



- ▶ S Soothing
- ▶ M Moisturizing
- ▶ A Anti-aging
- ▶ R Restructuring
- ▶ T Touch

FUCOGEL® 1.5P
FUCOCERT®
FUCOGEL® POWDER

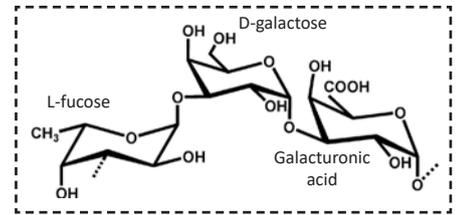


*The S.M.A.R.T.
multifunctional
reference*



DEFINITION

FUCOGEL® is an anionic polysaccharide with a high molecular weight (1.10⁶ Da) obtained by bacterial fermentation from non-GMO vegetable substrates. It contains L-fucose, D-galactose and galacturonic acid and is used in the form of a solution at 1% (w/w) in water (FUCOGEL® 1.5P, FUCOCERT®) or in the form of a powder with a non-GMO maltodextrin carrier (FUCOGEL® POWDER).



MODE OF ACTION

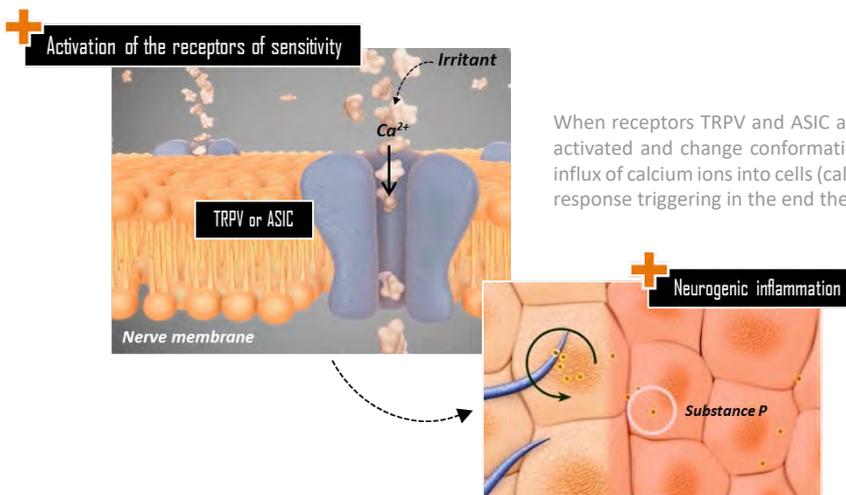
Renowned for being a **universal and multifunctional reference in cosmetic industry**, FUCOGEL® owns both **key active and sensory properties to easily and quickly access skin well-being**. Easy to formulate, melting hair and skin needs, suitable for all types of formulas and applications, comfort and softness booster, FUCOGEL® is also distinguished for its large performance: **short-term soothing, moisturizing, anti-aging, restructuring and touching agent**. FUCOGEL® owes its biological effectiveness from its affinity for fucose receptors in the skin but also from its unique ability to modulate neuronal sensitivity through the ASIC pathway.

S.M.A.R.T. PERFORMANCE

ON SKIN

Soothing

Every day, external stimuli, such as climate, pollution or chemicals cause irritation in skin and even more excessive reactions in fragile and sensitive skin. The sensations of pain and tingling involved are the witnesses of a cutaneous neurogenic inflammation. This reaction follows the release of Substance P (a neuromediator) mediated by the activation of different sensitivity receptors such as TRPV (Transient Receptor Potential Vanilloid) or ASIC (Acid-Sensing Ion Channel).



When receptors TRPV and ASIC are subjected to an irritant, lactic acid for example, they become activated and change conformation, resulting in opening of the cation channel and the massive influx of calcium ions into cells (calcium flash). This calcium influx marks the beginning of the cellular response triggering in the end the release of inflammation mediators such as the substance P.

