



Restores skin comfort  
of menopausal skin  
thanks to glycobiology.

## FUCOLIFE GR®

[ Global  
rejuvenation ]



*Improves  
self-esteem and  
reveals femininity!*



## CONTEXT

**Mandatory passage for all women, menopause leads to its share of upheavals. Hormonal fluctuations result in changes in skin physiology and emotional state.**

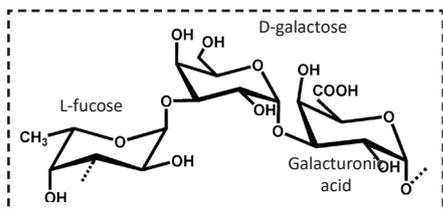
At the skin level, the **functional impairment of fibroblasts** is the most important alteration, aggravated by the onset of menopause. Gradually, they **become rarer** and **lose their ability to synthesize the essential dermal components**. At the same time, their **contractile activity required for tissue repair decreases**. These changes in the deep skin structure cause **skin sagging**, promoting the **formation of wrinkles**. **Thinner**, the skin will also be more **prone to aggression**, it will become **hypersensitive** and **dry**.

Having become **uncomfortable**, the skin is a **new source of concern** for women and adds to other disorders already present. Women feel **less beautiful** and have **less self-confidence**.

Thus, the support of women in the **management of their new skin** must be done **from the first years of menopause** to prevent **profound long-term deleterious effects**. To do this, it is essential to **act on the skin physiology** and **indirectly on its emotional consequence** in order to **restore self-esteem**.



## DEFINITION



FUCOLIFE GR® is low molecular weight polysaccharide (mean molecular weight 11 kDa) obtained through a controlled bacterial fermentation from non-GMO vegetable substrates. It comprises galacturonic acid, L-fucose and D-galactose and is available in the form of a powder (with a non-GMO maltodextrin carrier).

### POWDER FORM

#### ECO-CONCEPTION

The design of a powder form of FUCOLIFE GR® results from an eco-friendly approach allowing to reduce:

- the quantity of water used in the process and consequently to help **preserve the natural water resource of earth**
- the quantity of water transported around the world and consequently to **decrease the carbon footprint** of the raw material and the associated formula

#### NEW FORMULA INSPIRATION

- Without preservative, FUCOLIFE GR® is particularly suitable for **formula with natural label, experiencing a higher natural index, or with no or less preservative claim**.
- FUCOLIFE GR® can be suitable with make-up powder applications as well as any other powder forms (dry shampoo, baby talc, etc.) to bring its **biological and emotional properties**.



## MODE OF ACTION

**FUCOLIFE GR® rejuvenates globally the skin of menopausal women by:**

- 1.** Increasing the contraction force of fibroblasts, FUCOLIFE GR® improves the repair capability of old skin and regenerates tissues in depth.
- 2.** Modulating the synthesis of essential skin components, FUCOLIFE GR® restores the dermis and epidermis structural integrity.
- 3.** Improving cutaneous innervation and thickness, FUCOLIFE GR® reduces the feeling of skin discomfort

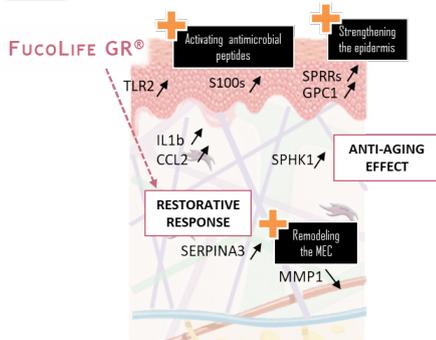
**By repairing deeply the skin, FUCOLIFE GR® improves cutaneous comfort and visibly decreases signs of aging. Women feel better about themselves, they recover youth and femininity!**

## 1. REGENERATES SKIN TISSUS

### Highlight signalization pathways



*Ex vivo study on human skin explant, n=1 (women, 45 years old), treated topically with FUCOLIFE GR® at 2% vs. Placebo after 1 day and 5 days (at 3h and 9h). Transcriptomic analysis by quantification of mRNA expression after 5 days of culture.*



> The induction of Serpin family A member 3 (SERPINA3) is linked to a restorative response following a skin lesion.

