



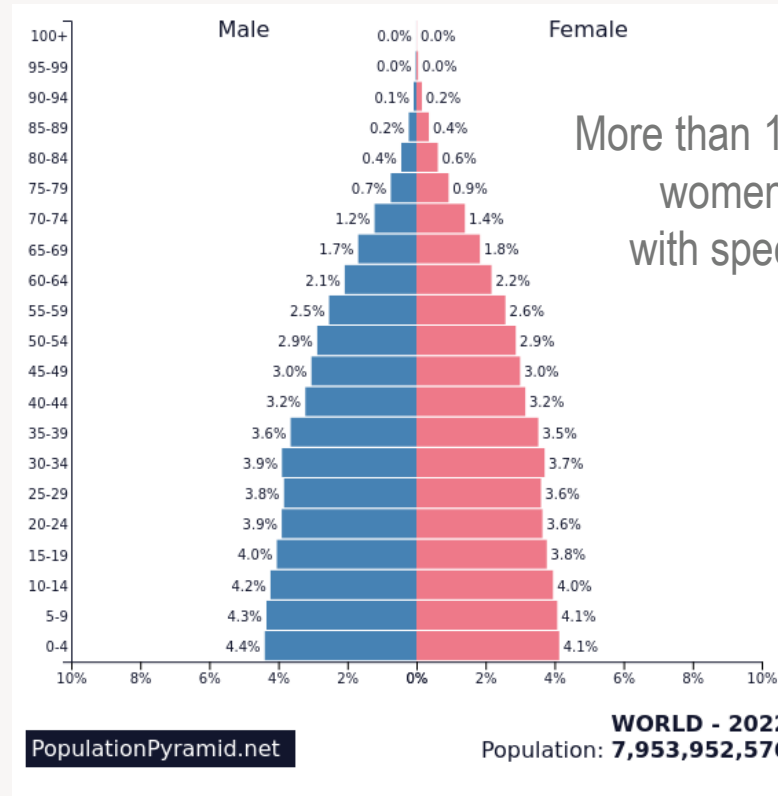
Menopausal impacts on skin are not inevitable, strategies to reduce signs and discomfort

Dr Richard Leroux,
Scientific and technology Manager



Menopause

Menopause, the shock of change



More than 1 000,000,000
women over 50
with specific needs

In 2030, 1.2 billion people will be over 50 (3 times more than in 1990)

65 % of visits to doctors are made by women over the age of 60, particularly for problems related to menopause

Menopause

Consumer Study

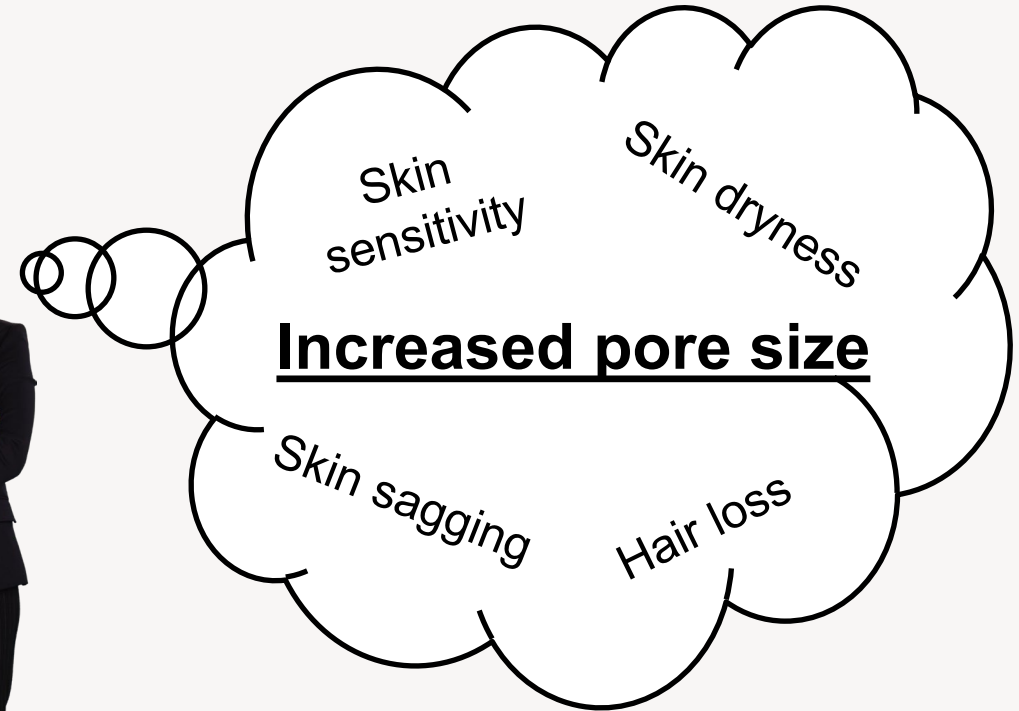
GLOBAL CONSUMER STUDY ON THE USAGE AND ATTITUDES OF MENOPAUSAL WOMEN



individual deep interviews (IDIs).

45-60 year old women, including 20% in perimenopause and 80% who have reached menopause (self-assessment).

4 regions 



Menopause

What we know



Menopause is preceded by a transition period of variable length, up to 5 years, characterised by alterations in normal ovarian function, causing changes to the organs, including the skin (HERMAN *et al.*, 2013).

Many endogenous or exogenous factors are involved in the pore enlargement phenomena: genetic predispositions, chronic ultraviolet exposures, acne, sex, age, menopause and amount of sebum (ROH *et al.*, 2006).

Caucasian **women** are **28** times more likely to have significant wrinkles at age 60 than at age 40, whereas in **men** this risk is only **12** times higher.

The risk of facial wrinkles is 3.7 times greater in Korean women than in men, (YOUN *et al.*, 2003).

Beyond the age of 50, the rate of facial skin changes is twice as high in women, and this worsens over the following decade, rising to three times greater (WINDHAGER *et al.*, 2019).

There are also clear links between the drop in essential compounds and failures in mitochondrial energy production, dysfunctions and even pathologies. This accelerates ageing of the organs and skin (HUDSON *et al.*, 2016, SHARMA *et al.*, 1998).

It is complicated, especially during the transition period, to distinguish what is strictly linked to chronological ageing from what is aggravated by pre-menopause, because ageing is a continuum.

Menopause

To reduce Menopause signs and discomfort

The drop in hormone levels strongly accelerates skin ageing:

The skin gradually relaxes and jowls appear on the lower jaw

Wrinkles that are already present tend to intensify

The skin becomes less firm, more wrinkled, and less elastic

It recovers its shape less readily when stretched (lost its resilience)

The eyelids also rapidly show signs of ageing (presence of sagging)

Pore sagging

To combat the combined effects of intrinsic and extrinsic ageing, both of which are aggravated in women by menopause:

Stimulate the production of certain elements of the dermal matrix

Improve the skin barrier defense

Limit the harmful effects of chronological ageing booster agents to the skin: UV, glycating agents.

Dynamisation of the cells of the skin

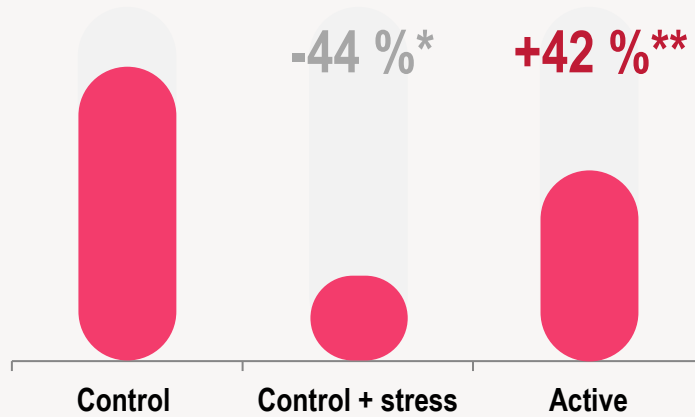
Menopause

Dermal matrix invigoration

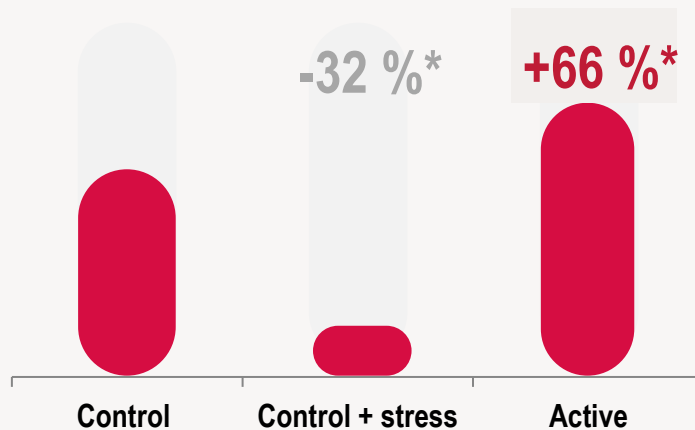
in vitro

Promotion of the dermis vitality key actors (PIP, collagen and elastin).

