

COBIOAGE

Skin Aging Exposome Protection
Redensifying Activity



N a t u r a l l y E f f e c t i v e

Skin Aging Exposome

*“The term **“skin aging exposome”** refers to the **external and internal factors** and their interactions, **affecting a human individual** as well as the response of the human body to these factors **that lead to biological and clinical signs of skin aging** ².”*

Exposome factors have been identified to potentiate skin aging

Some of those are:

- ✓ **Sun radiations:** ultraviolet and infrared radiation & visible light
- ✓ **Air pollution**
- ✓ **Tobacco smoke**
- ✓ **Nutrition**
- ✓ **Stress, sleep deprivation...**
- ✓ **A number of less well studied, miscellaneous factors**



Source: The skin aging exposome ²

² The skin aging exposome. Jean Krutmann, M.D.a, Anne Boulloc, M.D., Ph.D. Gabrielle Sore, Ph.D. Bruno A. Bernard, Ph.D. Thierry Passeron, M.D., Ph.D.

Skin Aging Exposome

The skin exposome triggers oxidative stress which causes protein glycosylation and the formation of **AGE (Advanced Glycosylation End-Product)**.

Glycosylation occurs when sugars and other compounds derived from its autoxidation of sugars react with proteins such as **collagen and elastin** leading to its **degradation** accelerating and inducing premature aging.



Skin Aging Exposome

COBIOAGE protects the skin from the environmental Influences **having antioxidant, anti-glycation and anti-lipid peroxidation activity.**

COBIOAGE protects the Extra Cellular Matrix preventing the degradation of its elements and stimulating the synthesis of collagen and elastin, **improving skin morphology, density, firmness and elasticity.**



**COBIOAGE is an excellent
Skin Aging Exposome
protector**

COBIOAGE

is an **extract** from the pod of the *Caesalpinia spinosa*, a **native tree** from **Peru**.

COBIOAGE

is approved by ECOCERT GREENLIFE, conforms to COSMOS Standard.



COSMOS
APPROVED



ethiplayer

Ethical work with people
Ethical work with products
Ethical work with environment

Properties

Also known as **Tara**, or **Peruvian carob**, it is a rich source of **bioactive compounds**.

Tara pods presents a high content in **Polyphenols**, essential constituents in the physiology of many plants, **protecting them from harmful physical and biological** events.

COBIOAGE presents a
total Polyphenolic content
> 14.000 mg/L
(measured as mg Gallic acid / L)



Rol of Polyphenols in skin care

Plant polyphenols are **potent antioxidants** that protect against **free radical damage** caused by exposure to UV light, reducing the risk of **premature aging**.

Most of the **natural polyphenols** can **absorb UV radiation**. Therefore, **when applied topically**, they can prevent penetration of the radiation into the skin¹.

The main polyphenolic
Compounds in tara pods are:
***Gallic acid, Epicatechin
Catechin, Apigenin
and Quercetin²***



¹ Skin photoprotection by natural polyphenols: Anti-inflammatory, anti-oxidant and DNA repair mechanisms Joi A. Nichols¹ and Santosh K. Katiyar

² Antioxidant properties of aqueous and ethanolic extracts of Tara (*Caesalpinia spinosa*) pods in vitro and in model food emulsions. *Journal of the Science of Food and Agriculture*

Efficacy Tests

1) In-tube enzymatic screening for the evaluation of the:

- ✓ **Anti-Oxidant**
- ✓ **Anti-Lipid peroxidation**
- ✓ **Anti-Glycation Activity**

And the protection of the Extra cellular Matrix:

- ✓ **Anti-Hyaluronidase & Anti-Collagenase activity**

2) In-vitro test in human fibroblasts for the evaluation of the **anti-wrinkle** and **firming effect**.

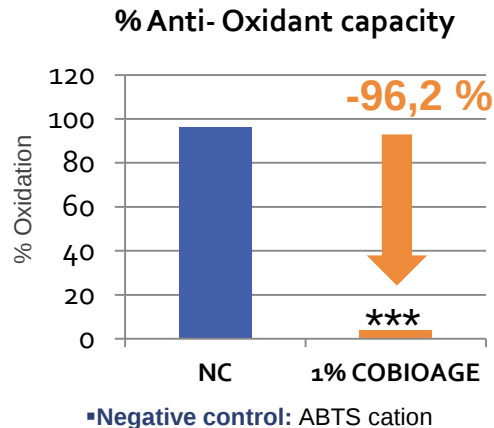
3) In-vivo clinical study to asses the **anti-aging** and **redensifying efficacy**