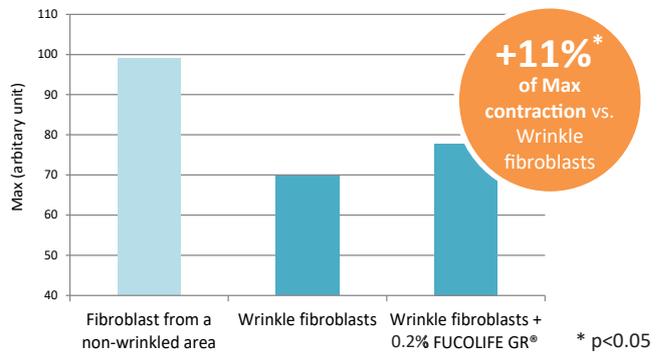
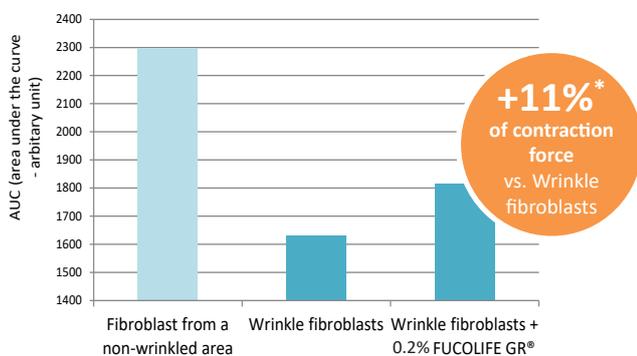
> The induction of SPHK1 lead to an anti-aging effect through calcium regulation in fibroblasts and keratinocytes by promoting the proliferation of fibroblasts, the production of collagen at the dermis level and the differentiation of keratinocytes at the epidermis level.

FUCOLIFE GR® activates signaling pathways, resulting in repair of age-damaged skin tissue. This step is followed by a restorative response resulting in a dermis and epidermis reorganization. Thus, this preliminary study confirms FUCOLIFE GR®'s ability to act quickly against the signs of aging and led us to work on menopausal skins.

### Improving skin repair capability



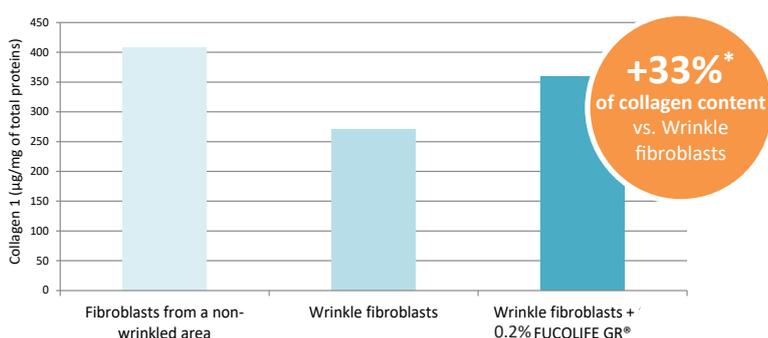
*In vitro study on human fibroblasts from wrinkles (55 years old), treated with FUCOLIFE GR® at 0.2% during 24 hours vs. fibroblasts from a non-wrinkled area. Measurement and quantification of the contractile force in GLASBOXPLUS® system.*



FUCOLIFE GR® increases the contraction force of fibroblasts. The contraction force induction seems to come from myofibroblast differentiation (characterized by the expression of Alpha SM-actin which takes place during tissue repair processes). Thus FUCOLIFE GR® increases the skin repair capability and has an anti-wrinkle effect.



*In vitro study on human fibroblasts from wrinkles (55 years old), treated with FUCOLIFE GR® at 0.2% during 24 hours vs. fibroblasts from a non-wrinkled area. Measurement and quantification of the contractile force in GLASBOXPLUS® system.*



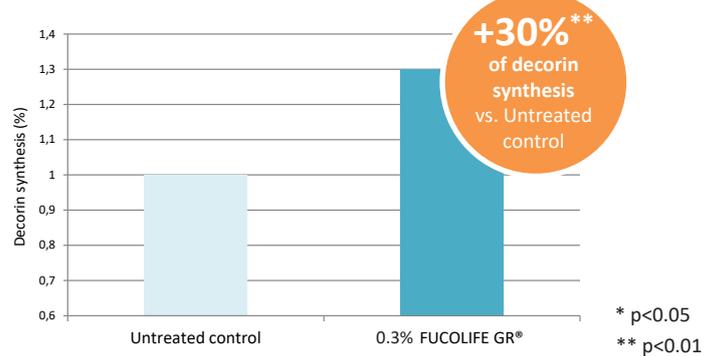
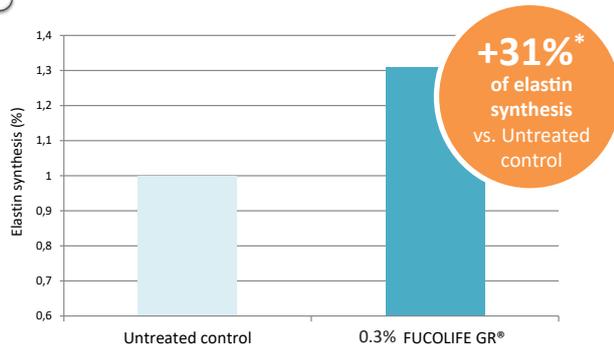
FUCOLIFE GR® helps to increase the collagen content. Thus, FUCOLIFE GR® can reduce wrinkles.