Procollagen type I production (1)



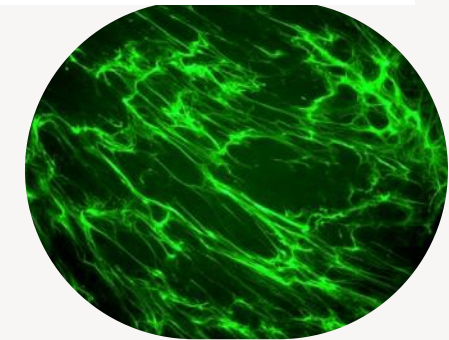
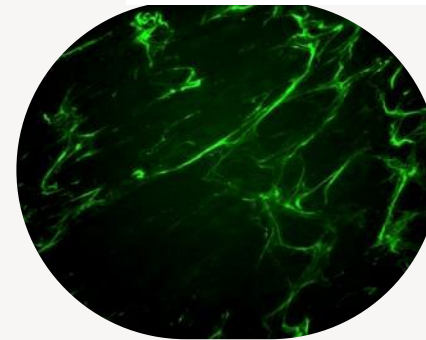
Collagen-I production (1)



COLLAGEN I +349 % p<0.01/control

Control

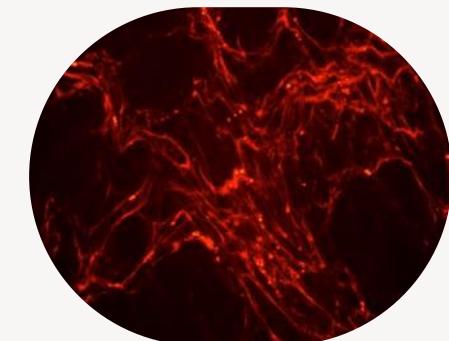
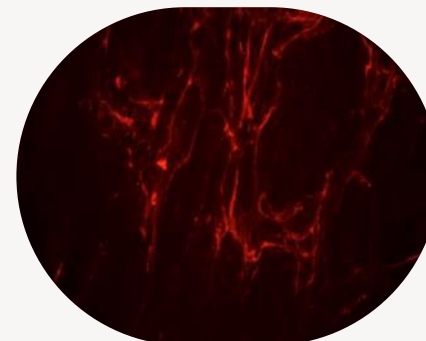
Active



ELASTIN +519 % p<0.01/control

Control

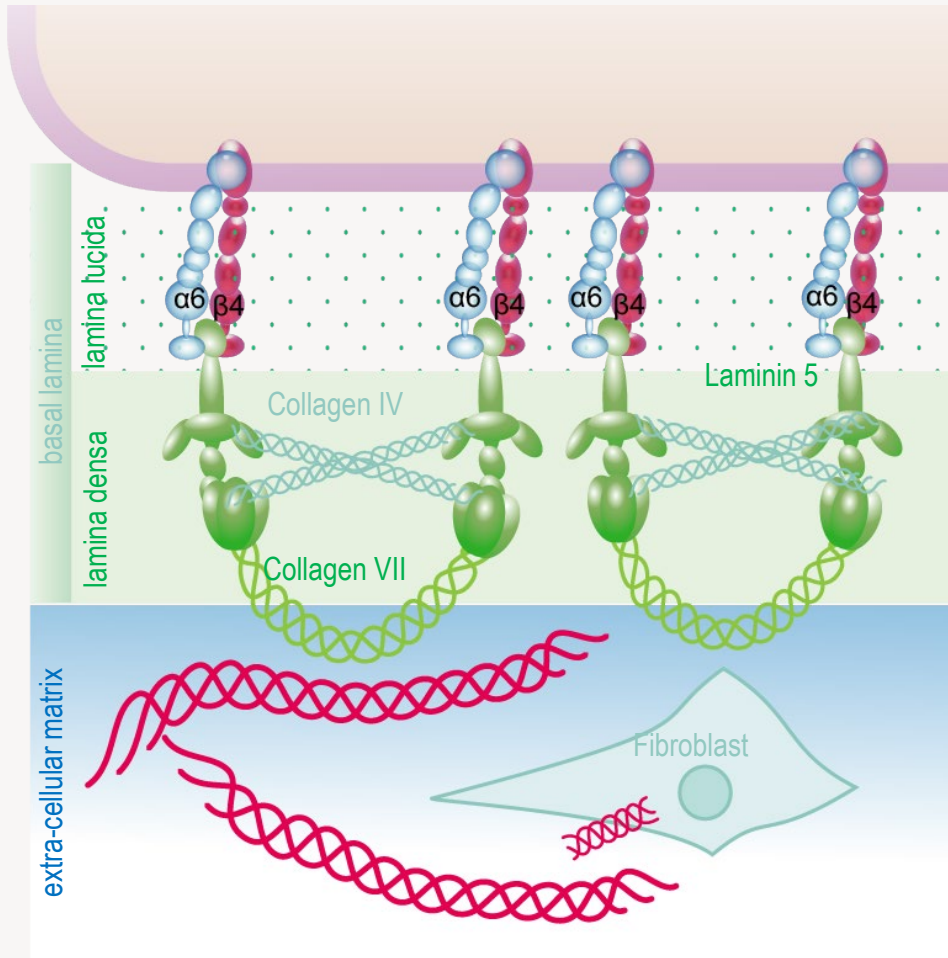
Active



Menopause

Dermal-Epidermal Junction

in vitro



COLLAGEN IV⁽¹⁾ **+27 %**, $p < 0.01$

LAMININ 5⁽¹⁾ **+17 %**, $p < 0.01$

COLLAGEN VII⁽²⁾ **+148 %**, $p < 0.01$

Stimulation *in vitro* of the dermal-epidermal junction's major components to fight against its weakening and flattening caused by ageing.

TECHNOLOGIES:

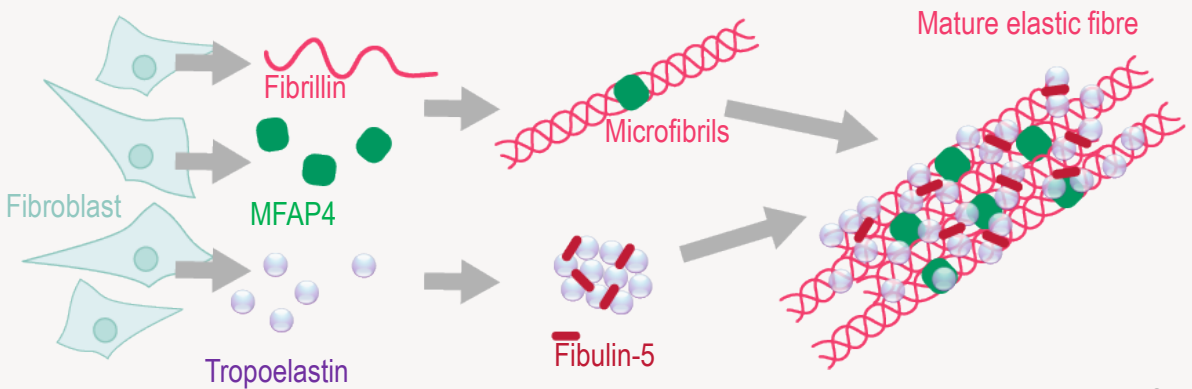
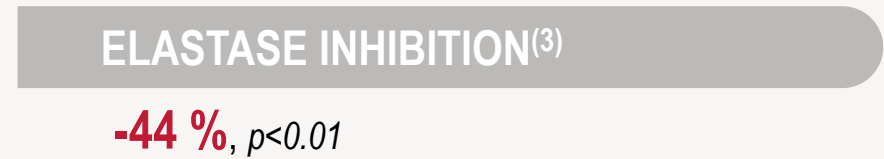
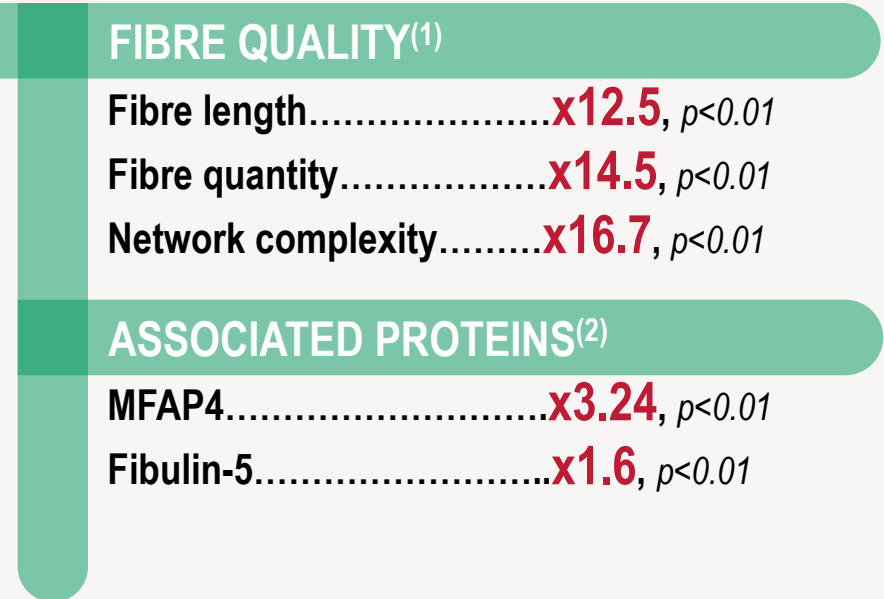
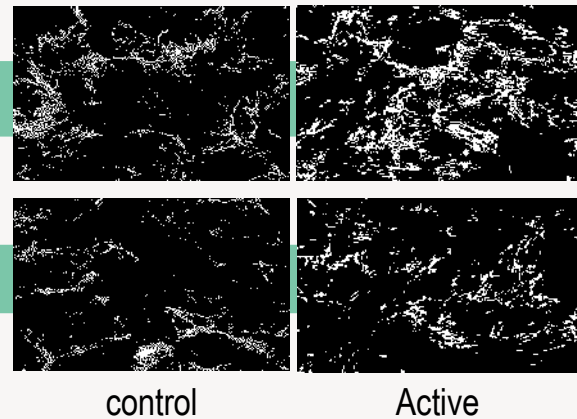
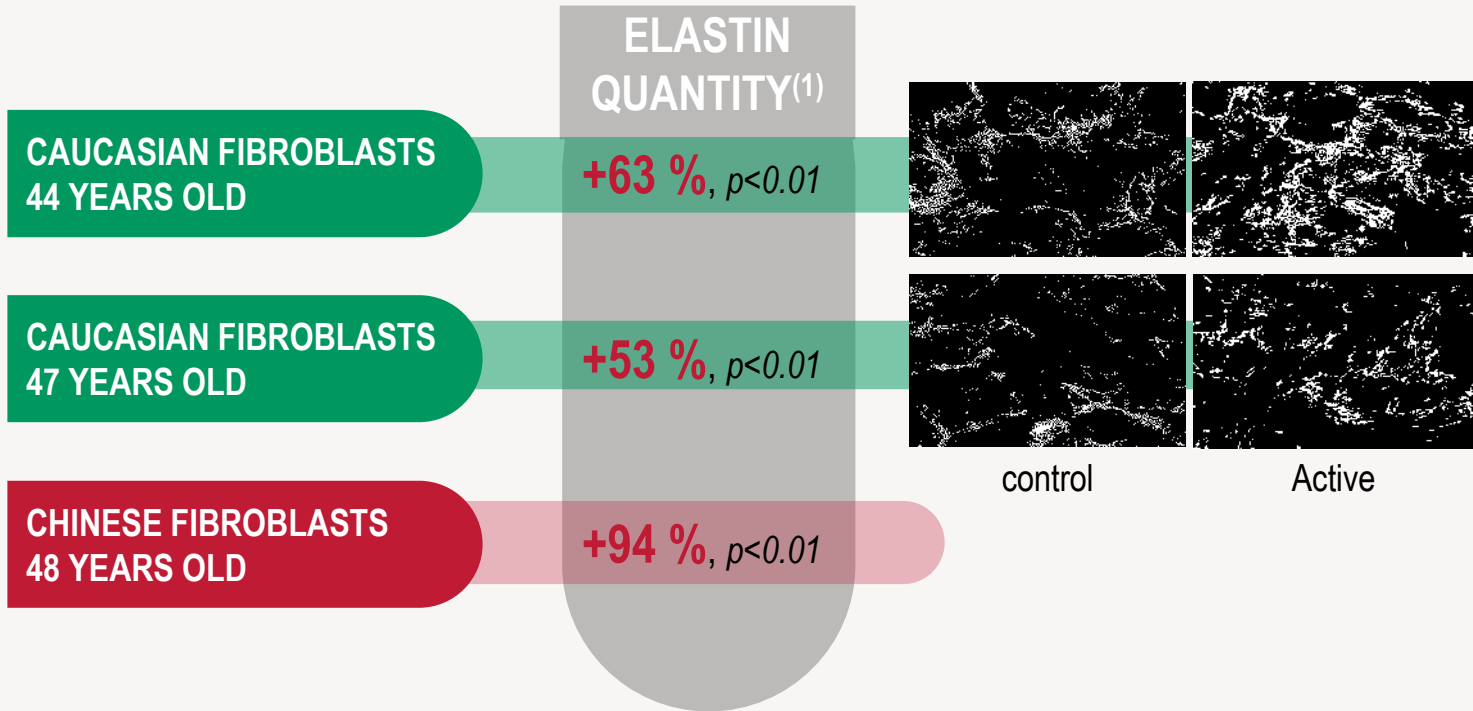
(1) Skin explants woman 45 years old + immunohistology, gel containing Active

