUVENATED SKIN) ▲



↗ keratinocyte proliferation
↗ HA production

↘ melanin production
↗ perlecan production
Reconstructed DEJ

↗ collagen production and fibers more organized and attached

ALGISIUM

DATA

Conductor

COSMETIC BENEFITS ALGISIUM – 5%

28 days

-15,1% Wrinkles volume

-12,8% Wrinkles depth

+24,1% Moisturizing

+25,9% Luminosity

+52,4% Firmness

+22,2% Radiance

1. KERATINOCYTES ACTIVITY NORMALIZATION

Keratinocyte proliferation

+20% KI67

Normalization of natural HA synthesis

+22% HA

Skin regains the thickness of its youth and its barrier function for good moisturizing.

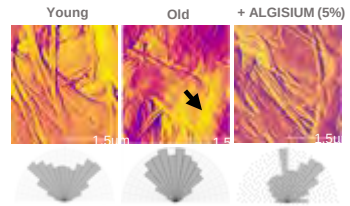
2. OPTIMIZATION OF INTERACTIONS BETWEEN THE DIFFERENT PLAYERS IN THE DERMIS

Plumped dermis

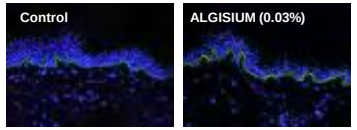
+35% collagen I

Fibroblast attachment force

Anisotropy



Strong DEJ

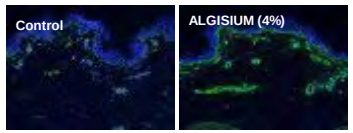


+21% collagen VII

Fibers are more synthesized, better organized and well attached.
Skin is plumped and more resistant.

3. REESTABLISHMENT OF THE FUNCTIONS OF THE DEJ

DEJ reestablishment



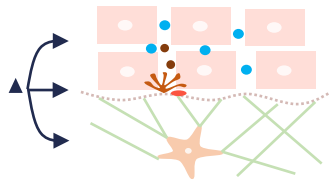
+18% collagen IV

Passage controller

+35% perlecan

Communication between skin layers is restored.
Skin is radiant and luminous.

ALGISIUM



ANTI-GRAVITY

Choreographer

CLAIMS

BIOLOGY

DATAS

Sagging skin is mainly due to a collapse of the skin as skin viscoelasticity does not fight gravity anymore. This situation is initiated by dehydration and decrease of skin firmness.

ALGISIUM, acting like a choreographer for your skin, has biological properties that composes a relevant dermal activity for anti-gravity effect.

ALGISIUM's biometic Silicium core, developped by a patented process penetrates deep into the different layers of the skin.

MECHANISM OF ACTION

Skin CHOREOGRAPHER

- Optimization of the interactions of fibers with their environment (β-integrin)
- Dermal rendensification (thymidine, HA, collagen I)

COSMETIC BENEFITS

+24,1% Moisturizing

+52,4% Firmness

ALGISIUM

CLAIMS

Choregrapher

LEARN MORE ABOUT:

Synthesis of HA by fibroblasts

Mecano-transduction

Biomechanics

SAGGING SKIN ARE ALSO AFFECTED BY:

- Lack of hydration
- Lack of firmness

SAGGING SKIN CAN MAKE YOU APPEAR OLDER THAN YOU REALLY ARE.