## 2. RESTORES STRUCTURAL INTEGRITY

### Remodeling the dermal matrix



*In vitro* study on fibroblasts, treated with FUCOLIFE GR® at 0.3% during 72 hours. Quantization of elastin and decorin synthesis by immunofluorescence after 1 day.

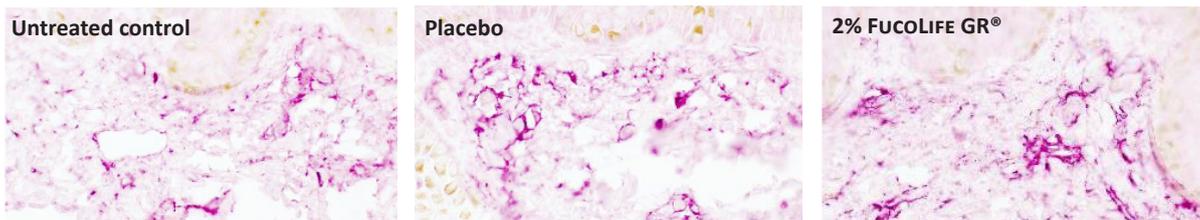


\* p<0.05  
\*\* p<0.01

FUCOLIFE GR® helps to increase the elastin and decorin content. The decorin is involved in organization of collagen network while elastin is an essential component of the dermis elastic network. Age leads to a degradation and a deconstruction of these extracellular matrix components. Thanks to its action at the heart of the dermis, FUCOLIFE GR® reinforces the skin deep architecture.



*Ex vivo* study on human skin explants (woman, 45 years old, n=3), treated topically with FUCOLIFE GR® at 2% vs. Placebo. Quantification of Versican expression in the papillary dermis by immuno-labeling and image analysis after 8 days of culture.



+20%#  
of versican  
expression  
vs. Placebo

# p<0.1

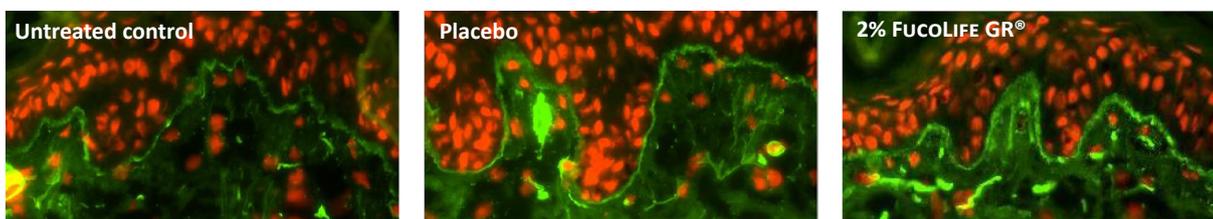
■ Versican

FUCOLIFE GR® helps to increase versican expression by 20% in the dermis. This extracellular matrix proteoglycan is known to bind to elastic fibers and hyaluronans to maintain skin hydration and elasticity. It also accelerates cellular motility and proliferation involved in skin dermal regeneration in postmenopausal women. Thus, FUCOLIFE GR® could act as a powerful player in skin rejuvenation for postmenopausal women.

### Fortifying the epidermal layer



*Ex vivo* study on human skin explants (woman, 45 years old, n=3), treated topically with FUCOLIFE GR® at 2% vs. Placebo. Quantification of Collagen-4 expression at the dermo-epidermal junction by immuno-labeling and image analysis after 8 days of culture.



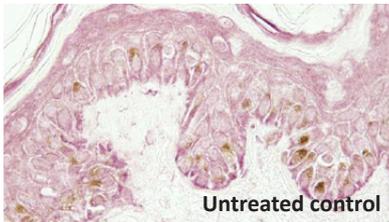
+33%#  
of collagen-4  
expression  
vs. Placebo

# p<0.1

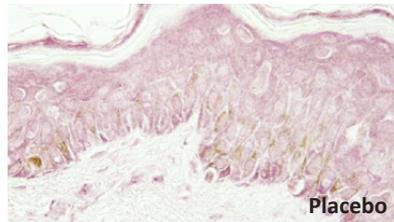
FUCOLIFE GR® helps to increase collagen-4 expression by 33% at the DEJ. Connected to the laminate network, the collagen-4 is found in the dermo-epidermal junction and confers mechanical stability to the structure.



