

# MARINE BAMBOO TG

Algal intelligence in the blue light kingdom



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**global**

Amsterdam • 17-19 April 2018



Green  
ingredient  
Award

**BRONZE**

# MARINE BAMBOO TG

## Algal intelligence in the blue light kingdom



The Green ingredient award is given to an ingredient that makes a significant environmental and social difference in the area of sustainability. The nominated ingredients have been launched over two years ago and have current applications in cosmetic products. Applicants proved the environmental and social difference the ingredient makes in terms of sustainability.

### *The Judges :*

- *Judi Beerling, Ecovia Intelligence*
- *Jean-Florent Campion, Sustainable Development Manager, L'Oreal*
- *Tom Hornshøj-Møller, R&D Manager, Urtekram*
- *Amarjit Sahota, Founder & President, Ecovia Intelligence*
- *Robin Parker, Technical Director, Acheson & Acheson*

# MARINE BAMBOO TG

## Algal intelligence in the blue light kingdom



1: PREMATURE AGING  
2: POLLUT'AGING  
3: PHOTOAGING (BLUE LIGHT/IRA)

### IN VITRO TESTS

### IN VIVO TESTS

- Down-regulates collagenase (MMP1) gene over-expression:
  - prevents collagen fragmentation
  - preserves fibroblast potential for new collagen production
- Stimulates elastin (+40%) and p63 gene expression (+50%)
- Protects and repairs the contractile forces of fibroblasts during aging and blue light irradiation.
- Counteracts the blue light-induced over production of MMP1.
- Rebalances the skin B-carotene loss and reinforces the skin anti-oxidative potential

CTFA/INCI name : Caprylic/capric triglycerides – Himanthalia elongata extract  
Incorporation rate : 1-3 %  
CHINA & COSMOS  
PATENT PENDING

# MARINE BAMBOO TG

## Algal intelligence in the blue light and IRA kingdom



- Marine Bamboo Tg comes from **Himanthalia elongata**.
- It is a brown seaweed, **more than 3 meters long, which rises from the sea bed** as land bamboo rises from the earth towards the sky.
- These marine plants and land bamboo **have similar cosmetic properties** as a firming, toning and revitalizing care.
- In addition, these long brown or olive green leathery straps look like **collagen fibers**

# MARINE BAMBOO TG

Algal intelligence in the blue light and IRA kingdom



- Enriched fraction of fucosterol and phyco-carotenoids.
- Marine substances involved in the fight against the UV, blue light and Infra-Red type A radiations in the ocean.

BIOSUBSTANCES	CONTENT ( $\mu\text{g/g}$ )
Unsaponifiables	710
Fucosterol	27
Phyco-Carotenoid *	0,06
Phyco- $\beta$ Carotene	0,11

\* unidentified carotenoid

Indicative values

# MARINE BAMBOO TG

## Algal intelligence in the blue light and IRA kingdom

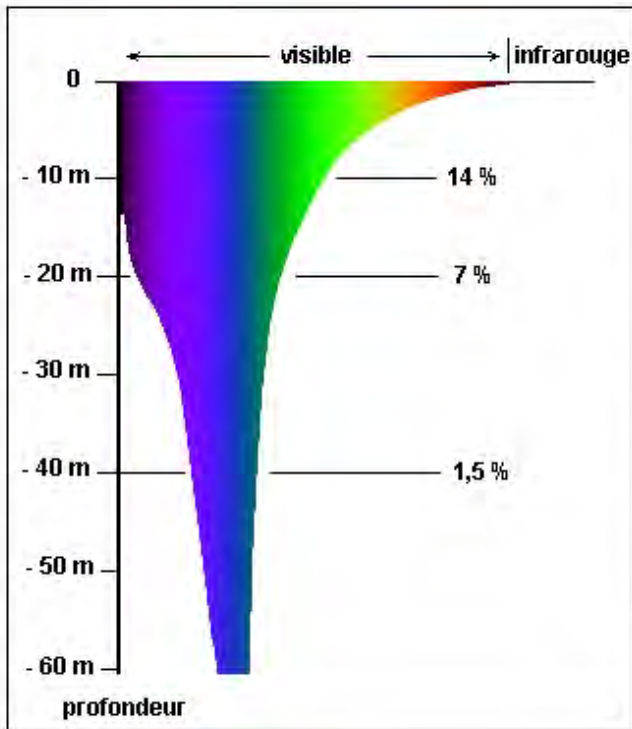


- Himanthalia Elongata lives in the underwater depths.
- The main characteristic of such environment is a very high exposure to blue visible light.
- Blue is the only wavelengths that penetrates in depth and this is why the ocean appears to be blue.