1) In-tube enzymatic screening for the evaluation of the Anti-Oxidant capacity:

Anti- Oxidant capacity

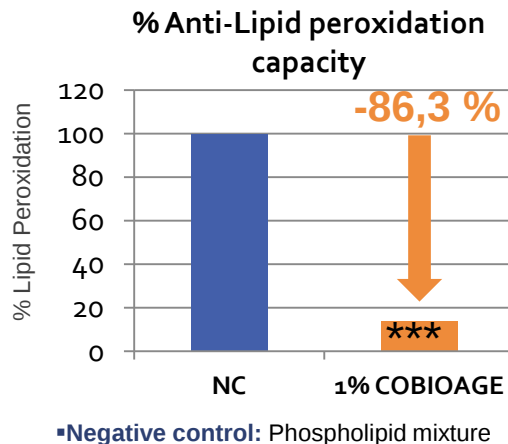
Anti-oxidant protection is a natural defense mechanism against the aggressions of environmental factors, such as **radiation** and **environmental pollution**.



Anti-Lipid peroxidation

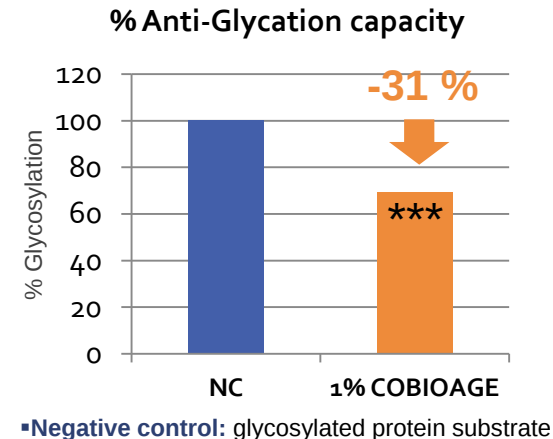
The poly-unsaturated lipids of cell membranes and lipoproteins are the main target of ROS.

Lipid peroxidation mediated by ROS generates **Reactive Carbonyls Species (RCSs)** that amplify the damage caused by ROS.



Anti- Glycation

Glycation occurs when sugars other compounds derived from their autooxidation react with proteins such as **collagen**, leading to its **degradation**.



In-tube enzymatic screening: Extra cellular Matrix protection

The main molecules that are **part of the ECM** (Extra Cellular Matrix) in the dermis are **collagen** and **hyaluronic acid**.

With aging, the levels of these proteins decrease, together with the strength and elasticity of the skin, which favors the appearance of wrinkles.

Matrix metalloproteinases are the origin of the appearance of wrinkles in aged skin. The decrease in flexibility is caused by the tridimensional degradation of the **ECM components: Hyaluronic acid and Collagen**.

COBIOAGE has proved to inhibit the enzymes that degrade the main ECM proteins: **Hyaluronidase and Collagenase**.

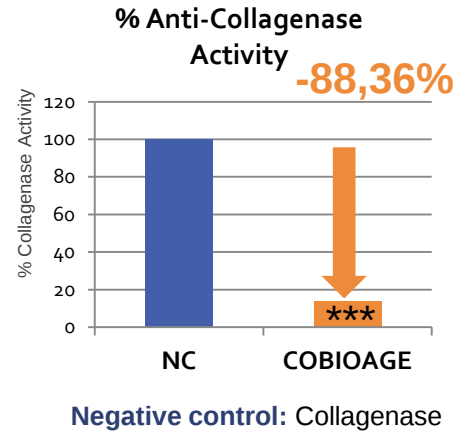
**Anti-aging, Firming
and Anti-wrinkle
capacity**



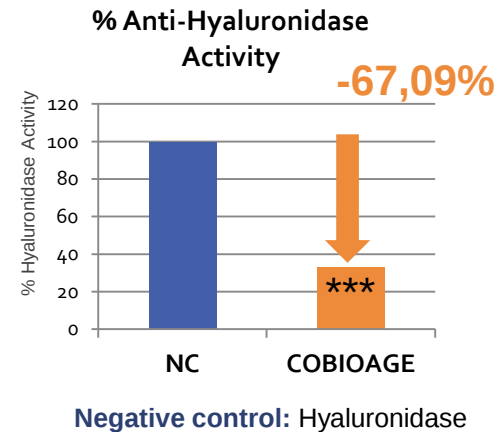
In-tube Extra cellular Matrix protection: Anti- hyaluronidase and anti-collagenase activity

▪ **Collagenase and hyaluronidase enzymatic tests:** are based on the ability of different enzymes to specifically degrade substrates of the extracellular matrix of the skin (hyaluronic acid and collagen, respectively).