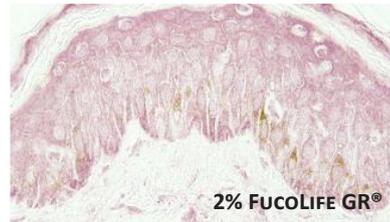
*Ex vivo* study on human skin explants (woman, 45 years old, n=3), treated topically with FUCOLIFE GR® at 2% vs. Placebo. Quantification of MMP1 expression in the epidermis by immuno-labeling and image analysis after 8 days of culture.



Untreated control



Placebo



2% FUCOLIFE GR®

MMP1

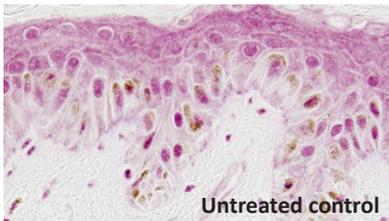
**+20%#**  
of MMP1  
expression  
vs. Placebo

# p<0.1

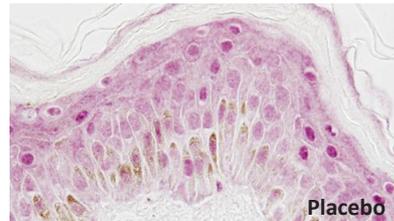
FUCOLIFE GR® helps to decrease the MMP1 expression by 20% in the epidermis. This enzyme is responsible for the Collagen-1 degradation.



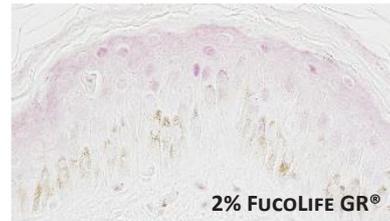
*Ex vivo study* on human skin explants (woman, 45 years old, n=3), treated topically with FUCOLIFE GR® at 2% vs. Placebo. Quantification of Hyaluronidase-2 expression in the epidermis by immuno-labeling and image analysis after 8 days of culture.



Untreated control



Placebo



2% FUCOLIFE GR®

Hyaluronidase-2

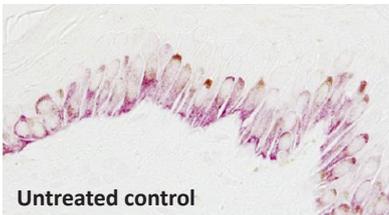
**-89%\*\***  
of hyaluronidase-2  
expression  
vs. Placebo

\*\* p<0.01

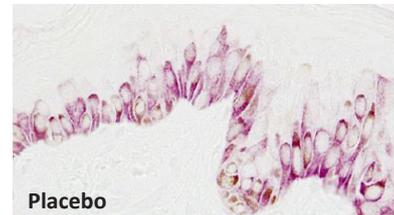
FUCOLIFE GR® helps to decrease the hyaluronidase-2 expression by 89% in the epidermis. This enzyme is responsible for the increasing degradation of hyaluronic acid with age. Thus, it has a key role in tissue regeneration and inflammation response which are phases of skin repair.



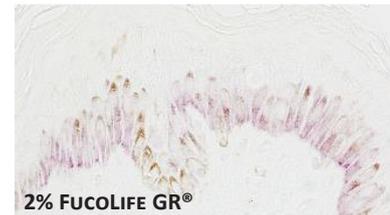
*Ex vivo study* on human skin explants (woman, 45 years old, n=3), treated topically with FUCOLIFE GR® at 2% vs. Placebo. Quantification of Elastase expression in the epidermis by immuno-labeling and image analysis after 8 days of culture.



Untreated control



Placebo



2% FUCOLIFE GR®

Elastase

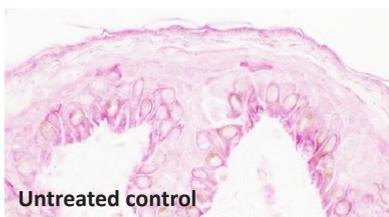
**-67%\*\***  
of elastase  
expression  
vs. Placebo

\*\* p<0.01

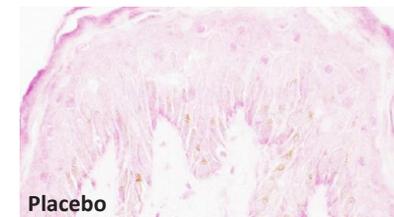
FUCOLIFE GR® helps to decrease the Elastase expression by 67%. This enzyme cleaves proteins and is implicated in collagen and elastin fibrils formation. In addition, it plays a decisive role in the control of inflammatory processes.



*Ex vivo study* on human skin explants (woman, 45 years old, n=3), treated topically with FUCOLIFE GR® at 2% vs. Placebo. Quantification of Glypican-1 expression in the epidermis by immuno-labeling and image analysis after 8 days of culture.