# MARINE BAMBOO TG

## Algal intelligence in the blue light and IRA kingdom

Penetration of visible light into water: the percentages represent the fraction of solar energy reaching the depth considered.



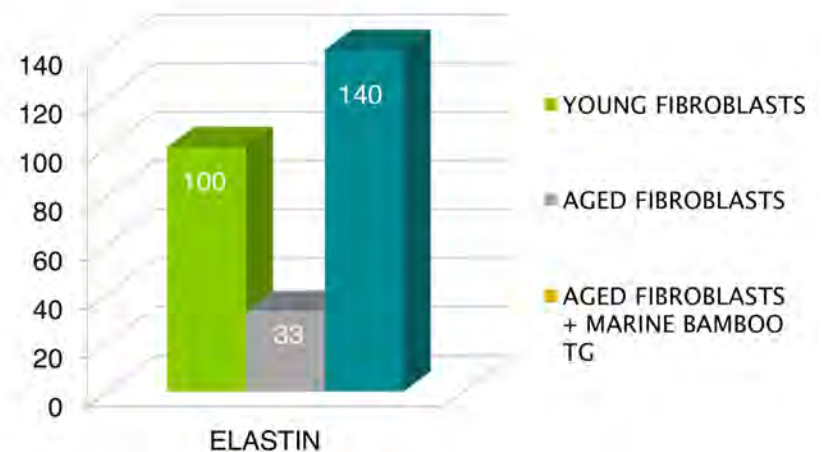
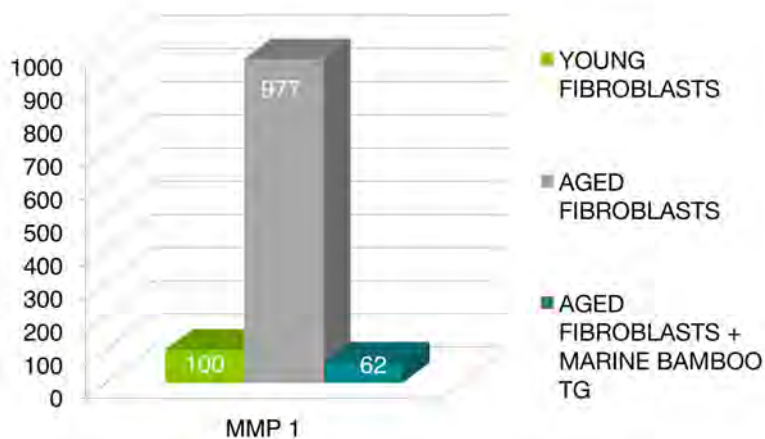
<http://eduscol.education.fr/orbito/pedago/littoral/lh310.htm>

- Solar radiation is absorbed by water, but this absorption is not equal for all components of the light.
- In the visible light, the orange-red does not penetrate beyond 5 m depth.
- The green disappears between 30 and 50 m.
- Blue is the least absorbed, and it is estimated that below 60 m, the vision is monochrome in the blue.
- Thanks to its unique defense system, *Himantalia* dominates the blue ocean.
- Bio-inspiration: in the same way, these substances counteract blue light toxic effects within the skin.

# MARINE BAMBOO TG

## Premature Aging, Pollut'aging, Photoaging

% RELATIVE EXPRESSION (YOUNG FIBROBLASTS: BASE 100)



In-Vitro studies performed on aged fibroblasts with Marine Bamboo (0,1%)

- **MMP1 gene:** MB down-regulates of the collagenase (MMP1) gene expression. This activity results in the prevention of collagen fragmentation and the preservation of fibroblasts potential for new collagen production.
- **Elastin gene:** MB stimulates the elastin gene expression.



# MARINE BAMBOO TG

## Photoaging (Blue light induced)



Today, the multiplication of equipment using LED bulbs in our environment (low energy bulbs, computer screens, tablets, smartphones, televisions etc ...) raises the issue of **skin damage**.

Blue light is a color of the spectrum of visible light that can be seen by the human eye. It is adjacent to the ultraviolet in the spectrum of sunlight, high energy, and has a wavelength ranging **from 400 to 500 nm**.