In the presence of specific inhibitors of the enzymes, they are not able to degrade the components of the extracellular matrix.



*** (p < 0.001); ** (p < 0.01)



In-tube Tests Results Summary:

COBIOAGE

probed to protect collagen fibers.

It also preserves hyaluronic acid
and avoids protein glycation and
lipid peroxidation



- Anti-Oxidation activity of **96,23 %**
- Anti-Lipid peroxidation of **86,28 %**
- Anti-Glycation activity of **30,91 %**
- Anti-Hyaluronidase activity of **67,09 %**
- Anti-Collagenase activity of **88,36 %**

2) In-vitro anti-wrinkle and firming effect in human fibroblasts

In-vitro tests carried out on human **skin fibroblasts** treated with **0.1% COBIOAGE**.

These results together with the obtained in the enzymatic tests (88% collagenase inhibition, 67% hyaluronidase inhibition), indicate:

✓ **Anti-wrinkle effect** due to the combined action of **preventing the degradation of hyaluronic acid** and the existing **collagen**, and **favoring collagen synthesis**.

✓ **Preventive effect in the loss of firmness** thanks to the **protection** of the degradation of the existing elastin and, fundamentally, to the better arrangement of this protein.

COBIOAGE
increases the
collagen
production
and favors the
arrangement
of elastin
filaments

Anti-wrinkle and firming effect in human fibroblasts: Stimulation of elastin synthesis

The **formation of wrinkles** is due to an **imbalance between the degradation of existing proteins** and its **synthesis** by fibroblasts.

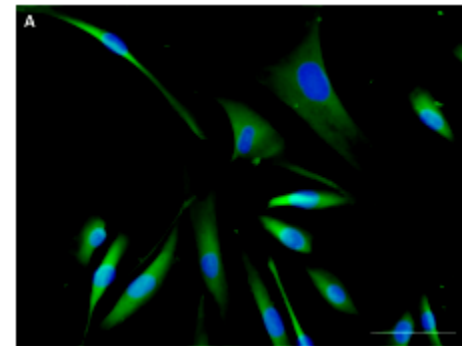
To evaluate **elastin expression levels**, human fibroblasts were incubated with 0.1% COBIOAGE for 16 hours and the **arrangement** and **signal intensity** of the labeled protein were evaluated by **immunofluorescence**.

0.1% COBIOAGE showed a **stabilizing effect of elastin fibers** (observed by a more distributed signal through the cellular cytoplasm).

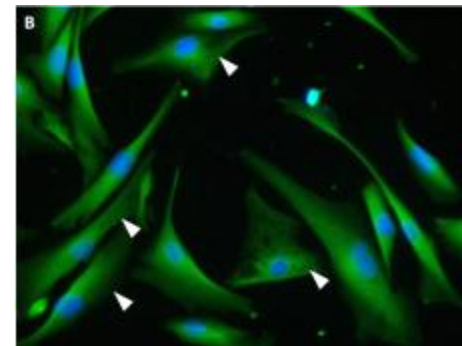
Stimulation of elastin synthesis can be observed because the **signal is more intense and larger** compared to control.

CONTROL:

Standard culture medium



0,1 % COBIOAGE:



Anti-wrinkle and firming effect in human fibroblasts: Stimulation of collagen synthesis

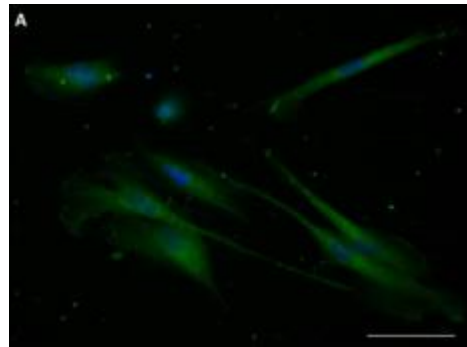
In the case of **collagen**, its **synthesis** was also evaluated by fibroblasts, obtaining **positive results**.