Untreated control



Placebo



2% FUCOLIFE GR®

Glypican-1

**+34%\***  
of glypican-1  
expression  
vs. Placebo

\* p<0.05

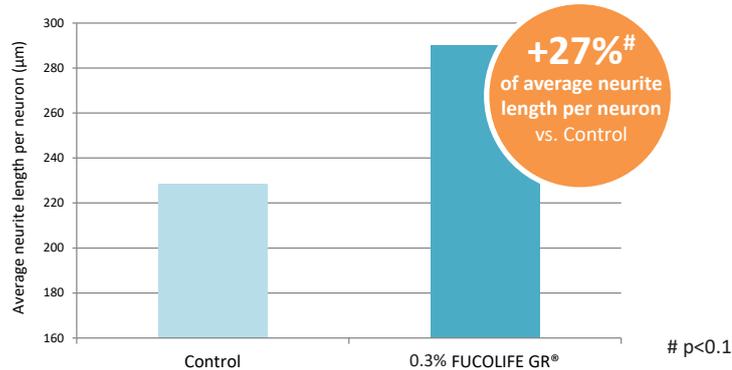
FUCOLIFE GR® helps to increase glypican-1 expression by 34% in the epidermis. This marker plays a role in the modulation of growth factor on keratinocytes. It has been established that keratinocytes in older subjects less respond less to stimulating growth factors leading to an increased epidermis fragility to external aggressors. Thus, Fucolife GR® strengthens epidermis weakened by aging.

### 3. ENHANCES SKIN COMFORT

#### Increasing skin innervation



**In vitro study** on a co-culture of hiPS sensitive neurons (human induced Pluripotent Stem cells from fibroblasts) and keratinocytes (woman, 33 years old) treated with FUCOLIFE GR® at 0.3%, during 96 hours, versus placebo. Visualization of neurons and neurites (their extensions and nuclei) by immunofluorescence and measurement of their length under microscope (normalization by the number of cells).

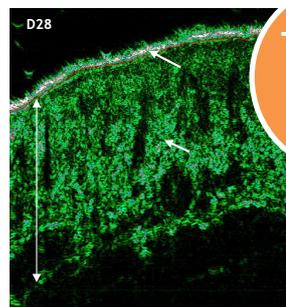
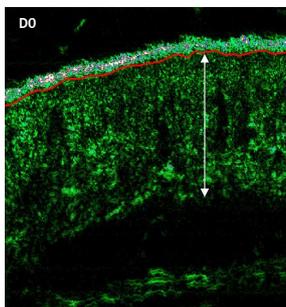


FUCOLIFE GR® increases the average neurite length of human sensory neurons by 27%. Age leads to a decrease in innervation with a modification in the ability of neurons to renew their extensions needed to capture stimuli from the environment. Thus, FUCOLIFE GR® increases the contact surface between keratinocytes and neurons that improve skin innervation and comfort.

#### Regaining skin thickness



**In vivo study** on two group of 20 recently menopausal Caucasian and Asian women (56 years on average) having sensitive and dry skin. Twice daily application on the whole face of a cream containing FUCOLIFE GR® at 2%, for 28 days, versus placebo. Measurement of epidermis thickness by ultrasound and realization of before/after photos.



**+7.7%\*\*** of epidermal thickness vs. D0

**+24%\*\*\*** of dermal density vs. D0

**+7.5%\*** of dermal thickness vs. D0

\* p<0.05  
\*\* p<0.01  
\*\*\* p<0.001

**74%**

“My skin looks deep regenerated” after 56 days

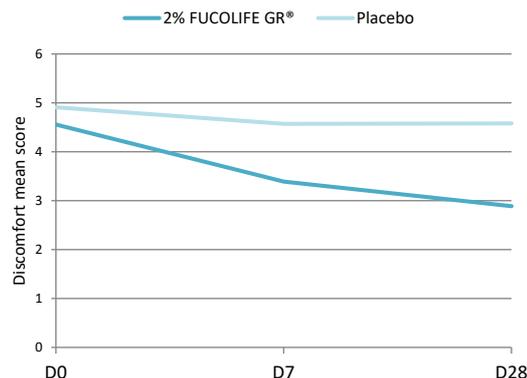
FUCOLIFE GR® significantly thickens the skin by 7.5% after only one month of application. Thus, skin gains what it would lose in 6 years of postmenopausal life. Added to the previous results, this confirms the ability of FUCOLIFE GR® to restore skin comfort.