Anti gravity

+24,1%

Hydration

+52,4%

Firmness

+32%

Viscoelasticity

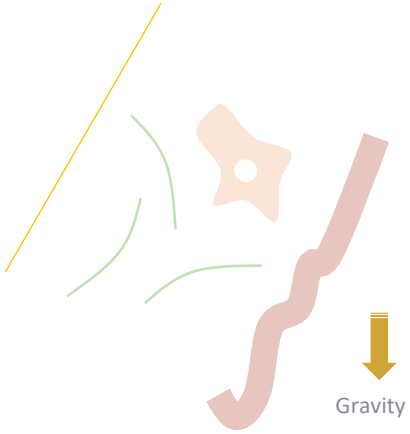
BIOLOGY

Choregrapher

LEGEND

- Fibroblast
- Fibroblast
- Collagen fibers
- Hydration spheres

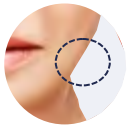
SAGGING SKIN

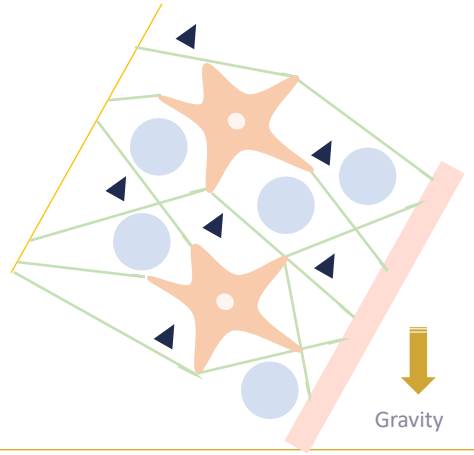


Isolated fibroblast

Macromolecules network is disorganized and aggregated

Si SUPPLEMENTED SKIN





Attached fibroblast

Macromolecules network is well organized and develops an elastic tension which allows a good opposition to stress.

The skin is thightened.

ALGISIUM

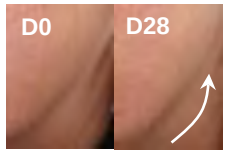
DATA

Choregrapher

COSMETIC BENEFITS : ANTI-GRAVITY

ALGISIUM – 5%

28 days



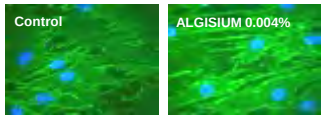
+24,1% Moisturizing

+52,4% Firmness

OPTIMIZATION OF THE INTERACTIONS OF FIBERS WITH THEIR ENVIRONMENT

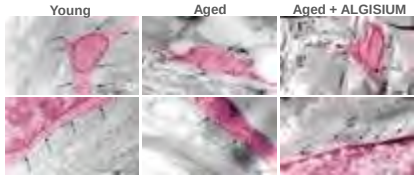
Fibroblast morphology restored

Adhesion fibroblast/collagen



↗ β-integrin

Interactions fibroblast/collagen



↗ number of fibroblasts / collagen fibers interactions

More and stronger interactions between fibroblasts and structural fibers

ALTERNATIVE TO INJECTIONS

Fibroblast proliferation restored

+96% ^{3}H thymidine intake

Fibroblast functions restored

+35% collagen I **+27%** HA

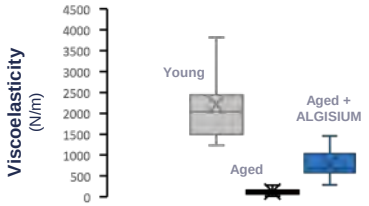
Dermis is redensified. **Skin is moisturized, plumped and firmer.**

ALTERNATIVE TO LIFTING SURGERY

Contraction

+48% fibroblast contractile ability

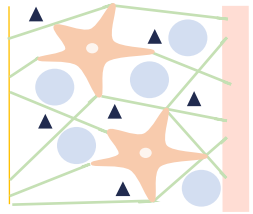
Viscoelasticity



Increase skin's viscoelasticity by **533%** and restores **32%** of age-induced loss of viscoelasticity

Skin recovers its viscoelasticity and its resilience. **Skin is no longer sagging.**

ALGISIUM



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CHINA COMPLIANT

TECHNOLOGY INFORMATION

Si found in nature

Non bioavailable — Si

EXSYMOL MONACO

Processes Si in Si bioavailable

Bioavailable — Si

+ alginic acid (compulsory to guarantee the stability of bioavailable Si)

EXSYMOL MONACO

Associates bioavailable Si with the molecule

Commercialized as — Si — Alginic acid, Alginic acid, Alginic acid

SILANOL

Able to deliver synergy with another recognized cosmetic molecule.
Stimulation of the skin's regenerative properties.