Fibroblasts treated with 0.1% COBIOAGE show a **more intense and larger signal** than in the case of the control situation.

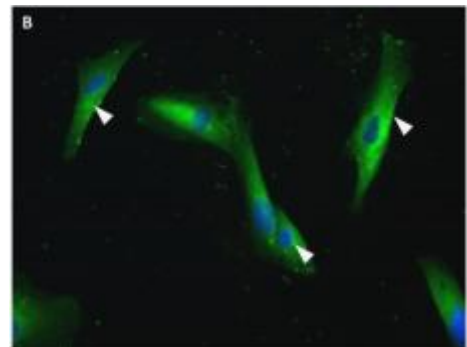
0.1% COBIOAGE showed to **stimulate the collagen synthesis** which can be observed because the **signal is more intense and larger** compared to control.

CONTROL:

Standard culture medium



0,1 % COBIOAGE:

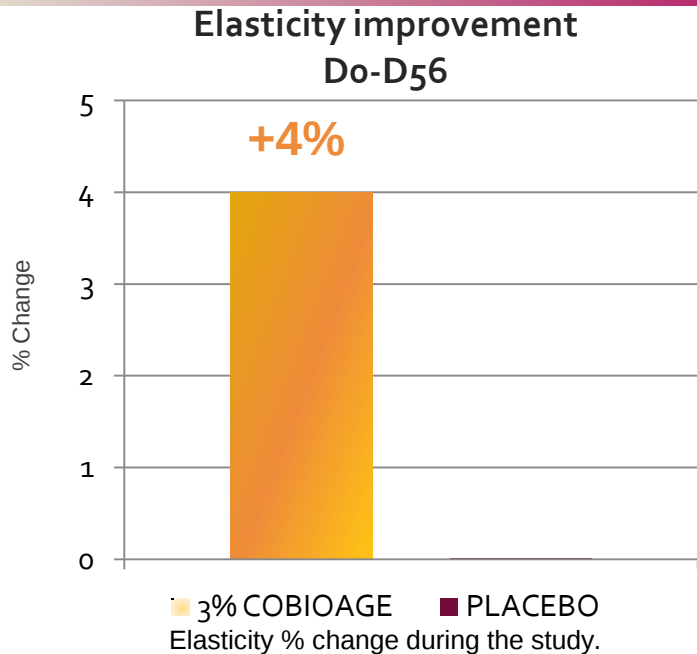


3) In-vivo: Clinical study to assess the anti-aging and redensifying efficacy of COBIOAGE

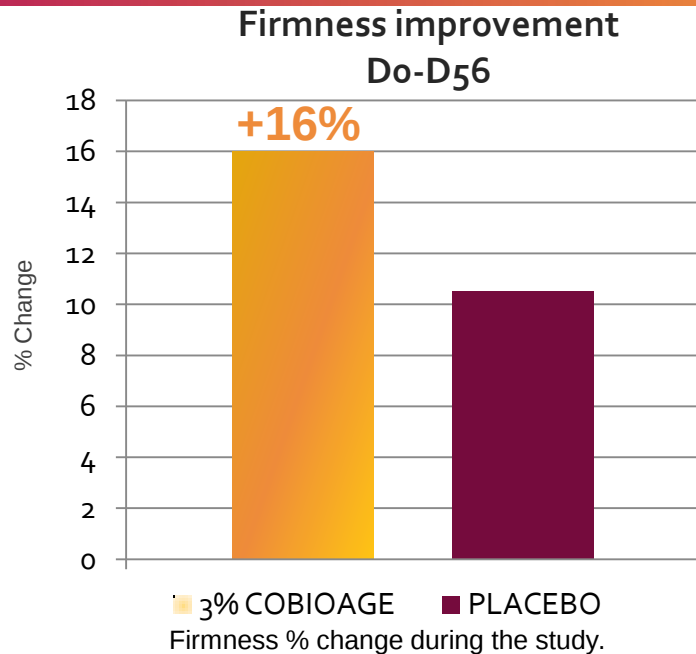
- 22 women, 50% 40 - 60 years old and 50% more than 60 years old were selected in the study.
- Application, twice a day for 56 days, of a **3% COBIOAGE emulsion** in one hemiface vs placebo emulsion in the other.
- The **anti-ageing efficacy** was assessed:
 - **Objectively and quantitatively by instrumental measurements** of the **skin firmness** and **elasticity** taken with a Cutometer®.
 - **Objectively and quantitatively**, by instrumental measurements of the **skin thickness** Sub Epidermal Low echogenic band **and density** by ultrasonography (Dermascan C system).