**In vivo study** on two group of 20 recently menopausal Caucasian and Asian women (56 years on average) having sensitive and dry skin. Twice daily application on the whole face of a cream containing FUCOLIFE GR® at 2%, for 28 days vs. Placebo. Skin discomfort analysis: FACS (Facial Action Coding System) assessment.



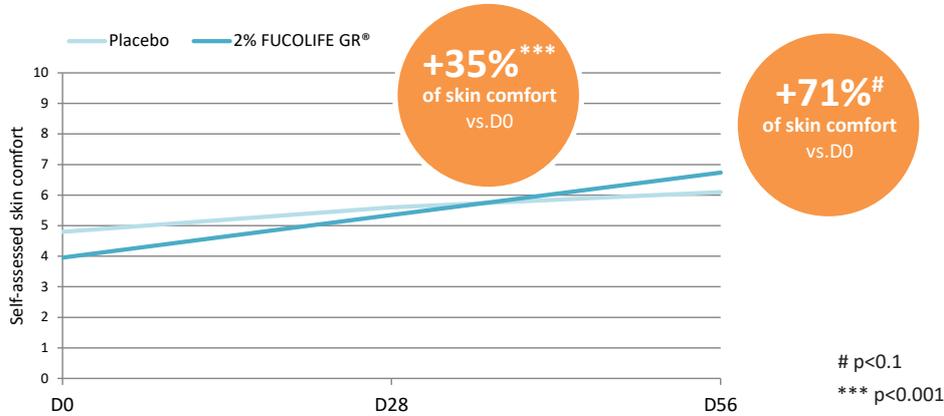
Behavioural analysis of facial expressions to measure apparent muscle changes.



FUCOLIFE GR® decreases significantly the skin discomfort by 37% in only one month of application. The variation between D28 and D0 is significantly 5 times higher for our product versus placebo.



*In vivo study* on two group of 20 recently menopausal Caucasian and Asian women (56 years on average) having sensitive and dry skin. Twice daily application on the whole face of a cream containing FUCOLIFE GR® at 2%, for 56 days vs. Placebo. Auto-evaluation of skin comfort thanks to a scoring scale from 1 (not comfortable) to 10 (very comfortable) at 28 and 56 days.



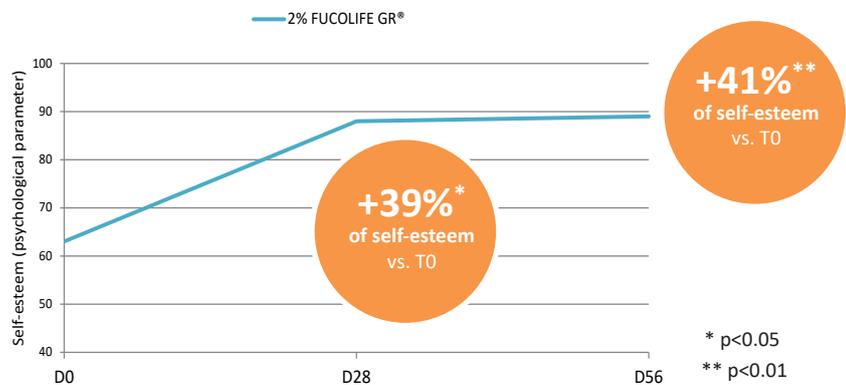
According to the panelists, FUCOLIFE GR® improves significantly the skin comfort in only one month of application and this effect continues and increases after the 2nd month of application. This confirms previous results, the decrease in measured discomfort is well felt by volunteers as early as 28 days.

## BEAUTY BENEFIT: RECOVER YOUTHFULNESS AND FEMININITY



*In vivo study* on two group of 20 recently menopausal Caucasian and Asian women (56 years on average) having dry and sensitive skin. Twice daily application on the whole face of a cream containing FUCOLIFE GR® at 2%, for 56 days. Auto-evaluation by MENQOL questionnaire at D0, D28 and D56.

MENQOL (self-esteem) questionnaire: Measurement of the impact of menopause on quality of life in women who experienced natural menopause.



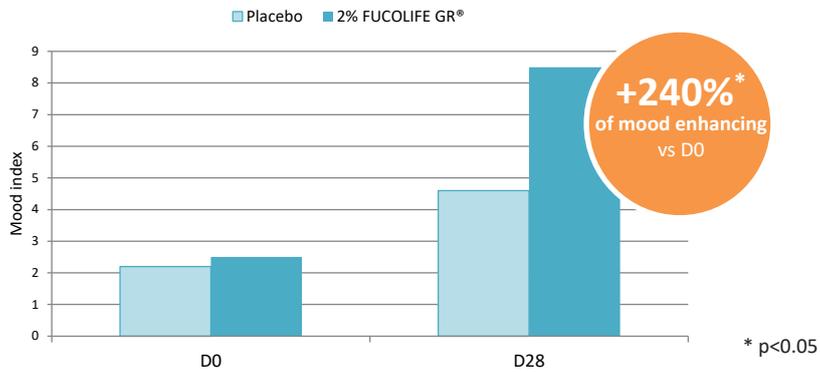
According to the panelists, Fucolife GR® increases volunteers' self esteem.