(2) Human keratinocytes + ELISA, Active

Menopause

Focus on Elastin: quantity & quality

in vitro

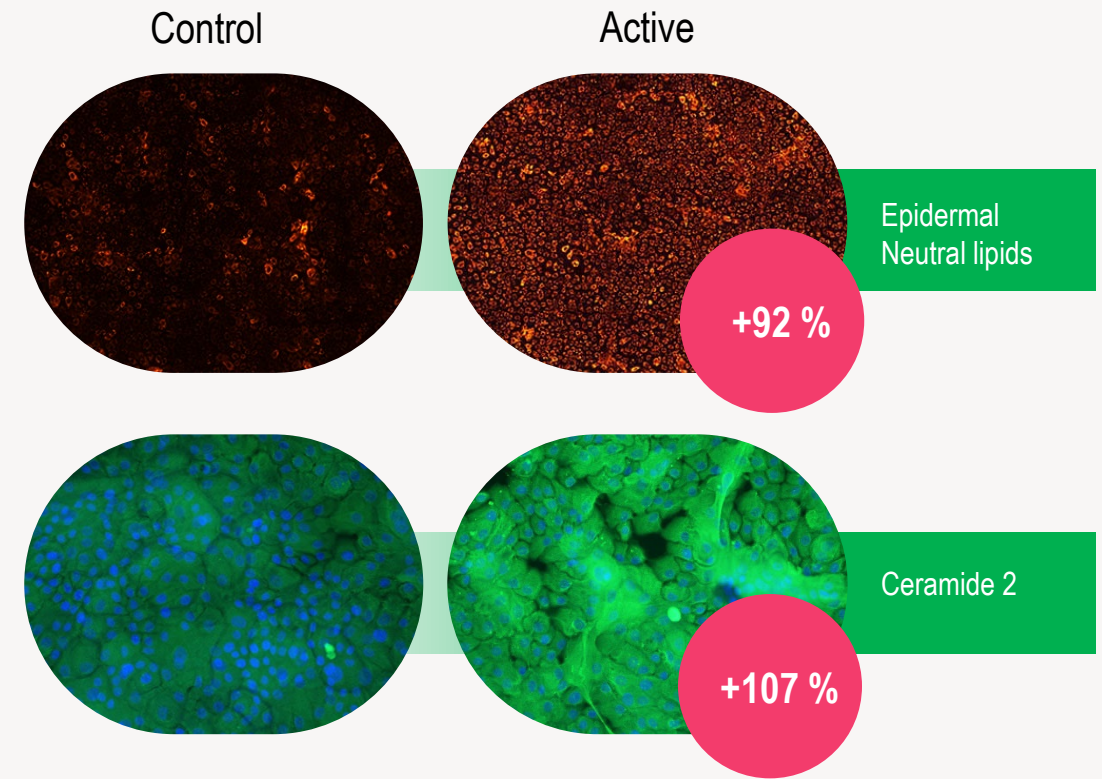
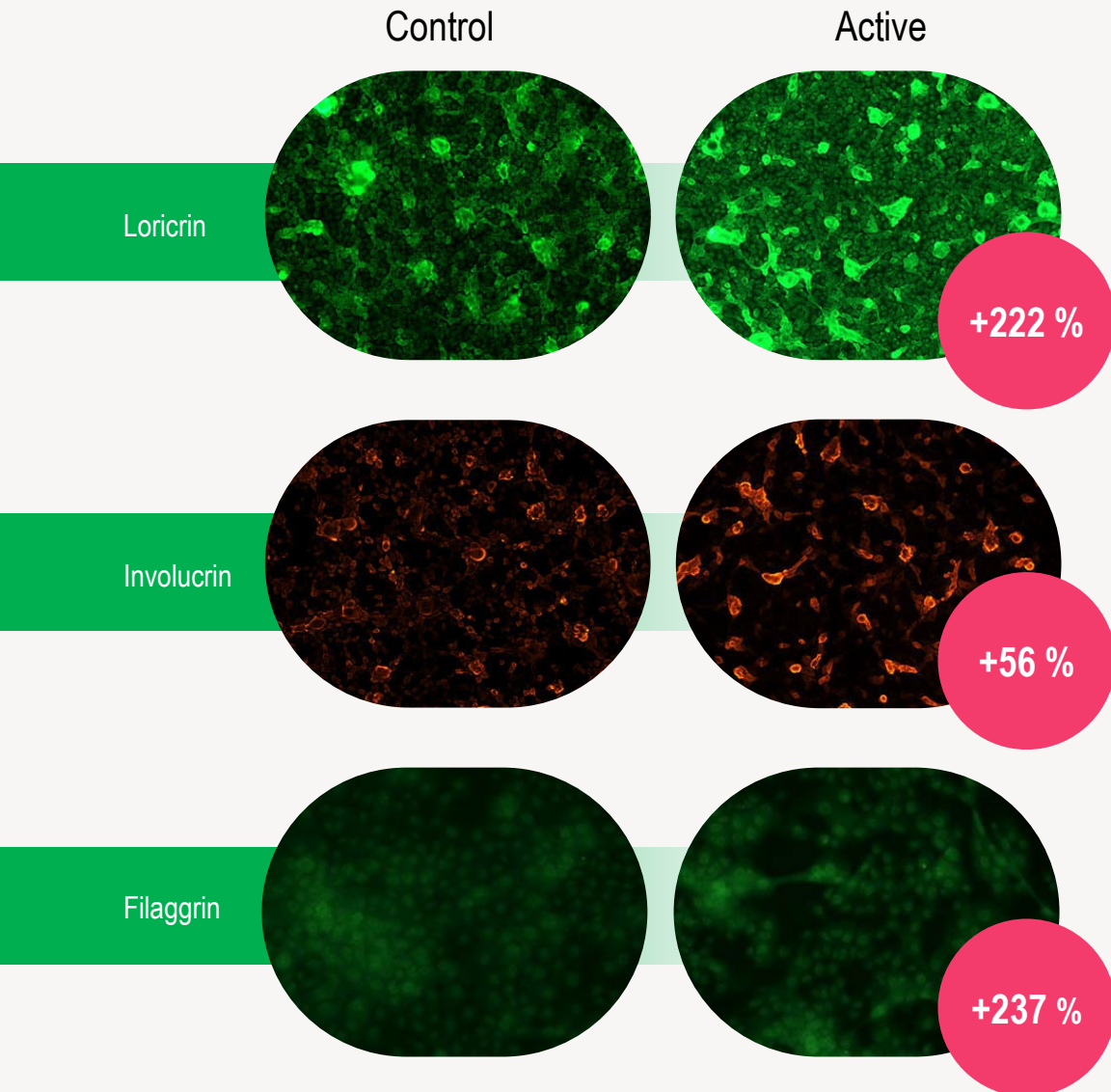


TECHNOLOGIES:
 (1) Human dermal fibroblasts + immunocytochemistry, Active
 (2) Human dermal fibroblasts + LC-MSMS, Active
 (3) in tubo NtBoc-NPE + human leucocyte elastase Active

Menopause

Epidermis architecture

in vitro 



Enhancing the quality of the skin barrier

Menopause

Resisting glycation

in vitro 

ELASTIN

Elastin glycation⁽¹⁾

-70 %/glycated control, $p < 0.01$

Elastin production after glycating stress⁽²⁾

x8.8/glycated control, $p < 0.01$

FIBROBLAST VITALITY

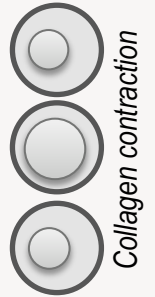
Fibroblast resilience to glycation⁽³⁾

Control 100 %

Glycated control 60 %/control, $p < 0.01$

Glycated + **Active** 94 %/control, $p < 0.01$

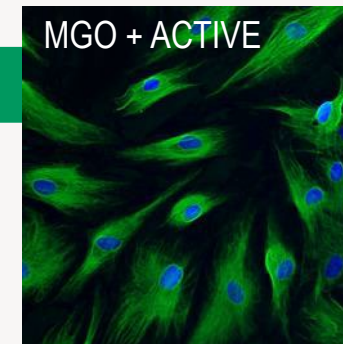
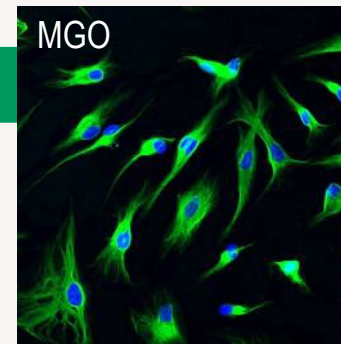
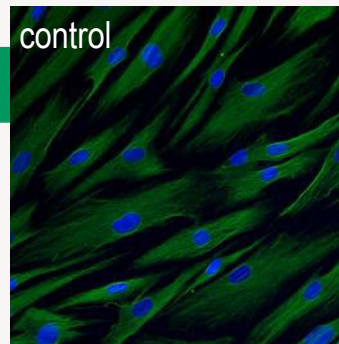
⇒ Quasi total protection against glycation



VIMENTIN

Vimentin protection against glycation⁽²⁾

+19 %/glycated control, $p < 0.01$



TECHNOLOGIES:

(1) *in tubo* elastin+ ribose glycating agent + ELISA, with Active

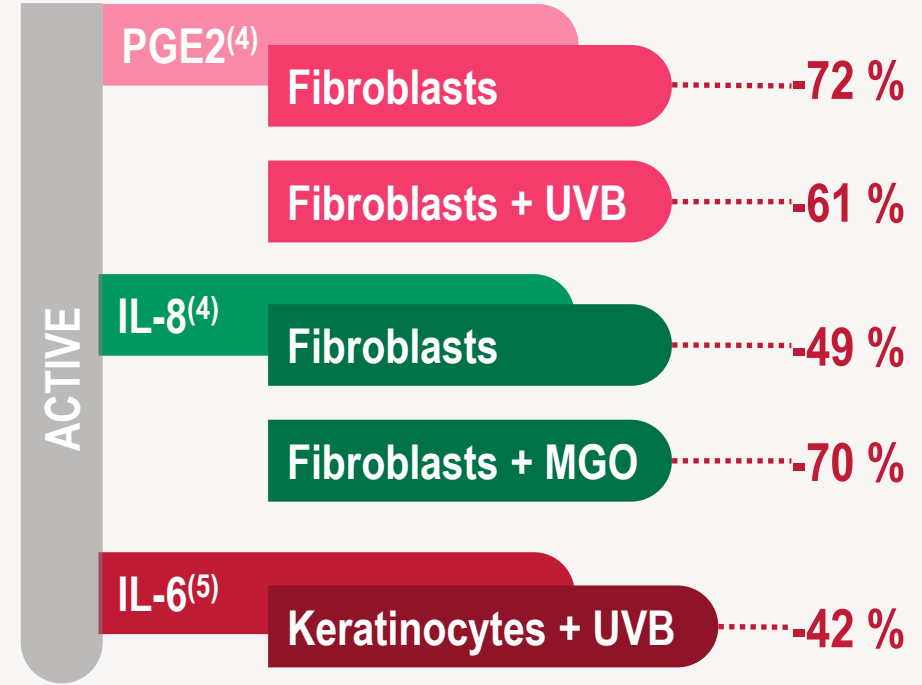
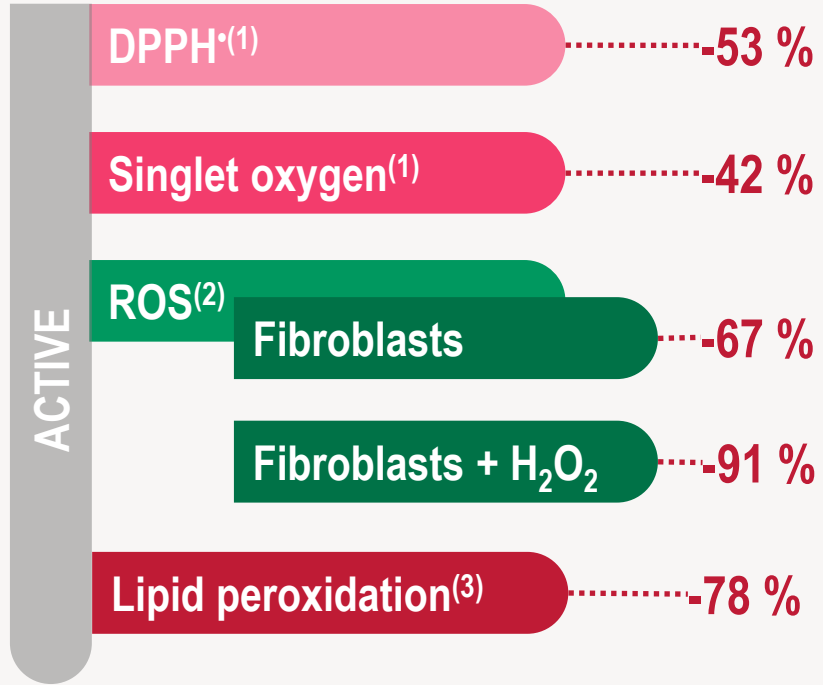
(2) Human dermal fibroblasts, 44 years old + MGO glycating agent + immunocytochemistry, with Active