**Blue-violet (400 to 430 nm)** induces oxydative stress.

# MARINE BAMBOO TG

## Photoaging (Blue light induced)

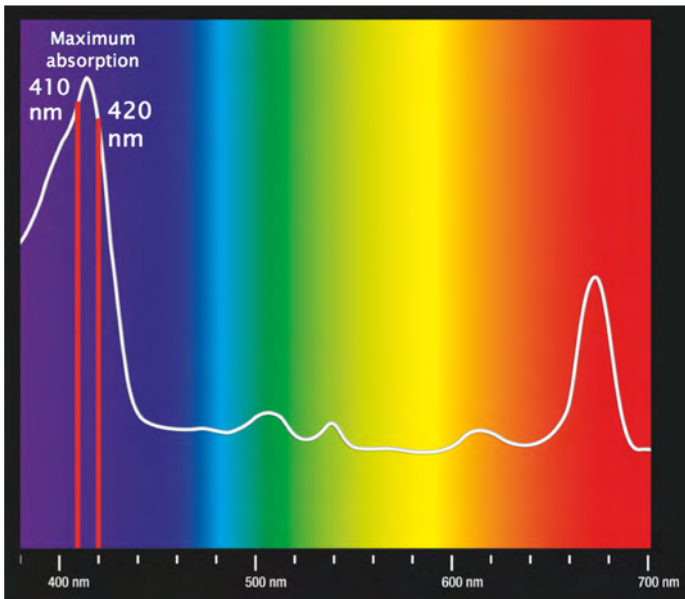


### **UV AND BLUE LIGHT INDUCE:**

*Production of ROS -> stimulation of inflammatory cytokines -> increases the expression of matrix degrading enzymes (MMP-1) -> decreases the anti-oxidative capacity of fibroblast -> inhibits its proliferation -> induces skin darkening and premature aging*

# MARINE BAMBOO TG

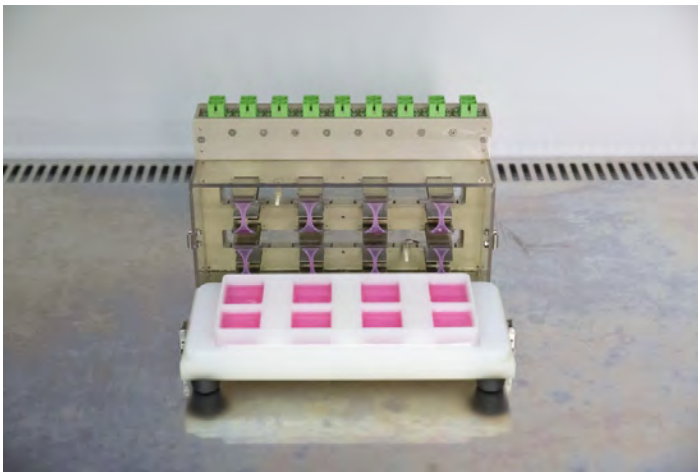
## Visible absorption spectrum



- MARINE BAMBOO shows an **absorption maximum rate** in the **400 to 430 nm** wavelength range.
- It focuses entirely **on the most toxic** high-energy wavelengths also called the bleu/violet rays. responsible of blue light skin damage.

# MARINE BAMBOO TG

## Quantification of the contractile forces of fibroblasts on a dermis equivalent study



### EFFECT OF MARINE BAMBOO TG AGAINST BLUE LIGHT EXPOSURE ON FIBROBLASTS

*Measurement: quantification of contractile forces developed by human fibroblasts*

#### 3 EXPERIMENTAL CONDITIONS:

- 1- Non-irradiated control
- 2- Blue Led irradiation control during 15 minutes on fibroblasts
- 3- Blue Led irradiation with 0.025% of Marine Bamboo during 15 minutes on fibroblasts

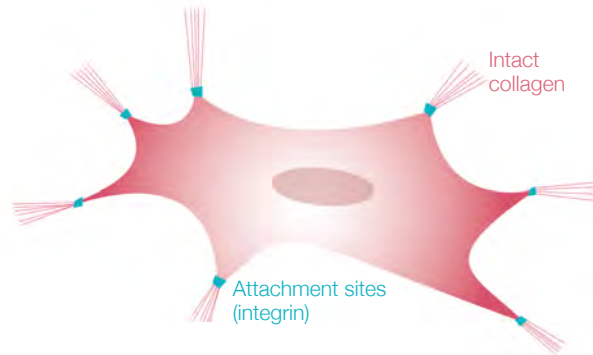
Fibroblasts were then suspended in a gel of polymerised collagen (dermis equivalent). Their contractile forces (=tension power) are measured.

The next day a new irradiation was performed with the same protocol.