*In vivo study* on two group of 20 recently menopausal Caucasian and Asian women (56 years on average) having dry skin. Twice daily application on all the face of a cream containing FUCOLIFE GR® at 2%, for 28 days vs. Placebo. Mood Apprehension by Projective Test: Scrapbooking Implicit Test



The Scrapbooking Implicit Test™ is based on an implicit approach to translate a pre-verbal assumption about oneself into analog representations.

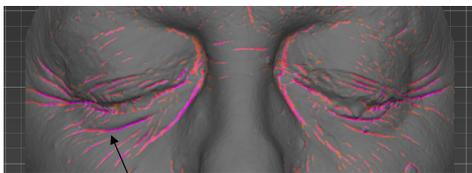


FUCOLIFE GR® improves significantly the mood of volunteers.

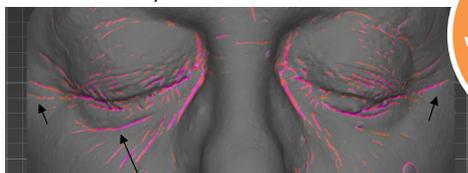


*In vivo study on two group of 14 recently menopausal Caucasian and Asian women (56 years on average) having under eyes wrinkles. Twice daily application on the whole face of a cream containing FUCOLIFE GR® at 2%, for 56 days vs. Placebo. Assessment of under eyes wrinkles depth by AEVA and realization of before/after photos.*

Volunteer 1 - Day 0



Volunteer 1 - Day 56



**-15%\***  
of under eyes wrinkles depth on average vs D0

\* p<0.05

**85%**

"My look seems less tired" after 56 days

**79%**

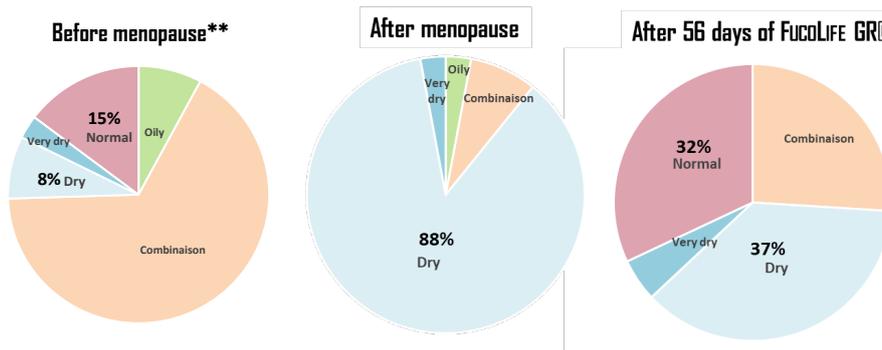
"My features look more relaxed" after 56 days

**Up to -41% of wrinkles depth under eyes after 56 days at 2% Fucolife GR®**

FUCOLIFE GR® restores the youthfulness of the skin by significantly and visibly reducing under eyes wrinkles after 56 days. The face seems less tired, it is visibly rejuvenated.



*Consumer study on two group of 20 recently menopausal Caucasian and Asian women (56 years on average) having dry and sensitive skin. Twice daily application on all the face of a cream containing FUCOLIFE GR® at 2%, for 56 days. Auto-evaluation.*



**68%**

«MY SKIN IS MORE COMFORTABLE»

«MY SKIN IS EASY TO MAINTAIN»

«I CARE LESS ABOUT MY SKIN»

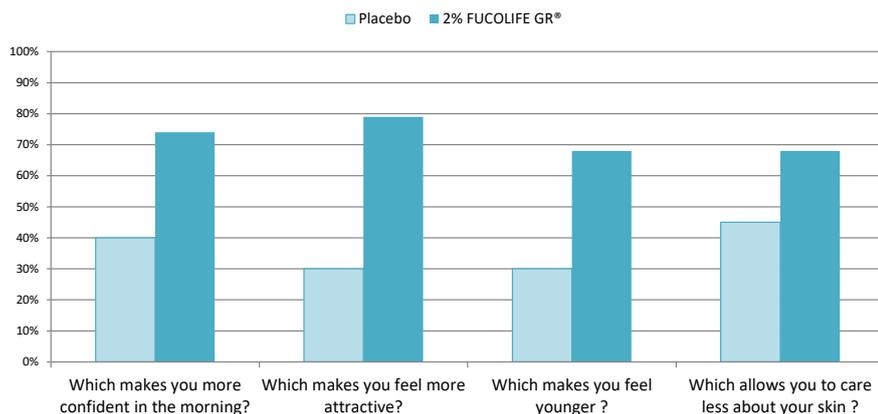
«I FEEL MORE SERENE AND CONFIDENT TO MAINTAIN MY SKIN DAILY»

«IT HELPS ME START MY DAY»

FUCOLIFE GR® reduces the sensation of dry skin after 56 days of use. These results are correlated with increased skin comfort. Volunteers are less concerned about their skin, which makes them more confident in everyday life.