(3) Human dermal fibroblasts, 44 years old + MGO glycating agent + collagen contraction measurements, with Active

Menopause

Fighting oxidation / inflammation

in vitro

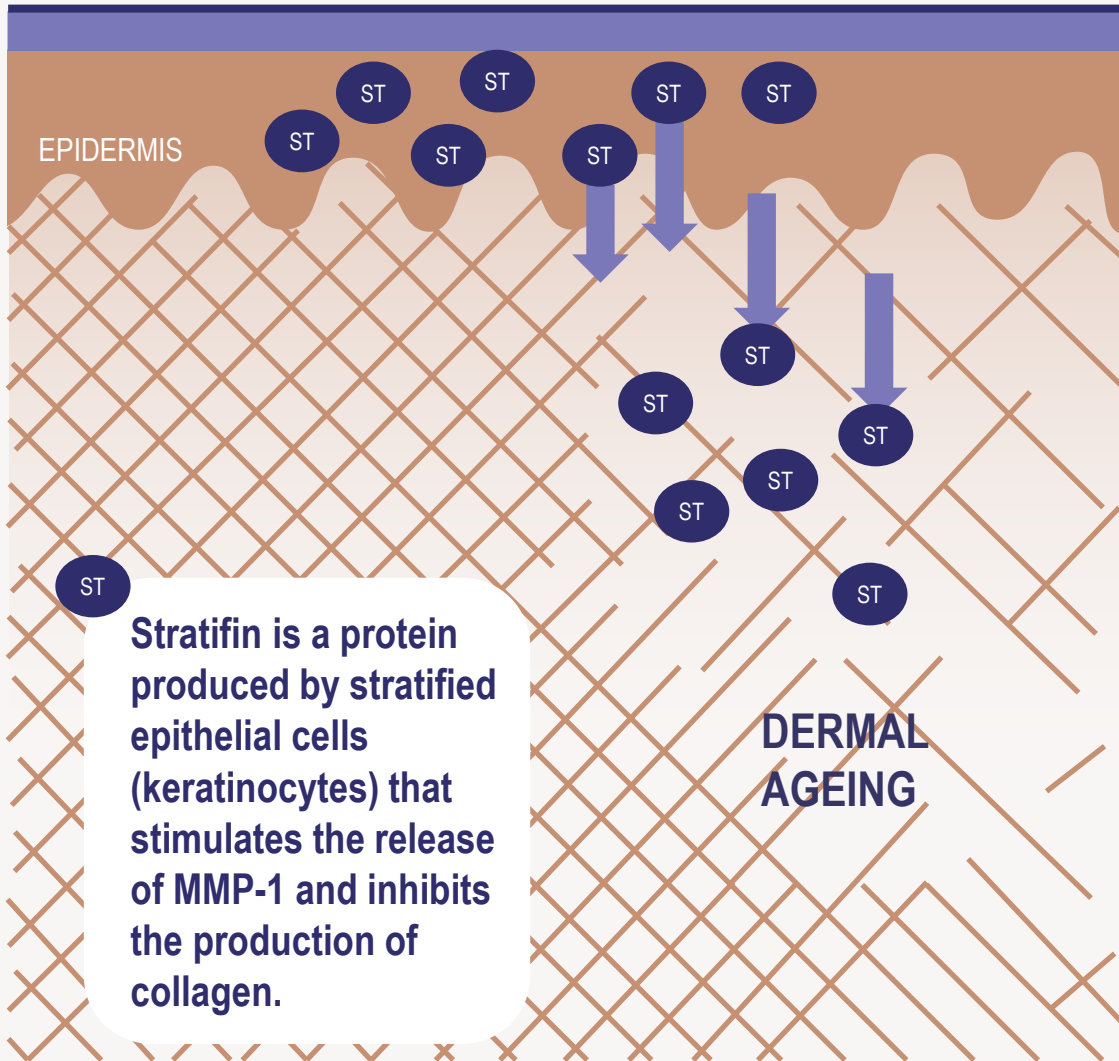


TECHNOLOGIES:

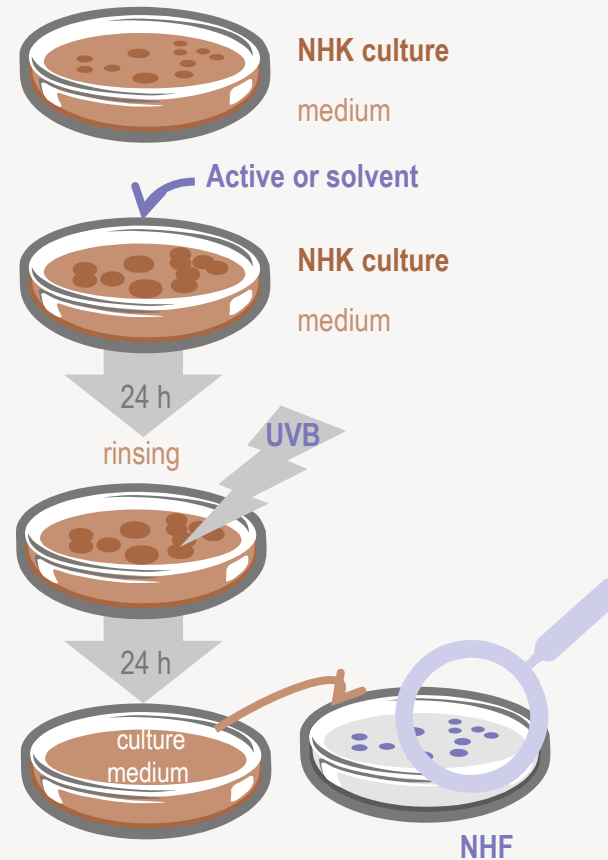
- (1) Anti free radical test
- (2) Normal human fibroblasts + DCFH-DA fluorescent probe + oxidative stress
- (3) Liposomes + UVA + absorbance measurement
- (4) Normal human fibroblasts + UVB + ELISA
- (5) Normal human keratinocytes + UVB + ELISA

Menopause

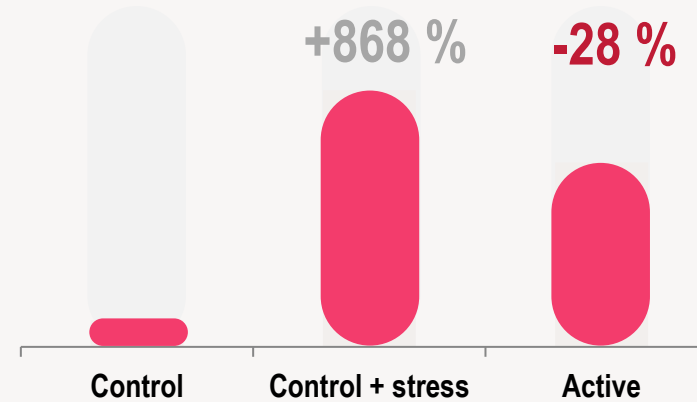
Anti-matrix cross-talking



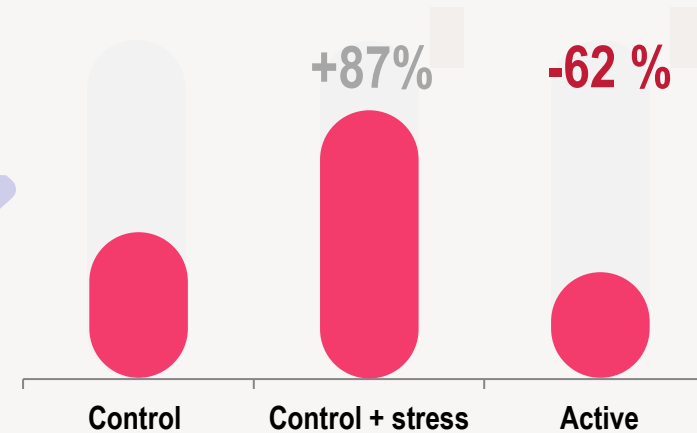
PROTOCOL



Stratifin production (1)