# MARINE BAMBOO TG

## What does “contractile force” mean?

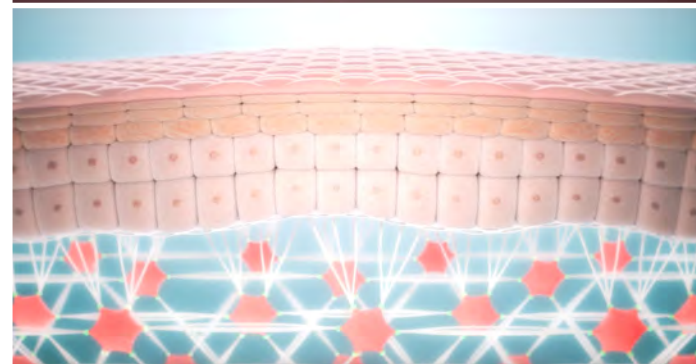
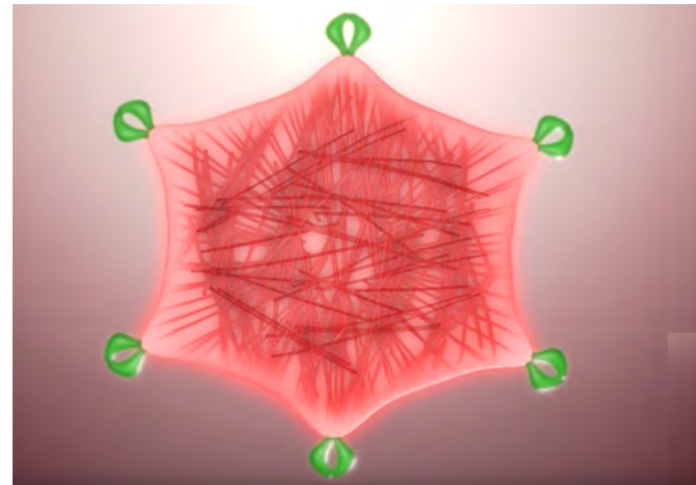
### Contractile forces of fibroblasts with Marine Bamboo TG



Fibroblasts are large and star shaped and well attached to the collagen fibers and fibrils through integrin.

They consequently remain mechanically active thanks to the protective and reparative effect of Marine Bamboo.

So Marine Bamboo breaks the aging vicious cycle stimulated with blue light. Fibroblasts are re-activated and increase its expression level of elastin while reducing its production of degradation enzymes.

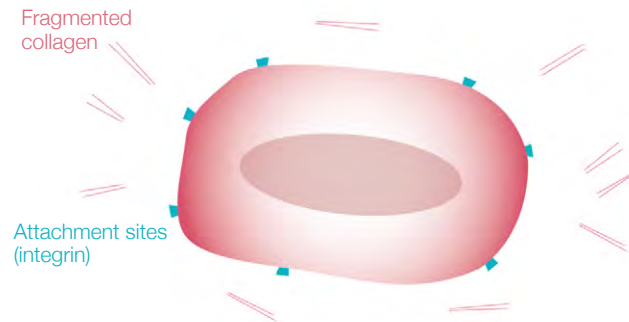


source: <https://www.youtube.com/watch?v=O5U2UpNQw2Q>

# MARINE BAMBOO TG

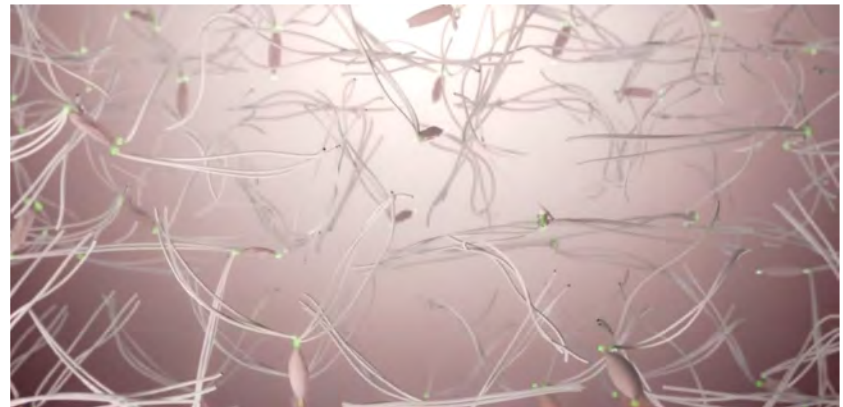
## What does “contractile force” mean?

### Contractile forces of fibroblasts in presence of blue light



Aging and blue light exposure causes the fragmentation of collagen fibers and the breakdown of the fibroblasts attachment sites (=contacts) with collagen fibrils. This phenomenon is also called fibroblasts collapse. This results in a decrease of the mechanical tension and consequently a decrease in skin firmness.