**Consumer study** on two group of 20 recently menopausal Caucasian and Asian women (56 years on average) having dry and sensitive skin. Twice daily application on the whole face of a cream containing FUCOLIFE GR® at 2%, for 56 days. Auto-evaluation.



**85%** «MY LOOK SEEMS LESS TIRED»



**79%** «MY SKIN IS MORE PLEASANT TO LOOK AT»  
«MY FEATURES SEEMS MORE RELAXED»  
«MY SKIN LOOKS GOOD»

**74%** «MY SKIN IS SOFTER, MORE ELASTIC»  
«THE PERCEPTION OF MY FACE IN THE MIRROR HAS IMPROVED»  
«MY SKIN LOOKS DEEP REGENERATED»

By acting deeply on the skin physiology, FUCOLIFE GR® visibly rejuvenates the skin. Women are more accepting their faces and feel more feminine.

«After using this product, the skin of my face is much more comfortable, I feel like my skin is more pleasant to look at.» Asian woman, 48 years old, menopause for 1 year.

«I find myself resplendent, rejuvenated. I have a more positive image of myself. I feel better about myself.» Caucasian woman, 54 years old, menopause for 1 year.

## ADDITIONAL INFORMATION

**INCI / CTFA name:** Maltodextrine (and) Biosaccharide gum-3

**Preservative:** none

**Regulations:** authorized for use in the UE, USA, Japon, China (IECIC 2015 et IECSC) and subject to conditions in Australia and Canada

**COSMOS certification :** pending

## APPLICATIONS

**Recommended dose:** 2%

**Preventive and curative anti-aging care**

**Anti-wrinkle care for mature skin (50 years old and over)**

**Treatment for hypersensitive and dry skins**

**Soothing care**

**Day and night care**

# FORMULATION

**pH stability:** 3.0 to 10

**Soluble** in water, glycerin, 20% alcohol solution

**Thermostability:** For cold process, incorporate in the aqueous phase, before or after making the emulsion for the emulsified forms. For hot process, incorporate during cooling, from 45°C. FUCOLIFE GR® can withstand high temperature (70°C) for a short time (until 6 hours) but it's better to incorporate <45°C.

## Formulation example:

AGE COMFORT OILY BALM

ref.: 2942007B/07

AGE COMFORT OILY BALM

	INGREDIENTS	INCI NAME	%
A	EMULIUM ILLUSTR0 (GATTEFOSSE)	<i>Polyglyceryl-6 / Polyhydroxystearate / Polyglyceryl-6 polyricinoleate</i>	3.00
	DUB SIS16 (STEARINERIE DUBOIS)	<i>Isostearyl isostearate</i>	37.00
	TEGOSOFT MM MB (EVONIK INDUSTRIES)	<i>Myristyl myristate</i>	5.00
	NOMCORT HK-G (NISSHIN OILIO GROUP)	<i>Glyceryl Behenate/Eicosadioate</i>	3.00
	CETIOL CC (BASF)	<i>Dicaprylyl carbonate</i>	QSP 100
	RHEOPEARL KL2 (CHIBA FLOUR MILLING CO)	<i>Dextrin palmitate</i>	1.50
	COMPRITOL 888 PASTILLES (GATTEFOSSE)	<i>Glyceryl behenate</i>	2.00
B	VIRGIN ARGAN OIL DEODORIZED ORGANIC (OLVEA VEGETABLE OILS)	<i>Argania spinosa kernel oil</i>	5.00
	COVI-OX T-70 EU (BASF)	<i>Tocopherol</i>	0.20
C	DEMINEALIZED WATER	<i>Aqua</i>	5.00
	FUCOLIFE GR® (SOLABIA GROUP)	<i>Maltodextrin / Biosaccharide gum-3</i>	2.00
	GLYCEROLAT® SFT ST. JOHN'S WORT (SOLABIA GROUP)	<i>Aqua / Glycerin / Hypericum perforatum extract</i>	2.00
D	VITALITY PERFUME RS 29139 (TECHNICOFLO)	<i>Parfum (fragrance)</i>	0.20

## Contact us

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