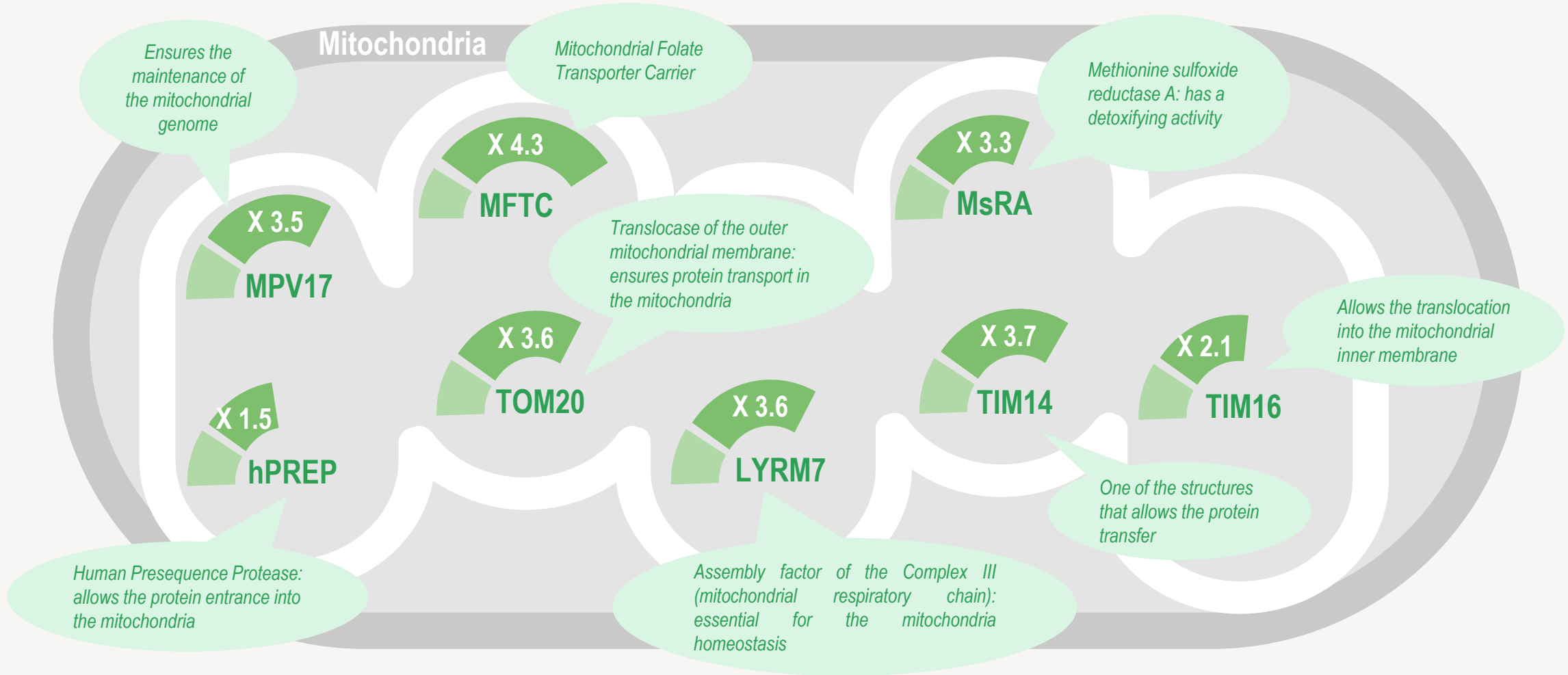


MMP-1 production (2)



Menopause

Mitochondrial homeostasis



Menopause

Study protocols

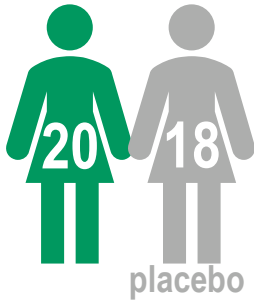
in vivo

CAUCASIAN PANEL



38

mean age 57
(49-66)



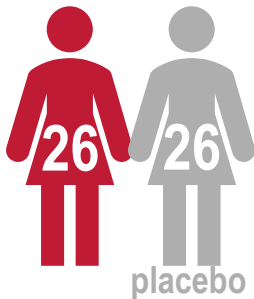
- 8 volunteers in early menopause <2 years
- Twice daily application of a cream containing Active for 2 months
- Evaluation of facial contour sagging, upper eyelid sagging, crow's feet wrinkles by Fringe projection, ElastiMeter™, Expert assessments and self evaluations

CHINESE PANEL

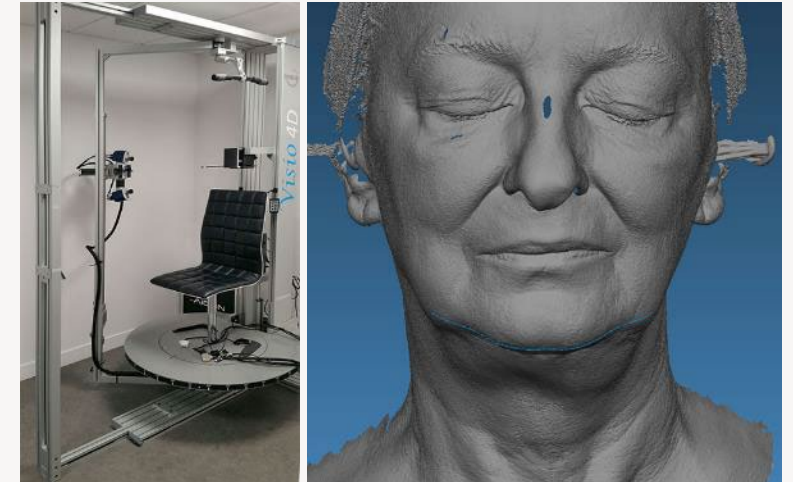


52

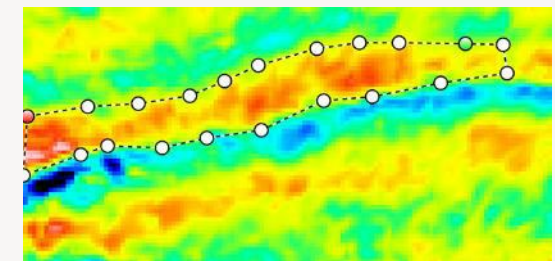
mean age 56
(51-60)



- All volunteers in menopause <7 years
- Twice daily application of a cream containing Active for 2 months
- Evaluation of marionette lines, skin elasticity, firmness by Fringe projection, Cutometer™, Expert assessments



Fringe projection



Upper eyelid evaluation




Menopause

Facial contour remodelling

in vivo


CONTOUR SAGGING

-5.1 %/placebo, $p < 0.05$, up to **-10 %**

 71 % volunteers

JOWL VOLUME


-11.4 %/placebo, $p < 0.05$, up to **-41 %**

 69 % volunteers

The expert judges evaluate a significant improvement of the jowl sagging for **34 %** volunteers.

MARIONETTE LINES

Depth: **-14.8 %**/placebo, $p < 0.05$, up to **-36 %**

 65 % volunteers

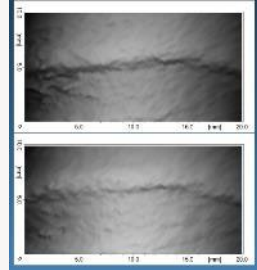


Menopause


Eye contour remodelling

in vivo

UPPER EYELID DROOPING



Max height: **-24.7 %**/placebo, $p < 0.05$, up to **-52 %**
Volume: **-32 %**/placebo, $p < 0.05$, up to **-78 %**
Surface: **-30 %**/placebo, $p < 0.01$, up to **-45 %**

 100% volunteers

EXPERT JUDGE EVALUATION

Significant improvement of the eyelid sagging for **51 %** volunteers.

SELF EVALUATION

The eyes are very significantly perceived less tired by **80 %** volunteers.



CROW'S FEET WRINKLES

Relief: **-9.5 %**/placebo, $p < 0.05$, up to **-35 %**
Max depth: **-10.4 %**/placebo, $p < 0.01$, up to **-36 %**

 100% volunteers

EXPERT JUDGE EVALUATION

The skin is evaluated significantly less wrinkled for **63 %** volunteers.