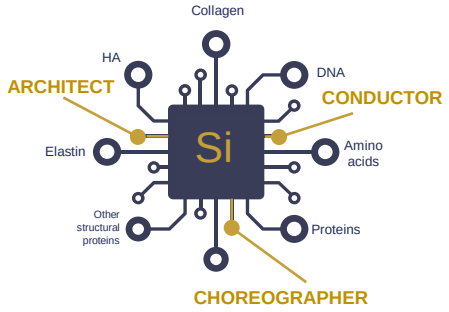
Global cosmetic benefits

No impact on

Coral *Daphnid* *Algae*

WHY SILICIUM FOR SKIN?

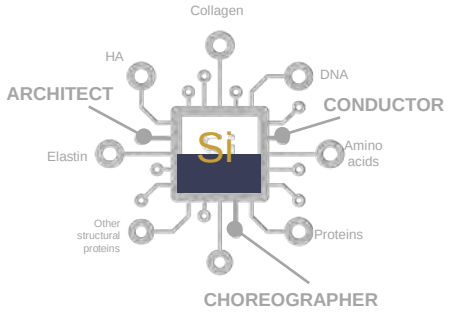
Young skin
Naturally charged with silicium



Silicium is one of the main essential components of the skin with collagen and HA. While these last 2 have passive role, silicium is the key factor of skin natural intelligence (N.I.).

More info available in our silicium technology file to explain the link with collagen and HA

Aged/exposed skin
Lack of silicium



↘ Levels of silicium in connective tissues
→ Loss of elasticity

↘ Ha levels in connective tissues
→ Loss of hydration

So, recharge your skin with Biofunctional Silicium to wake up its natural intelligence

LEARN MORE ABOUT:

ALGISIUM, MTS, what's the difference?

All data

ALGISIUM

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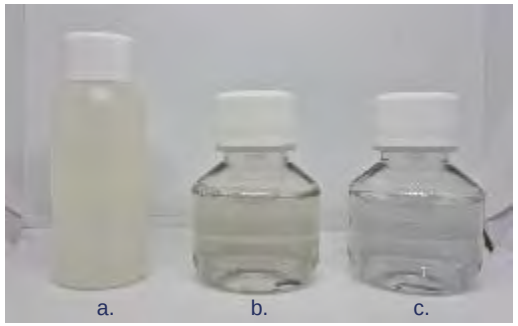
CHINA COMPLIANT

FORMULATION



a. Packaging of the sample sent by EXSYMOL
b. ALGISIUM pure: mass effect on the color
c. ALGISIUM diluted at 5% in water

Formula to come...

INCI: *SILANETRIOL (and) ALGINIC ACID*

Use level: 3% - 6%

pH ≈ 5.5 (4.5 – 6.5)

Density at 20°C ≈ 1.0

Miscibility: water

Incompatibility: high concentrations of calcium salts, alcohols and glycols

Appearance: clear to slightly opalescent liquid, transparent to pale yellow

Excellent tolerance

Cold and hot processable

All data

CLINICAL TEST

Techniques	Markers	ALGISIUM (5%)	
		D14	D28
Dermatologist	Hydration	+13.8% **	+24.1% ***
	Firmness	+4.0%	+3.8%
	Elasticity	+4.0%	+3.8%
	Texture	+12.0% **	+20.0% ***
	Wrinkles	+7.7%	+12.0%
	Luminosity	+14.8% *	+25.9% **
	General appearance	+14.8%	+22.2% **
Cutometer	Firmness	-	+52.4%***
Primos	Waviness (Wt)	-	-12.9%***
	Roughness (Ra)	-	-13.2%***
	Max roughness (Rm)	-	-14.2%**
	Wrinkle depth (Rz)	-	-12,8%**
	Wrinkle volume	-	-15.1%***
	Depth	-	-10,8%***
	Texture / imperfections	-	-9.4%***

ANTI-OXIDATION

ALGISIUM objectives	Markers	0,3%	3%	15%
Cell damage	LDH activity		-77%	-50%*
Membrane resistance	Membrane order « S »	+10%	+16%	