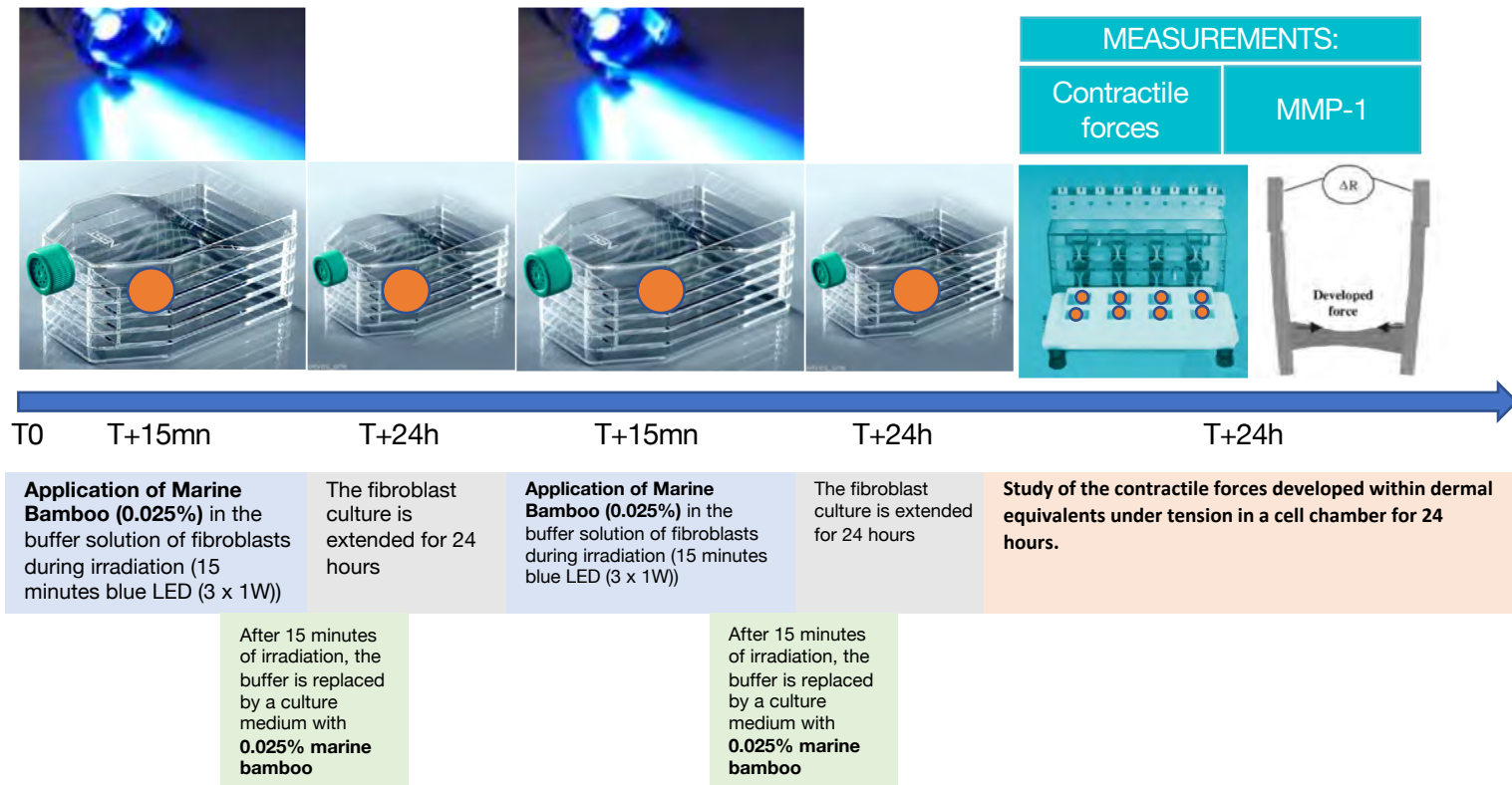
Fibroblasts size is reduced and they synthesize less collagen and more destructive enzymes (MMP1) that will further damage the fibrillar network and accentuate its atrophy in a vicious circle.