▪ INHIBITION OF NEUROGENIC INFLAMMATION THROUGH ASIC SIGNALING PATHWAY

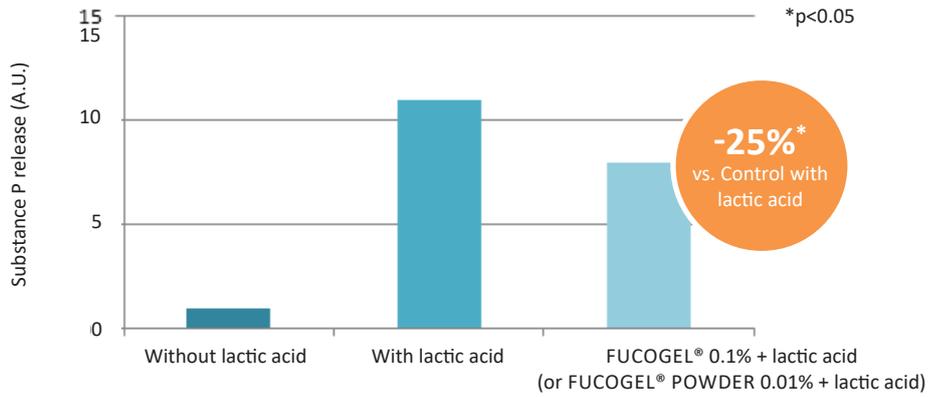
To describe the mode of action of FUCOGEL® a unique keratinocyte / neuron cell model was developed with Pr. Misery (University of Brest, France), a world reference in neurodermatology⁽¹⁾.

⁽¹⁾ A new tool to test active ingredient using lactic acid in vitro, a help to understand cellular mechanism involved in stinging test: an example using a bacterial polysaccharide (FUCOGEL®), Sakka M, Leschiera R, Le Gall-Ianotto C, Gouin O, L'herondelle K, Buscaglia P, Mignen O, Philbé JL, Saguet T, Carré JL, Misery L, Lebonvallet N - Experimental Dermatology, 2018.



In vitro study on keratinocytes/neurons co-culture treated in the medium with FUCOGEL® at 0.1% (or 0.01% FUCOGEL® POWDER) in water and lactic acid at 0.1%. Quantification of the Substance P released by ELISA kit.

**EXCLUSIVE STUDY
NEVER SEEN BEFORE!**



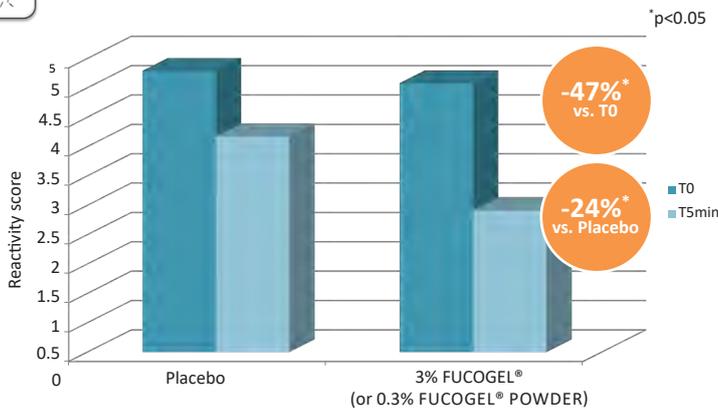
FUCOGEL® significantly inhibits the activation of the ASIC pathway, shown by a 25% decrease of the lactic acid-induced release of Substance P.

By limiting neuronal hyper-reactivity, FUCOGEL® relieves from neurogenic inflammation and stinging sensations.

IMMEDIATE NEURO-SOOTHING ACTIVITY



In vivo study on volunteers with sensitive and reactive skin. One application of FUCOGEL® at 3% (or 0.3% FUCOGEL® POWDER) vs. Placebo on the nasolabial fold after lactic acid aggression. Soothing effect evaluation after 5 minutes (stinging test).



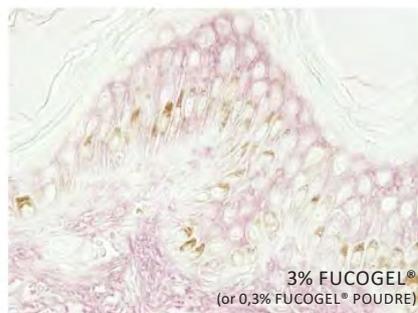
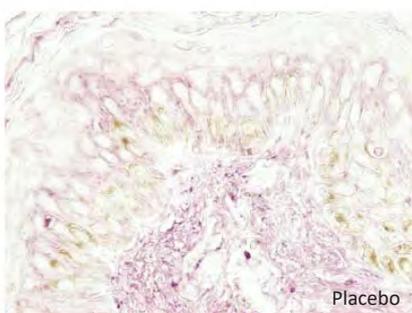
Only 5 minutes after application, FUCOGEL® has a soothing effect on irritated and hypersensitive skin by decreasing the tingling sensation.