ANTI-GLYCATION

ALGISIUM objectives	Markers	15%
Glycation	Reticulated proteins	-50%*

ANTI-STRESS

ALGISIUM objectives	Markers	0.1%
Protection vs cortisol	Filopodia length	+59%

ECM ORGANIZATION

ALGISIUM objectives	Markers	0.1%	0.3%	0.6%	1.25%	2.5%	4%	5%	6.7%
Fiber aggregation	Fiber thickness					-58% ***			
Fiber orientation	Anisotropy						+++		
Interactions epidermis / collagen fibers									+++
Interactions fibroblasts / collagen fibers	ß1-integrin expression				+++				
	TEM observations						+++		
	Fibroblast tonicity						+141%** *		
	Attachment force						100% recovery ***		
Fibroblast morphology	Cell size					100% recovery			
	Cell circularity					100% recovery			
Fibroblast contractile ability	Lattice diameter	20% recovery	60% recovery	100% recovery	100% recovery				
	Contraction index	+37%	+48%	+74%	+94*				
Skin viscoelasticity	Visco-elasticity							32% recovery ***	

HYDRATION / BARRIER FUNCTION

ALGISIUM objectives	Markers	5%	6%
Keratinocyte proliferation	Ki-67	+20%	
Moisturizing effect	Hydration level		+18% afTer 60min +20% after 120min +37% after 360min

DEJ PROTECTION

ALGISIUM objectives	Markers	4%	10%
Stimulation of the expression of all DEJ constituents	Collagen IV expression	+18%	
	Collagen VII expression		+21%
	Laminin-5 expression	+30%	
	Perlecan expresion	+35%	

Statistics *p<0,05 **p<0,01 ***p<0,001

CYTOSTIMULATION

ALGISIUM objectives	Markers	0.01%	0,1%	5%
Keratinocyte proliferation	Ki-67			+20%
Fibroblast proliferation	^{3}H thymidine intake	+15%	+96%	

CELL COMMUNICATION

ALGISIUM objectives	Markers	1%	1.5%
Inrteractions keratinocyte / fibroblast	Fibroblast proliferation	+44%	+120%

HA PRODUCTION

ALGISIUM objectives	Markers	0.5%	1%	2.5%	5%
Production of HA by keratinocytes	HA production	+22%	+76% *	+39% *	+39%
Production of HA by fibroblasts	HA production				+27%*

COLLAGEN PRODUCTION

ALGISIUM objectives	Markers	4%	10%
Stimulation of collagen production by fibroblasts	Collagen I fibers	+35%***	
	Collagen IV expression	+18%	
	Collagen VII expression		+21%

PHOTOPROTECTION

ALGISIUM objectives	Markers	1%	2.5%	3.5%
Protection against UV	IL-1	-19%	-41%	-60%

MELANIN CONTROL

ALGISIUM objectives	Markers	4%
Regulation of KGF trafficking	Perlecan expression	+35%

ALGISIUM

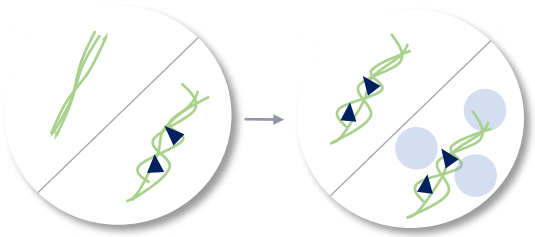
ALL DATA

Home

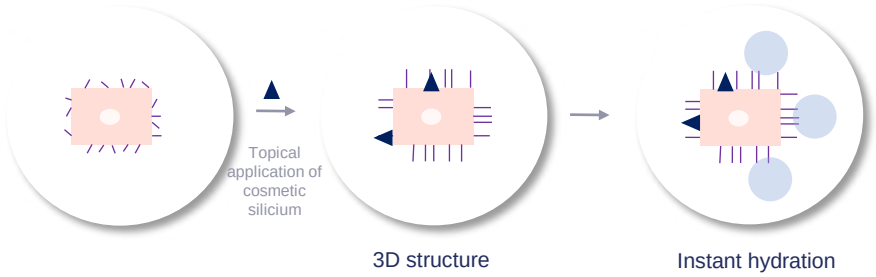
Silicium and hydration spheres

The hydroxyl function of bio-funXional silicium are able to modify the structural organization of proteins. By preventing their agglomeration, it favors the connection with water molecules, essential for their 3D structure with a secondary benefits of creating internal skin layers hydration

It has been very well studied in the dermis (Eglin et al., 2006) where the positive hydration properties of silicium also favors the organization and self-assembly of the collagen structure.