source: <https://www.youtube.com/watch?v=O5U2UpNQw2Q>

# MARINE BAMBOO TG

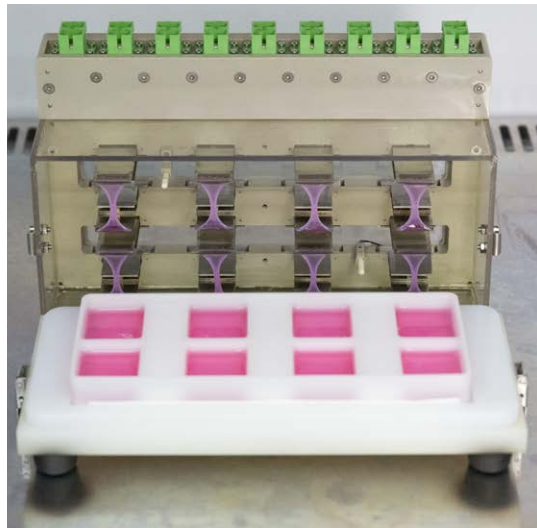
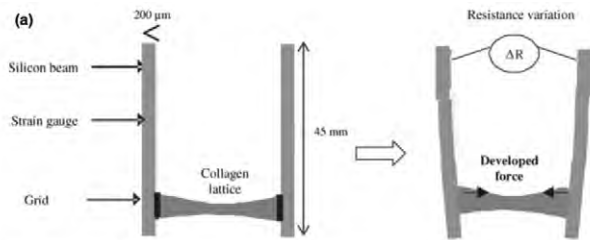
Protocole: blue led irradiation with 0.025% of Marine Bamboo during 15 minutes on fibroblasts



EVALUATION OF BOTH PROTECTIVE AND REPARATIVE EFFECTS OF MARINE BAMBOO<sup>TG</sup> AGAINST BLUE LIGHT IRRADIATION

# MARINE BAMBOO TG

## Quantification of the contractile forces developed by fibroblasts

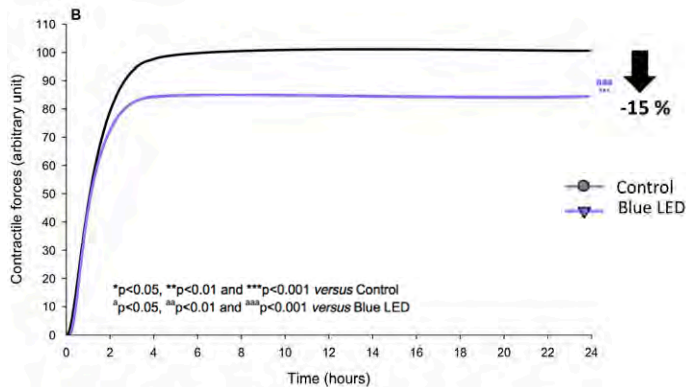


- The forces generated by fibroblast in tense collagen lattices were quantified using a special device before and after Blue Light irradiation.
- The cell chamber is composed of eight rectangular culture wells in which dermal equivalents develops.
- Two opposite beams hung down into each well at a distance of 27 mm apart.
- The dermal equivalent is attached to this sensor.
- The beams have an optical system to detect their own deformation. This deformation is proportional to the contractiles forces developed by fibroblasts.
- The data is collected by a computer, which includes a specific program to transmit the information of the forces in real time.



# MARINE BAMBOO TG

## Effects of the blue light on the contractile forces of fibroblasts and aging



### NON-IRRADIATED CONTROL VERSUS BLUE LED IRRADIATION CONTROL

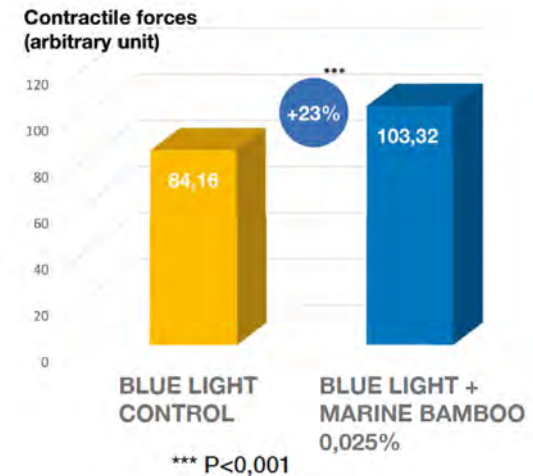
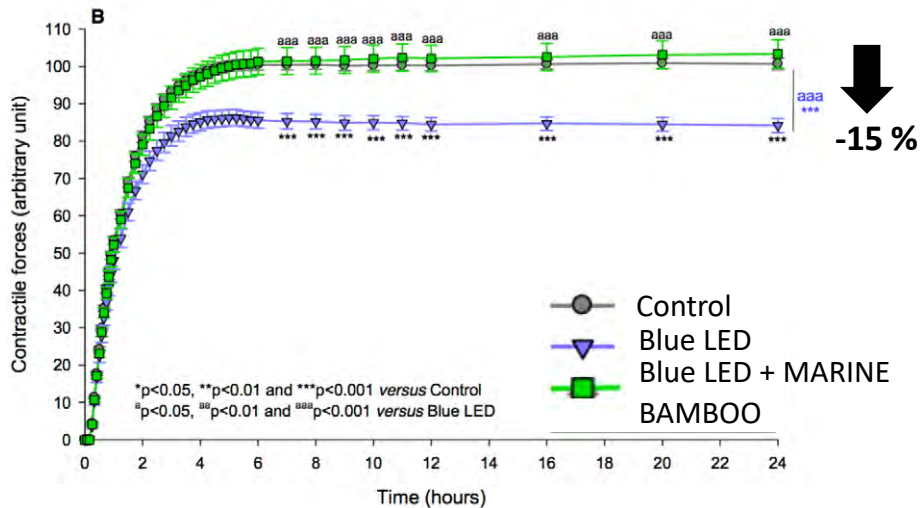
Blue LED irradiation (blue curve) causes a decrease of 15% of the contractile forces developed by fibroblasts after irradiation.