FUCOGEL® proves to be a soothing reference in neurocosmetics for sensitive and reactive skin. It restores immediately well-being and comfort.

Moisturizing



Ex vivo study on explants, treated topically with FUCOGEL® at 3% (or 0.3% FUCOGEL® POWDER) vs. Placebo. Quantization of epidermal and dermal hyaluronic acid expression by immunolabelling. Pictures analysis after 8 days of culture.



+56%**
of epidermal
hyaluronic acid
expression
vs. Placebo

+20%*
of dermal
hyaluronic acid
expression
vs. Placebo

■ hyaluronic acid

*p<0,05 ; **p<0,01

FUCOGEL® significantly increases the synthesis of epidermal and dermal hyaluronic acid which declines with age. This key molecule is involved in skin hydration and has a unique capacity in retaining water.



In vivo study on volunteers. Application on the forearm of FUCOGEL® vs. hyaluronic acid (1% polysaccharide in water). Measurement of the hydration by N.M.R. before and after application (1h, 3h, 8h).

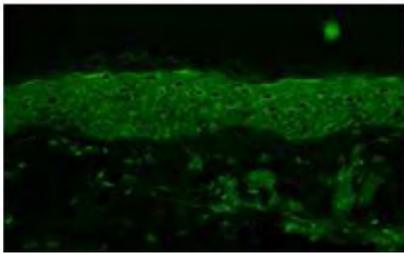
FUCOGEL® shows a progressive and prolonged moisturizing effect. Its effect complements that of hyaluronic acid.

Keratinocytes possess on their surface some receptors involved in cellular communication and the activation of many physiological reactions. These receptors, called lectins, have a particular affinity for glycans such as fucose.

▪ DETECTION OF FUCOSE RECEPTORS IN THE EPIDERMIS



Ex vivo study on explants incubated in a Hoescht / fluorescent Neoglycoproteins (Fuco-proteins) medium during 90 min. Observation of the attached fucose Neoglycoproteins by epifluorescence microscopy.



Fluorescence visualization of protein binding: demonstration of strong presence of fucose receptors in the epidermis

Thus, the cosmetic contribution of fucose-rich polysaccharide like FUCOGEL® makes it possible to modulate various reactions and synthesis within the skin as the one of sirtuin-1, loricrin and involucrin for anti-aging and restructuring effect.

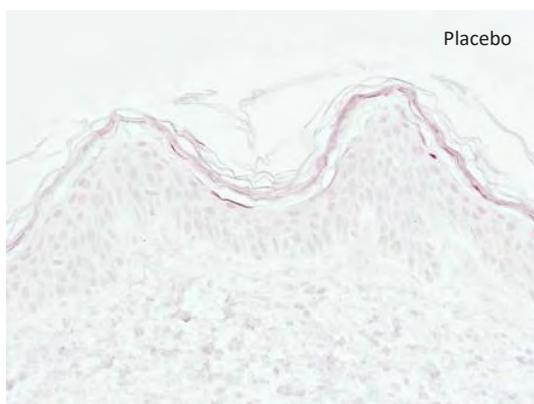
Anti-aging

▪ STIMULATION OF SIRTUINS-1, "YOUTH PROTEINS"

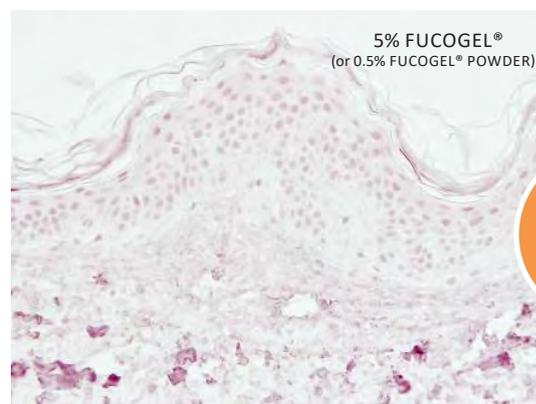
Sirtuins-1 are key markers of cell longevity, also called "youth proteins", because of their essential role in the control of physiological processes including DNA repair, resistance to oxidative stress and cell death. Nevertheless, age and external aggressions significantly affect their synthesis, accelerating premature aging.