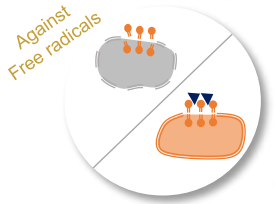


These hydrating properties can be transposed to the epidermis, where it is known that the hydration is based on the hygroscopic properties of Natural Moisturazing Factors (NMF) composed of glycoproteins.



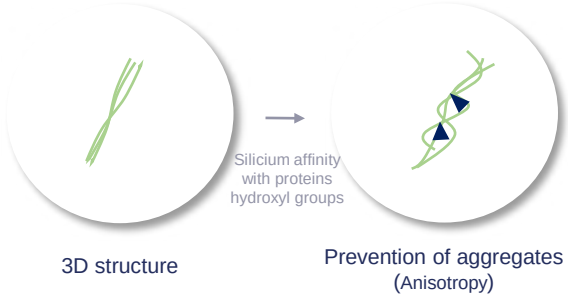
Silicium, shield of cell membranes

Silicium inhibits stress induced lipid peroxydation (Coskun et al., 2016). It was demonstrated that this property helps to maintain the integrity of cells membrane and protects from cell death.



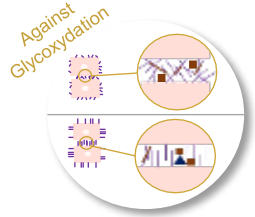
Spontaneous junction between silicium and collagen

BiofunXional Silicium has a specific affinity with hydroxyl groups that favors the 3D organization and self assembly of collagen (Eglin, 2005).



Mechanism of protection of silicium against glycation

BiofunXional silicium affinity with hydroxyl functions of amino acid of collagen and glycoaminoglycanes fight against the crosslinking effects of glycation (Eglin, 2005; Schwarz, 1973).



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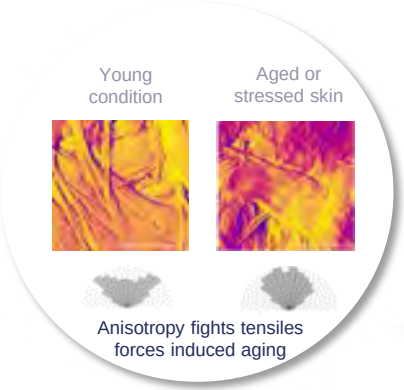
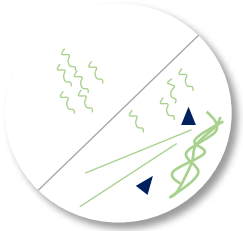
Anisotropy

Anisotropy (opposite of isotropy) is the property of being direction dependent (Wikipedia).
In dermo-cosmetics, it is interesting to measure this parameter in the dermis, which changes with age.
Young skin has a high degree of anisotropy (collagen fibers are in all directions) while aged skin has a loss of anisotropy (fibers alignment).
Young skin is a natural anisotropic barrier, more resistant to multidirectional tensile forces than aged skin.