Assessment of firmness and elasticity by Cutometer®



**After 56 days
COBIOAGE induced a 4%
improvement in skin elasticity**



**After 56 days
COBIOAGE induced a 16%
improvement in skin firmness**

Assessment of the skin thickness and density

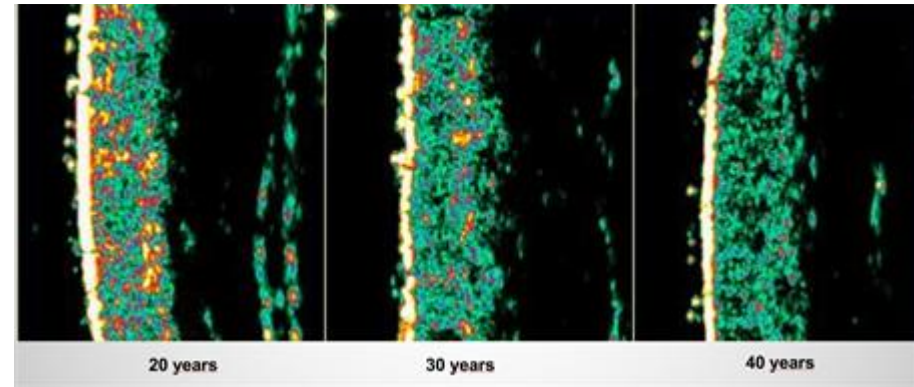
Sub Epidermal Low echogenic band (SLEB BAND)

Changes in the dermis associated with aging can be detected by **skin ultrasonography**.

Aged and photoaged skin shows a **subepidermal low echogenic band (SLEB)** located immediately **below the epidermis** that is an **ultrasound manifestation of elastosis**.

There is an association between age and SLEB thickness, being the SLEB band a photoage-related indicator.

Evolution of Dermis density with age
Subepidermal low-echogenic band (SLEB)



Assessment of the skin thickness and density

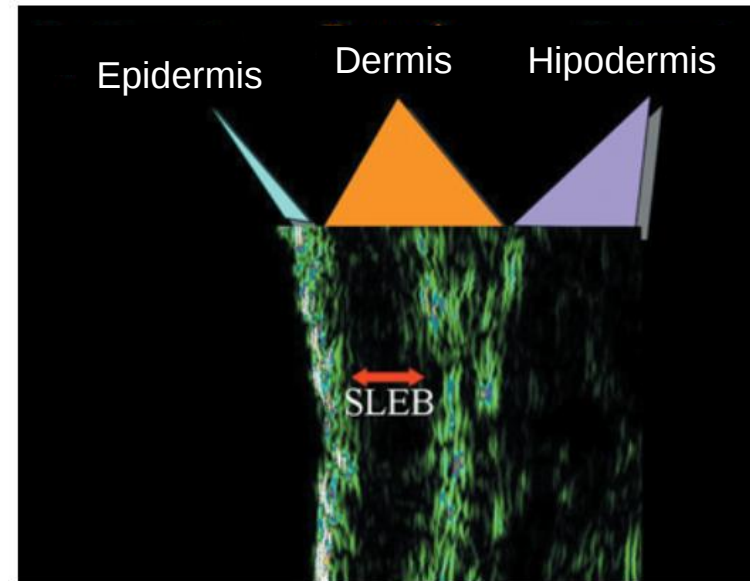
■ Skin morphology effect:

Skin thickness was evaluated by *Sub Epidermal Low echogenic band* .

Skin density by *ultrasonography* (Dermascan C system).