Ex vivo study on explants treated **topically** with FUCOGEL® at 5% (or 0.5% FUCOGEL® POWDER) vs. Placebo. Quantization of sirtuins-1 by immunolabeling at D8.



Placebo



5% FUCOGEL®
(or 0.5% FUCOGEL® POWDER)

+475%*
vs. Placebo

*p<0.05

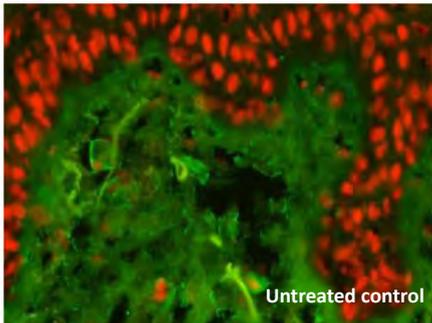
■ Sirtuins-1

Thanks to its sirtuin-1 stimulating action, FUCOGEL® helps to fight against aging, promotes cell longevity and consequently the stimulation of physiological processes controlled by sirtuins.

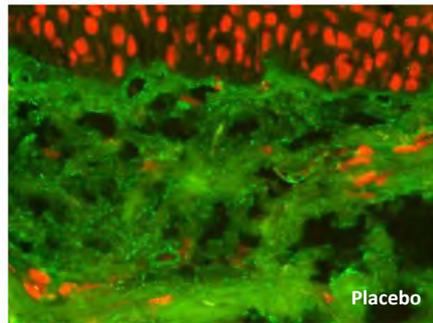
STIMULATION OF COLLAGEN-1



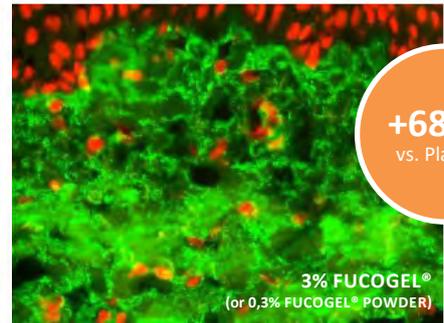
Ex vivo study on explants treated topically with FUCOGEL® at 3% (or 0.3% FUCOGEL® POWDER) vs. Placebo. Quantization of collagen-1 by immunolabeling at D8.



Untreated control



Placebo



3% FUCOGEL®
(or 0,3% FUCOGEL® POWDER)

+68%**
vs. Placebo

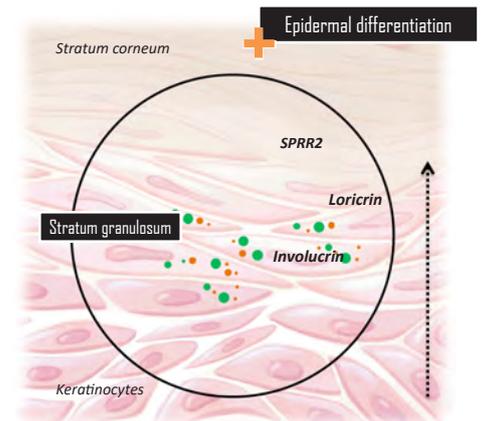
**p<0,01

- Cellular nuclei
- Collagen-1

FUCOGEL® helps to increase the expression of collagen-1 which is the principal component of collagen fibers in the dermis. Age leads to a degradation of collagen by specific enzymes. Thanks to its action at the heart of the dermis, FUCOGEL® helps to fight against aging and reinforces the architecture of the skin.

Restructuring

Sirtuins-1 play a key role in the promotion of epidermal differentiation. Thus, stimulating the synthesis of sirtuins-1 also helps to regenerate the barrier function. Involucrin and loricrin are proteins in the upper layers of epidermis, markers of epidermal differentiation. As for SPRR2, it is a later marker that participates in the cornification of keratinocytes.