Menopause

Skin elasticity and firmness

in vivo

CHEEK FIRMNESS

Resistance: **+8.2 %**/placebo, $p < 0.05$, up to **47 %**



 **72 %** volunteers



ELASTICITY


Elasticity: **+14 %**/placebo, $p < 0.05$, up to **+81 %**

Resilience: **+10.7 %**/placebo, $p < 0.05$, up to **+52 %**

 **85 %** volunteers
 **73 %** volunteers

EXPERT JUDGE EVALUATION

To the touch, the skin is evaluated firmer by **10 %** ($p < 0.08$) vs placebo, with a maximum of **+100 %**.

 **46 %** volunteers had an improvement.

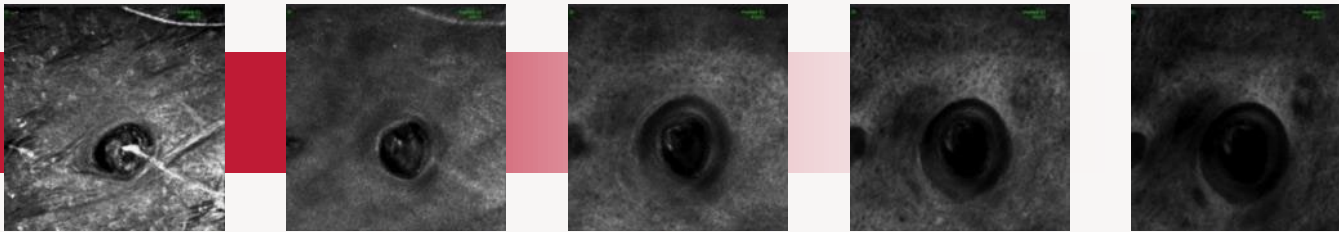


Menopause

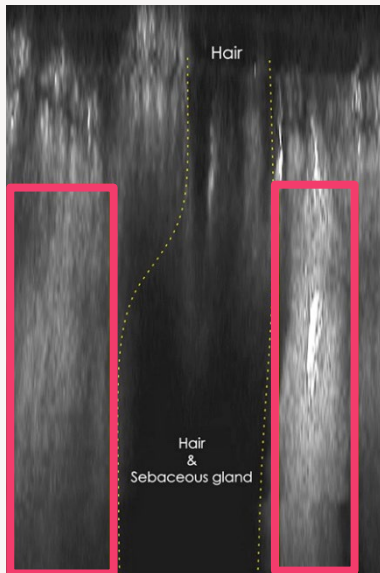
Focus on Pores

in vivo

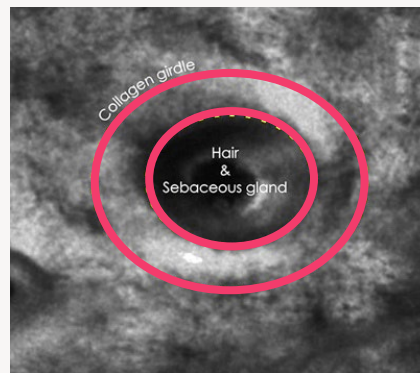
Instrumental evaluation of the pore supporting tissues by a confocal laser microscope VivaScope® 3000.



Microscope views of a pore, from the upper layer of the skin (on the left) to the deeper layer (on the right)



Virtual section reconstitution of a pore channel and its sheath
Surrounding areas: supporting tissue measurement

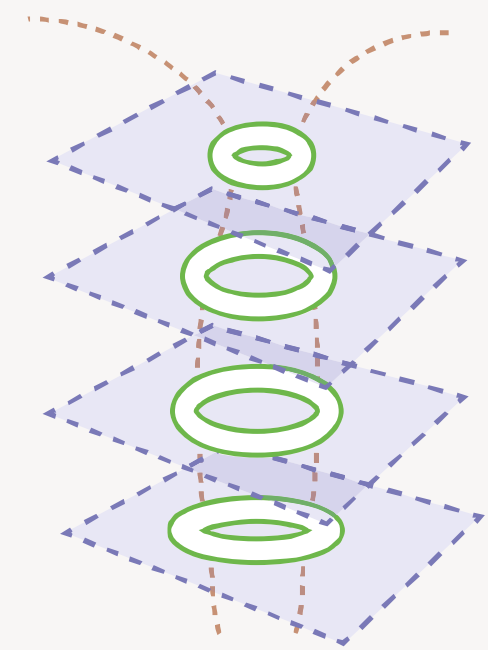


Photograph presenting the peripheral dermal zone of a pore

**INTENSITY OF THE
COLLAGENOUS SHEATH**

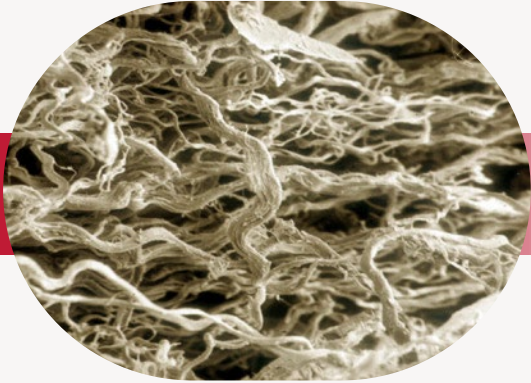
+14.4 %/T0*

Actives can rebuild the collagenous sheath surrounding the pores and makes it more efficient in maintaining the pore refined shape.



Instrumental evaluation of the dermal density by Translucymetre® (cheek).

COLLAGEN FIBRE DENSITY



Mature skin



Young skin



Measurement of the light attenuation through the encountered layers and macromolecules of the skin.

SKIN DENSITY

+15.1 %*/placebo
⇒ 10 years younger^{\$}

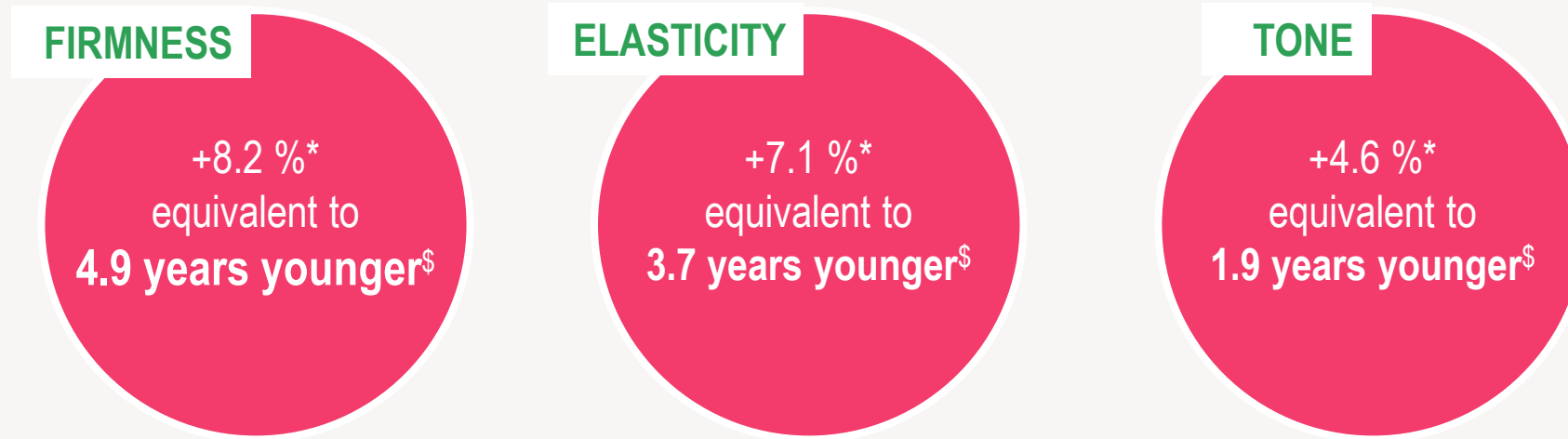
By increasing the collagen fibre density, Actives helps fight against sagging and re-plumps the skin as if it was 10 years younger.

Menopause

A dynamic skin structure

in vivo

Instrumental evaluation of the viscoelastic parameters by Cutometer® (cheek).



Actives improves skin tone,
firmness and elasticity thus allowing the cutaneous
supporting structures to be more shaped and vigorous

*Significant vs T0: * $p < 0.05$ and vs placebo: $p < 0.05$; \$ correlated to an internal study on 62 volunteers.

Menopause

A refined skin texture

in vivo

Instrumental evaluation of the micro-depressionary network by image analysis (cheek). Measurement of the isotropy parameter.