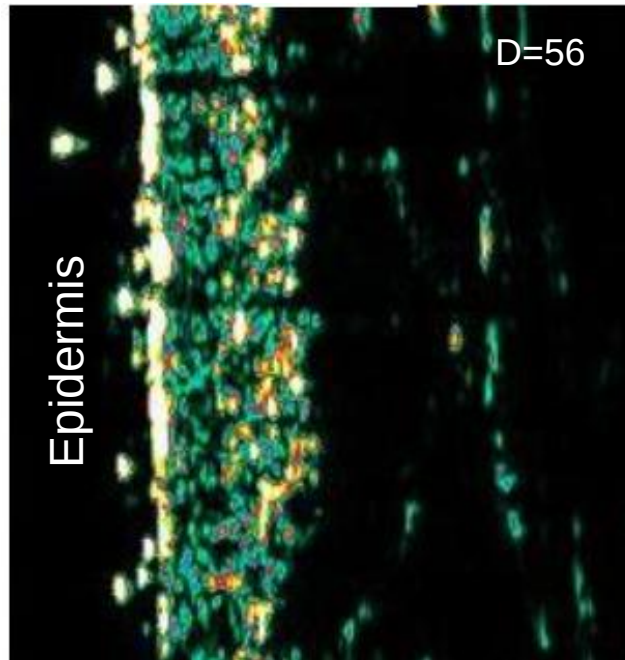
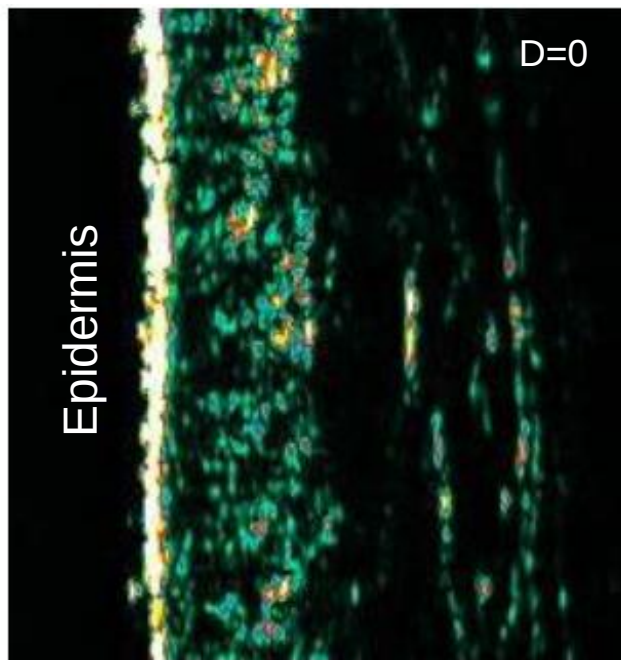
■ Measurements were performed before and after the application of the product, on **D0 and D56**, in **both** hemifaces (active versus placebo).

■ **To guarantee the initial conditions** for each evaluation a comparison between the left and right hemifaces at D0 was calculated showing that there was no differences between left and right areas so **every subsequent difference detected can only be attributed to the application of the products.**



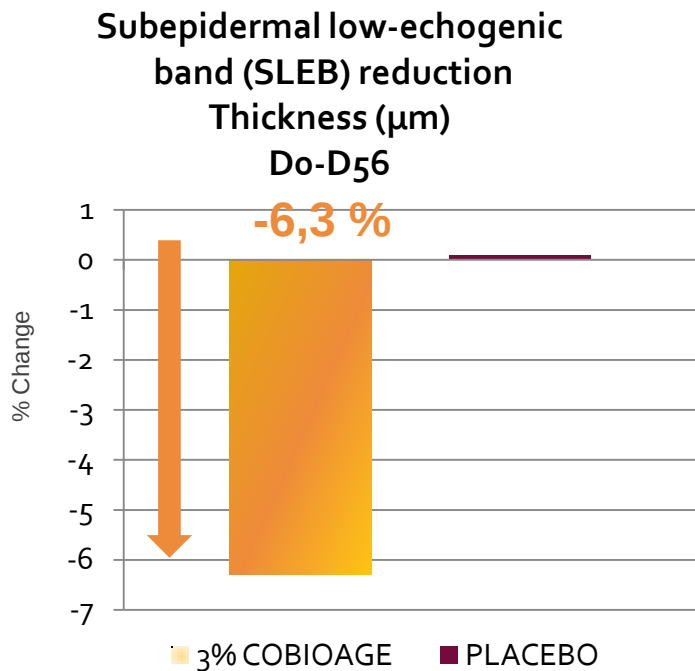
The presence of an **age-dependent subepidermal low-echogenic band (SLEB)** is a marker of **skin aging**.