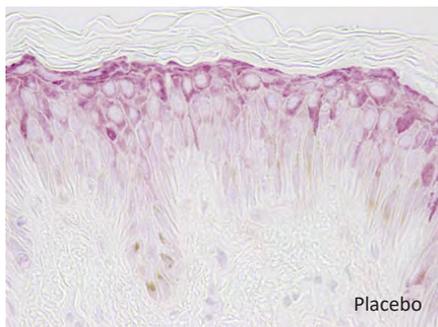


STIMULATION OF EPIDERMAL RENEWAL

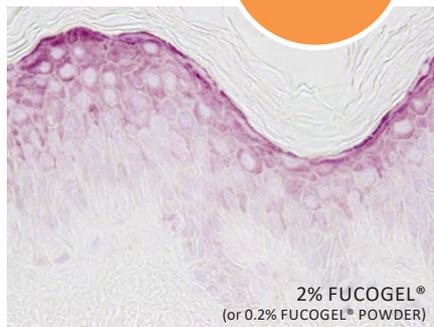


Ex vivo study on explants treated topically with FUCOGEL® at 2% and 5% (or 0.2 and 0.5% FUCOGEL® POWDER) vs. Placebo. Quantization of the loricrin and involucrin by immunolabeling at D8.

> INVOLUCRIN

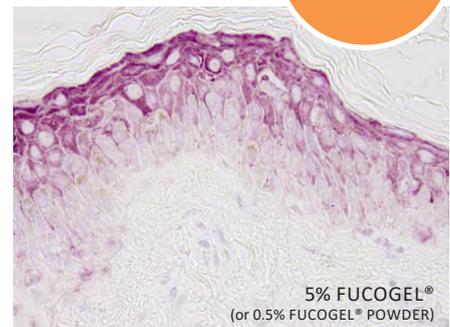


Placebo



2% FUCOGEL®
(or 0.2% FUCOGEL® POWDER)

+51%**
vs. Placebo



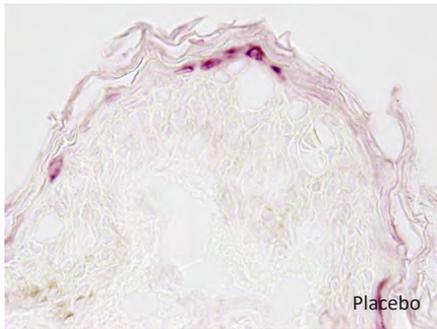
5% FUCOGEL®
(or 0.5% FUCOGEL® POWDER)

+88%***
vs. Placebo

- Involucrin

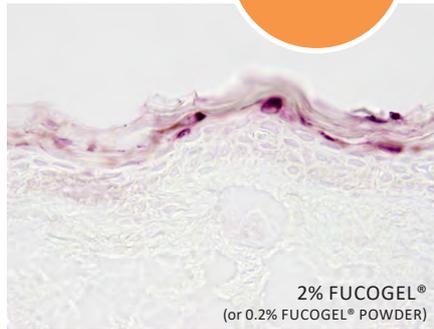
p<0.05 ; *p<0.01

> LORICRIN

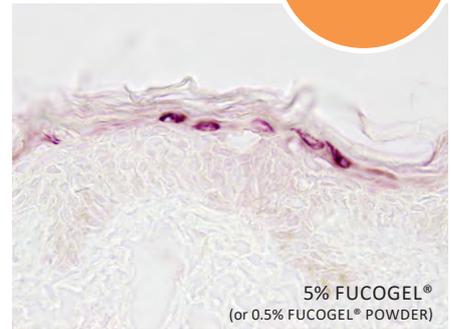


Placebo

■ Loricrin



2% FUCOGEL®
(or 0.2% FUCOGEL® POWDER)



5% FUCOGEL®
(or 0.5% FUCOGEL® POWDER)

+76%**
vs. Placebo

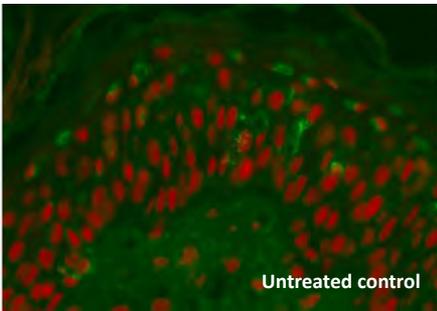
+51%*
vs. Placebo

*p<0.1 ; **p<0.05

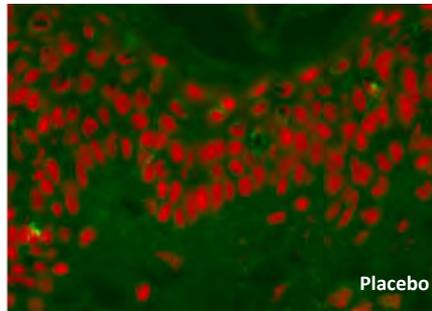
> SPRR2



Ex vivo study on explants treated topically with FUCOGEL® at 3% (or 0.3 FUCOGEL® POWDER) vs. Placebo. Quantization of SPRR2 by immunolabeling at D8.