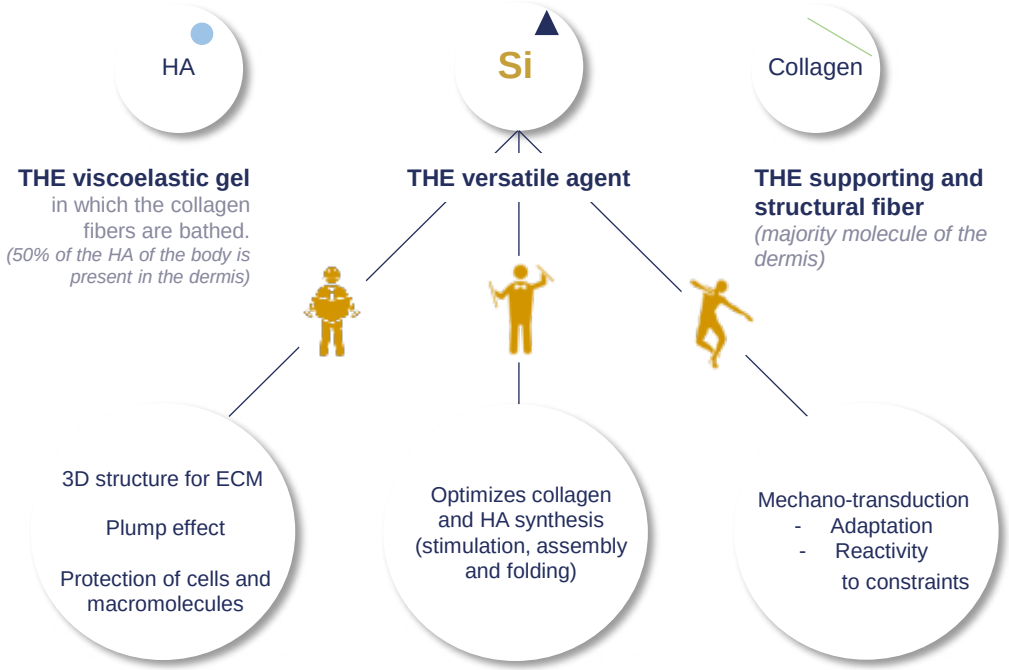
Optimization of collagen assembly

BiofunXional Silicium has a specific afficity with hydroxyl groups that favors the 3D organization and self assembly of collagen (Eglin, 2006).



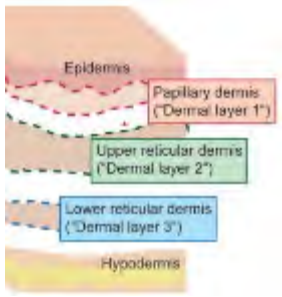
Anti-fibrosis
Optimized collagen production

The structural and functional link between silicium, collagen and HA



Importance of the papillary dermis

The papillary dermis is located below the dermo-epidermal junction and characterized by low density opposed to deeper reticular dermis (80%).
While the reticular dermis ensures nutrition of the epidermis and structure of the skin, the papillary dermis is essential for the quality of the dermo-epidermic interactions (cohesion and communication).



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Synthesis of HA by fibroblasts

Hyaluronic acid is a glycosaminoglycan (or GAG) that is strongly represented in the skin, since approximately 50% of the body's hyaluronic acid is found in the dermis. Keratinocytes displays on their membranes specific structures that are specific receptors for HA but also synthetizes HA: hyalurosme.
The strong ability of this polysaccharide for retaining water, held it to be responsible for the hydration of the viable layers of the epidermis and superficial layers of the dermis.
In addition, HA has another essential role that explains why most of HA is synthetized by fibroblasts. HA is a viscoelastic gel that support for collagen fibers, it fills the spaces in the extracellular matrix (ECM) and thus has a pulping effect (Nuggens, 2010).

Mecano-transduction

Mechanotransduction is the ability of a cell to perceive mechanical changes in its environment, receive these signals as mechanical forces, and convert them into a biochemical message leading to a cellular response.

Biomechanics

The essential functions of human skin depend on the mechanical properties of the dermis and the extracellular matrix, which provide it with elasticity and resistance to mechanical stress.
The study of biomechanics aims to study the mechanical properties of the skin and uses various techniques such as AFM, Atomic Force Microscopy
It is possible, for example, to demonstrate an increase in the tension of the collagen network caused by a significant tensile force of the cell, to restore the altered traction capacity in aged fibroblasts, or to study the viscoelasticity on explants. .

ALGISIUM, MTS, what's the difference?

MTS is methylsilantriol, it is the core of our BiofunXional silicium technology.

ALGISIUM is the commercial form of this BiofunXional silicium and is stabilized by alginic acid, inactive molecule, but that might surprise you with its sensorial benefits when linked with silicium.

As a result, testing MTS or ALGISIUM during in vitro evaluation is equivalent.