#### Results:

- Decreases the contractile capacity and migratory activity of fibroblasts in the wrinkles.
- Weakens the contraction forces of the extracellular matrix and reduces the mechanical tension of the skin.
- Induces a loss of elasticity and tonicity of the dermis.

# MARINE BAMBOO TG

## Quantification of the contractile forces of fibroblasts



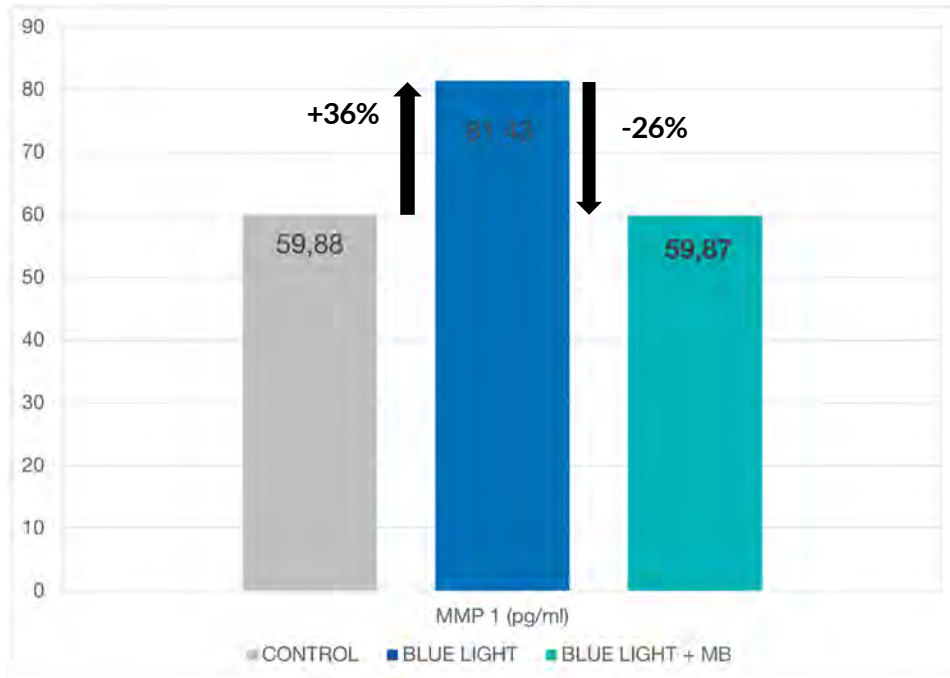
### Blue LED irradiation with 0.025% of Marine Bamboo (green curve) :

**Protective effect** on fibroblast irradiated with blue light via the preservation of their contractile forces

**Repairing effect** on fibroblasts after blue light irradiation via the restoration of the contractile forces (similar to not irradiated control)

# MARINE BAMBOO TG

## Quantification of MMP1 production



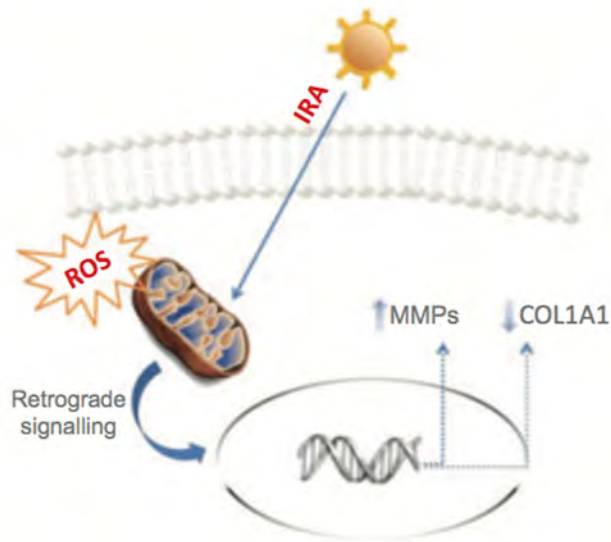
### MMP1 PRODUCTION:

- MMP-1 tends to increase after blue light irradiation (+36%).
- Marine Bamboo tends to decrease the level of MMP-1 by 26%, close to the « non-irradiated control level ».