Untreated control



Placebo



3% FUCOGEL®
(or 0,3% FUCOGEL® POWDER)

+68%*
vs. Placebo

*p<0,05

■ Cellular nuclei
■ SPRR2

FUCOGEL® activates cell renewal, a capacity demonstrated through the stimulation of loricrin, involucrin and SPRR2 expression. The cell renewal is a function which slows down with age but which nonetheless remains essential for a "young appearance" of the skin.

In sensitive skin, restoring the quality of the skin barrier allows to limit the appearance of sensations of tightness, irritation and discomfort. As a result, FUCOGEL® confirms its benefits for sensitive and fragile skins.

Touch - Improvement of softness



In vivo studies by 15 experts on the effect and texture of a cream containing FUCOGEL® at 3, 5, 7 and 10% (or 0.3, 0.5, 0.7 and 1% FUCOGEL® POWDER) vs. Placebo.

From 3%
or 0.3%

- Easy to spread
- "Enriches" touch of aqueous formula (e.g. : lotion)
- No sticky and shiny effect
- Increases soft touch of formula
- Offers gliding to formula

FUCOGEL® offers a universal emotional experience through softness triggering comfort, pleasure and well-being.

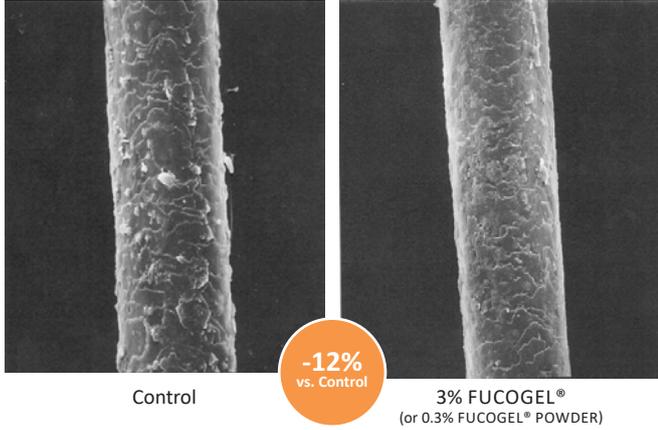
FUCOGEL® is an active ingredient perfectly suitable for producing all types of cosmetic formulations combining effectiveness and sensory properties.

▪ **COATING EFFECT FOR DAMAGED HAIR**

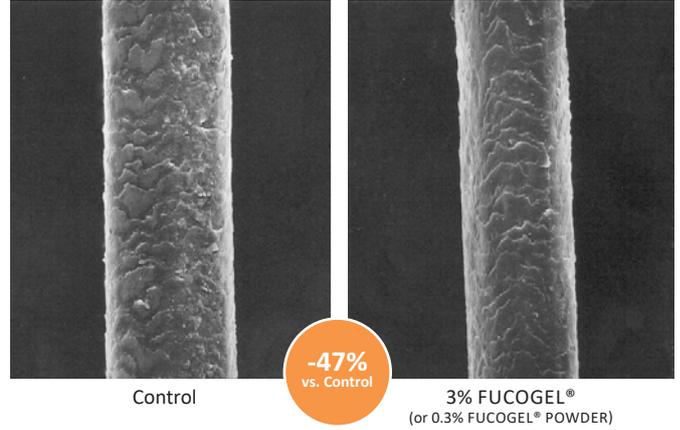


Ex vivo study on hair fibers denaturing in H₂O₂. Application of FUCOGEL® at 3% (or 0.3% FUCOGEL® POWDER) vs. Control and observation of hair fibers before and after rinsing. Visual analysis and scoring from 5 (damaged hair) to 1 (healthy hair) according to roughness, detached scales. Microscopic analysis.

Leave-on condition



Rinse-off condition



FUCOGEL® decreases the surface irregularities and smoothes hair fiber, in leave-on and rinse-off conditions.