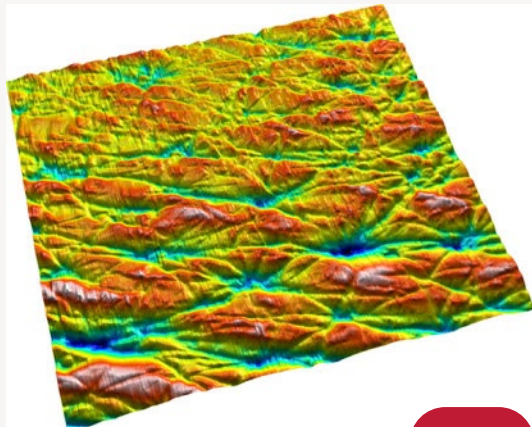
Actives helps refine the skin texture thus giving the skin a better light-reflecting potential similar to young skin.



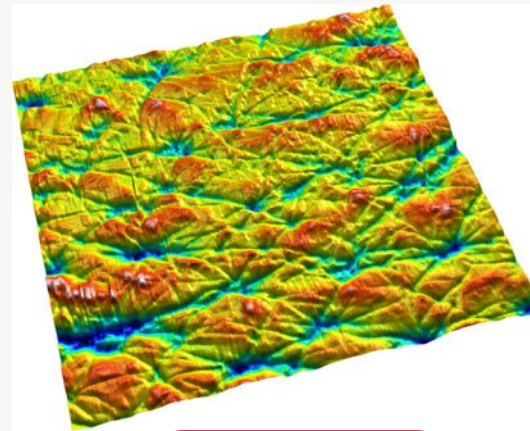
Anisotropy of mature skin



Isotropy of young skin



T0



After 4 weeks

TEXTURE REGULARITY

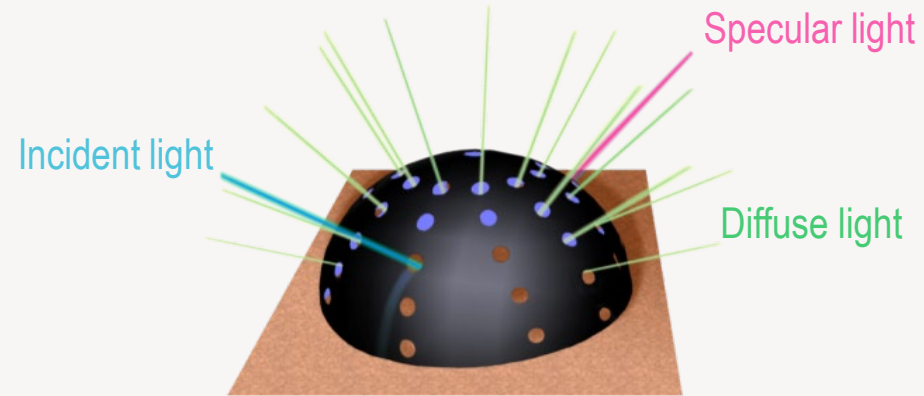
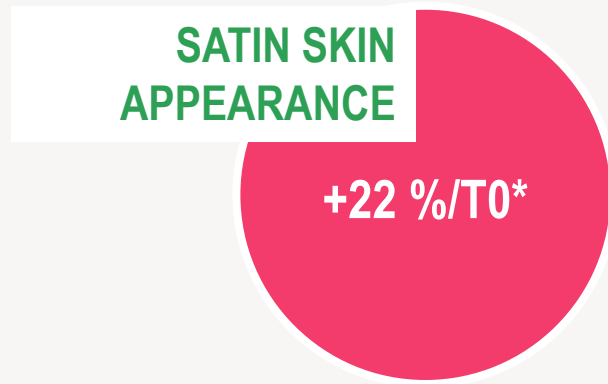
+10 %/T0*

Menopause

Satin skin finish

in vivo

Instrumental evaluation of the light diffusion quantification on the skin surface by Goniolux.



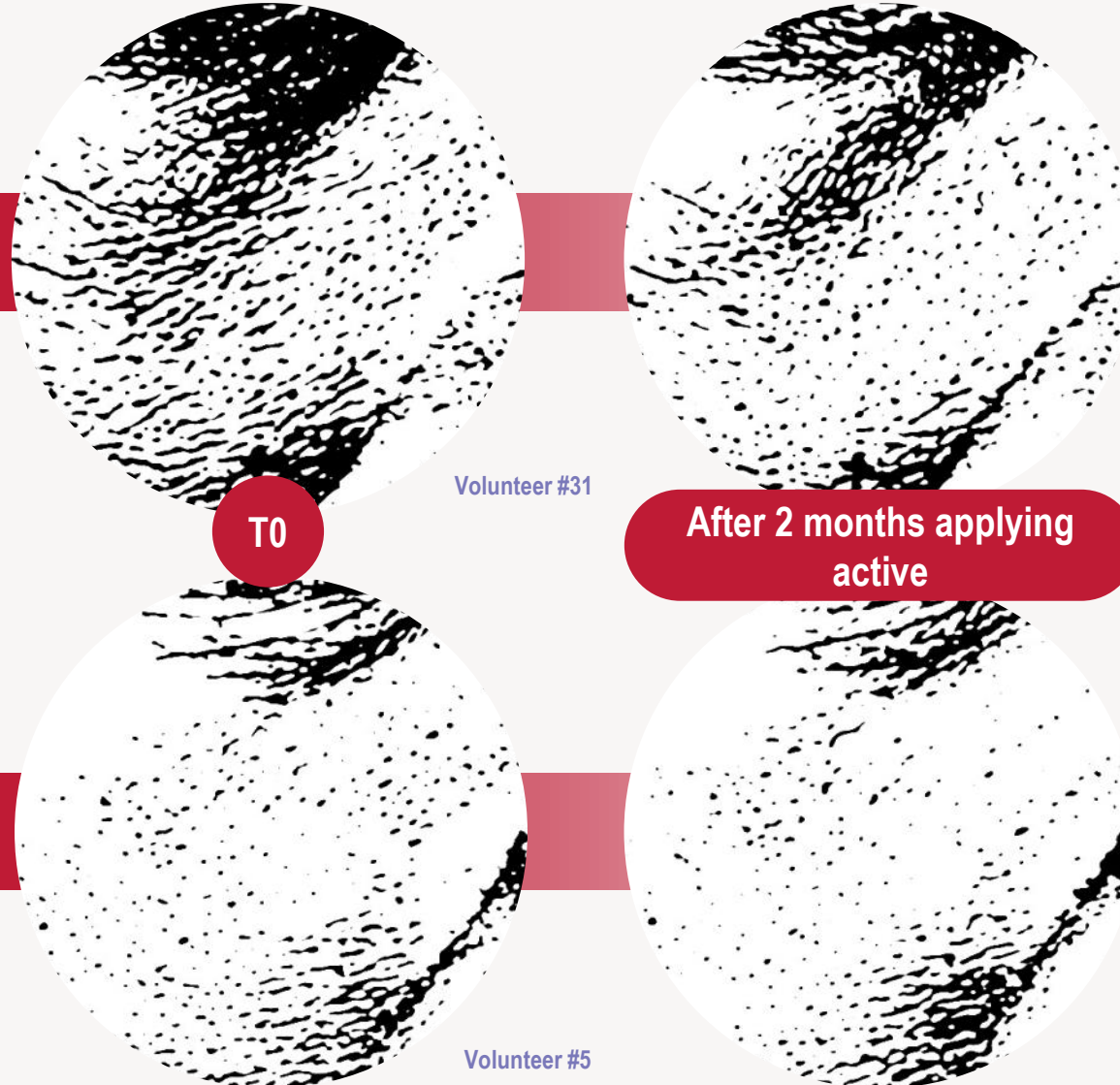
The skin reflects light rays with a soft-focus effect that attenuates the visible imperfections.

Thanks to an improved architecture of the epidermis and dermis, actives helps the skin to effectively diffuse the reflected-light. This gives the skin a natural satin aspect for an empowered and youthful appearance.

Menopause

Visibly transformed micro-relief

in vivo





Menopause and its impacts are scientifically demonstrated.

It impacts elastic tissue but also collagen via multiple pathways.

Visible signs: first wrinkles apparition, pore enlargement...

Actives ingredients can reduce these impacts at cellular level:

Boosting Extra cellular matrix components

Fighting oxidation / inflammation or other pathways as glycation...

Actives ingredients can visibly reduce these impacts :

Less sagging, more firmness, tone or texture improvement, smoothing the skin...

Menopausal impacts on skin are not inevitable, there are some opportunities to reduce signs and discomfort with actives

Menopausal impacts on skin are not inevitable,
strategies to reduce signs and discomfort



Thank you

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