After 56 days, the sub-epidermal density improved by +3,1%:



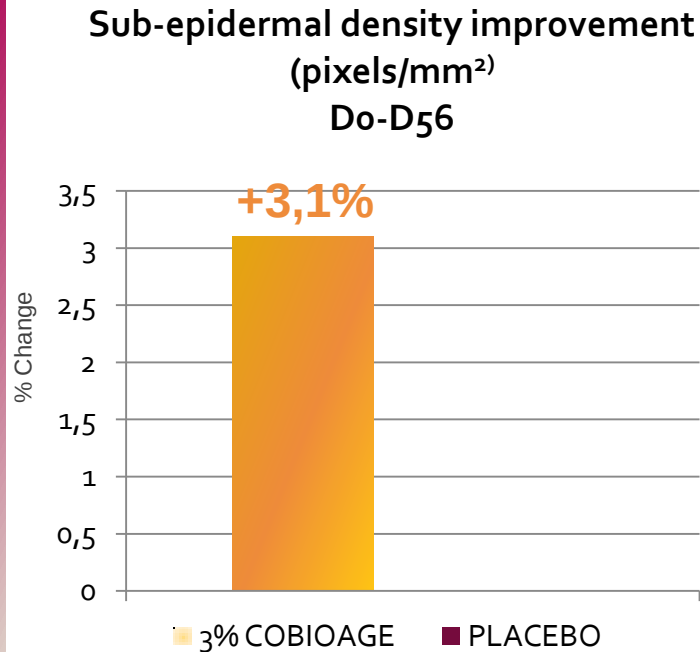
Ultrasonography
images of a volunteer
malar area at the
beginning and at the end
of the treatment,
showing a **decrease in**
the SLEB band
as there is an improve
in the sub-epidermal
density and therefore
an **improve in the skin**
morphology.

Assessment of the skin thickness and density



The **SLEB** band presence is a marker of skin aging.

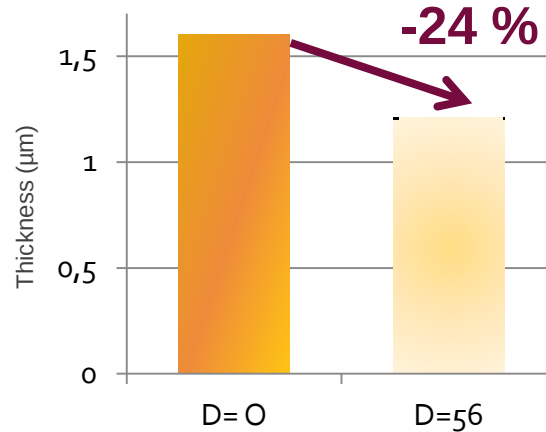
COBIOAGE reduced the SLEB band by -6,3 % improving the skin density by +3,1 %



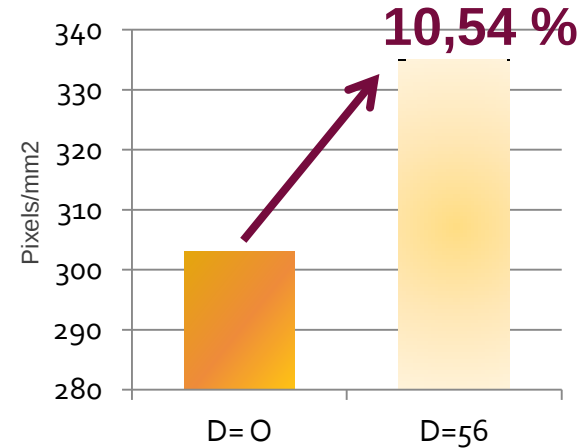
SLEB Band reduction and density increase in the 40- 60 years old group

The group aged between 40 and 60 years experienced the greatest SLEB BAND decrease with an average reduction of **24%** at the end of the treatment, and a **10,54%** improvement in skin density.

SLEB Band Reduction
40-60 years old group
Do-D56



Sub-Epidermal density
improvement
40-60 years old group
Do-D56



Voluntaries self-assessment of COBIOAGE

After 56 days of application of COBIOAGE, the volunteers confirmed that:

Q1:The skin was more **hydrated**

Q2:The product turned their skin **smoother**

Q3:The skin was more **flexible and elastic**

Q4:The skin was **firmer**

Q5:The skin colour was **more uniform**

Q6:The product **improved the overall beauty of the skin**



COBIOAGE

presented very good skin
acceptability and compatibility

Cosmetodynamic properties:

Global Skin Exposome Protection

■ Anti-wrinkle, redensifying and firming:

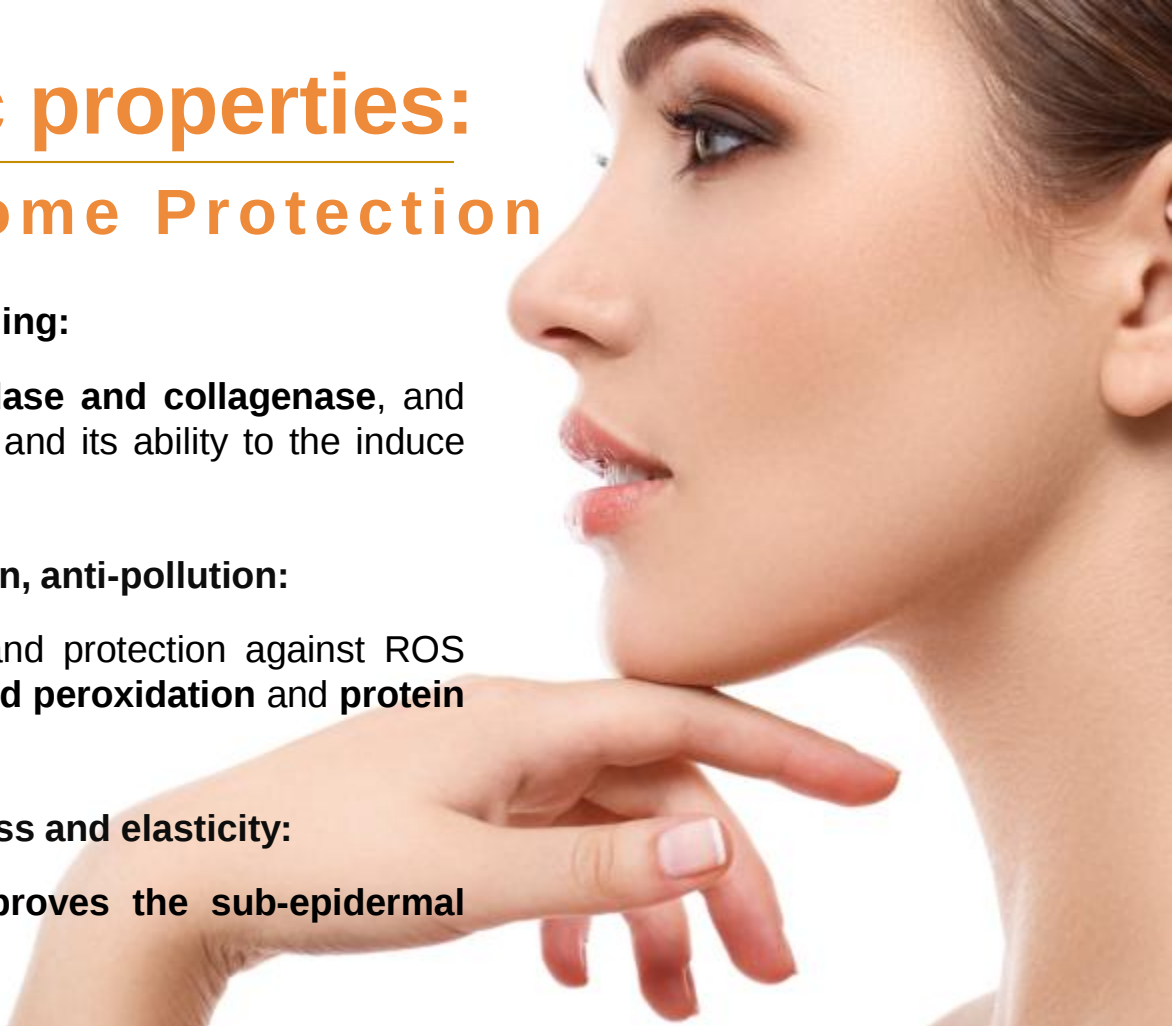
Due to its ability to **inhibit hyaluronidase and collagenase**, and thanks to its **elastin stabilizing effect** and its ability to induce **collagen synthesis**.

■ Anti-aging & photoaging protection, anti-pollution:

Thanks to its **anti-oxidant capacity** and protection against ROS damage, its protective effect against **lipid peroxidation** and **protein glycosylation**.

■ Improves skin morphology, firmness and elasticity:

Decreases the **SLEB band** and improves the **sub-epidermal density**.



Product specifications:

■ INCI:

Propanediol, Aqua (Water), Caesalpinia Spinosa
Fruit Extract.

■ DOSE OF USE:

0,5 - 5 %

■ SOLUBILITY:

Hydrosoluble

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