Neuro-soothing activity of FUCOGEL® benefits for sensitive or dry scalp, irritated by dandruff condition or chemicals used in hair dye.

APPLICATIONS

Recommended dose:

- FUCOGEL® 1.5P or FUCOCERT®: 1% - 20%
- FUCOGEL® POWDER: 0.1% - 1%

FUCOGEL® is a universal reference for cosmetics:



Soothing, moisturizing, anti-aging, restructuring and touch care



Care for all ages (from baby to mature skin), all types of skin and hair



Face, body, hair, sun and make-up care



Gel, emulsion, gel-cream, lotion, foaming

FORMULATION

- **FUCOGEL® POWDER:** see specific documentation

▪ **FUCOGEL® 1.5P and FUCOCERT®**

FUCOGEL® is easy to formulate:

pH stability: 2.0 to 10.0

Soluble in water, glycerin, butylene glycol, 20% ethanol solution

Thermostability: incorporate in the aqueous phase, either hot or cold, before or after preparing the emulsion for the emulsified forms.

Formulation example:

COTTOONING CARE
réf. : 330502/1
HEAD TO TOES CREAM

	INGREDIENTS	INCI NAME	%
A	TEGO CARE PSC3	<i>Polyglyceryl-3 stearate/citrate</i>	3.00
	DC5562 CARBINOL FLUID (DOW CORNING)	<i>Bis-Hydroxyethoxypropyl Dimethicone</i>	3.00
	DC2503 (DOW CORNING)	<i>Stearyl dimethicone</i>	2.00
	DC1503 (DOW CORNING)	<i>Dimethicone / dimethiconol</i>	2.00
	DUB PTS (STÉARINERIE DUBOIS)	<i>Pentaerythrityl tetrastearate</i>	2.00
	DUB MCT (STÉARINERIE DUBOIS)	<i>Caprylic / capric triglyceride</i>	4.00
	Ω ⁶ CERAMIDE® COTTON (SOLABIA GROUP)	<i>Cotton seed oil / Palm oil aminopropanediol esters</i>	0.50
B	DEMINERALIZED WATER	<i>Aqua</i>	Qsp 100
	PRESERVATIVE	/	Qsp
	GLYCERIN	<i>Glycerin</i>	3.00
	ULTREZ 21 (NOVEON)	<i>Acrylates / C10-30 alkyl acrylate crosspolymer</i>	0.25
C	FUCOGEL® 1.5P (SOLABIA GROUP)	<i>Biosaccharide gum-1</i>	3.00
	COTTON ECOMILK® (SOLABIA GROUP)	<i>Glycerin / Aqua / Gossypium oil / Magnesium aluminium silicate / Xanthan gum</i>	2.00
D	NAOH, SOL AT 10%	<i>Sodium hydroxide</i>	Qsp pH
	PERFUME (EXPRESSIONS PARFUMÉES)	<i>Parfum</i>	0.20

ADDITIONAL INFORMATION

▪ **FUCOGEL® 1.5P:**

INCI/CTFA name: Biosaccharide gum-1

Preservative system: 1.5% phenoxyethanol

Regulatory status: authorized for use in EU, USA, Japan, China (IECIC 2015 and IECSC), Australia and Canada

▪ **FUCOCERT®:**

INCI/CTFA name: Biosaccharide gum-1

Preservative system: none (Additives: 3% Water / Glycerin / Sodium levulinate / Sodium anisate and 0.4% Glyceryl caprylate)

Regulatory status: authorized for use in EU, USA, Japan, China (contact us), Australia and Canada

Raw material approved by ECOCERT GREENLIFE according to COSMOS Standard

▪ **FUCOGEL® POWDER:**

INCI/CTFA name: Maltodextrin (and) Biosaccharide gum-1

Preservative system: none

Regulatory status: authorized for use in EU, USA, Japan, China (IECIC 2015 and IECSC), Australia and Canada

Raw material approved by ECOCERT GREENLIFE according to COSMOS Standard



**COSMOS
APPROVED**



**COSMOS
APPROVED**

Contact us

www.solabia.com

SOLABIA GROUP
FRANCE
+33 1 48 10 19 40

SOLABIA USA
UNITED STATES
+1 212 847 2397

SOLABIA BIOTECNOLOGICA
BRAZIL
+55 44 3260 8000

SOLABIA GmbH
GERMANY
+49 681 99 63 606