$p < 0,05$

# MARINE BAMBOO TG

## Target: Photoaging (IRA induced)



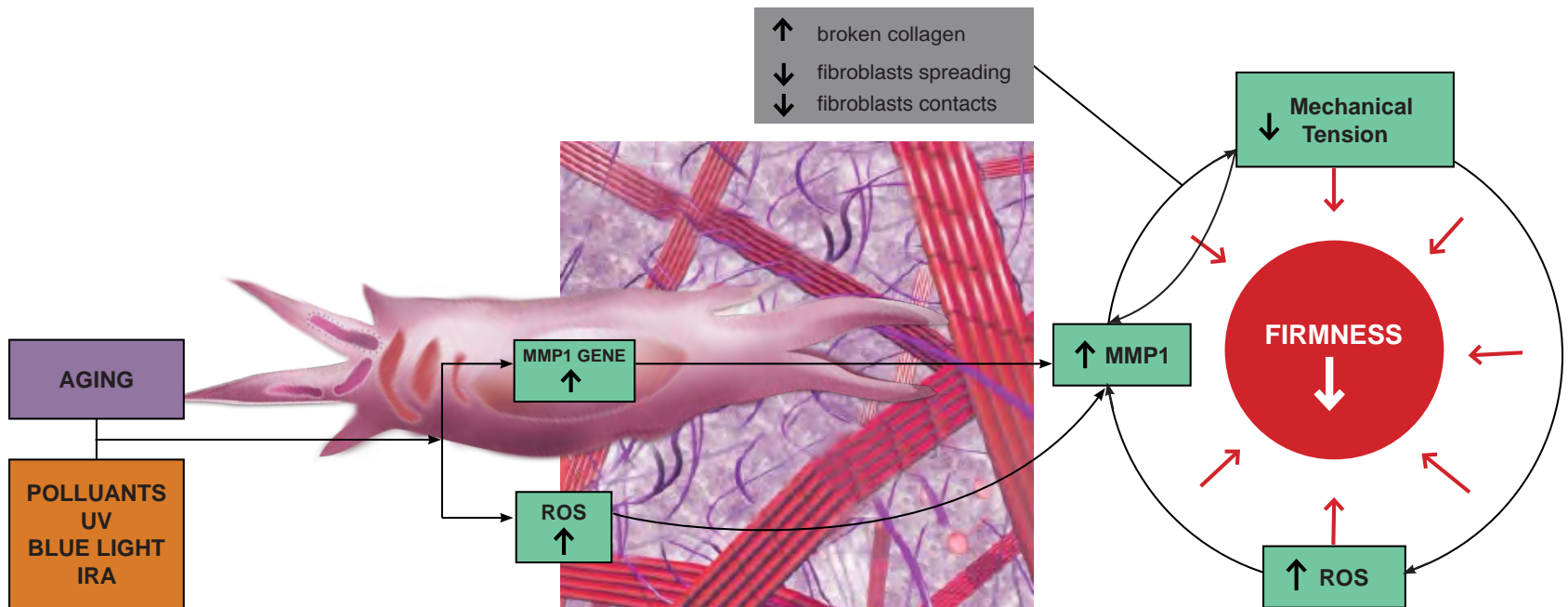
### IRA INDUCES:

- Degradation of the skin B carotene, one of the main skin antioxidants.
- Disruption of mitochondrial integrity resulting in:
  - > an increase of ROS
  - > a stimulation of MMP1 expression
  - > a decrease in the pro-collagen expression

As a consequence, the combination of UV , blue light and IRA significantly contributes to the formation of wrinkles in photoaging.

# MARINE BAMBOO TG

## The aging vicious cycle



Marine Bamboo breaks the critical mechanism of skin photoaging called the vicious aging cycle where ROS and MMP1 production are closely linked.

# MARINE BAMBOO TG

## In-vivo studies

- *Marine Bamboo 3% versus Placebo cream*
- *Cutometer and Visia CR*
- *28 days*
- *24 women*

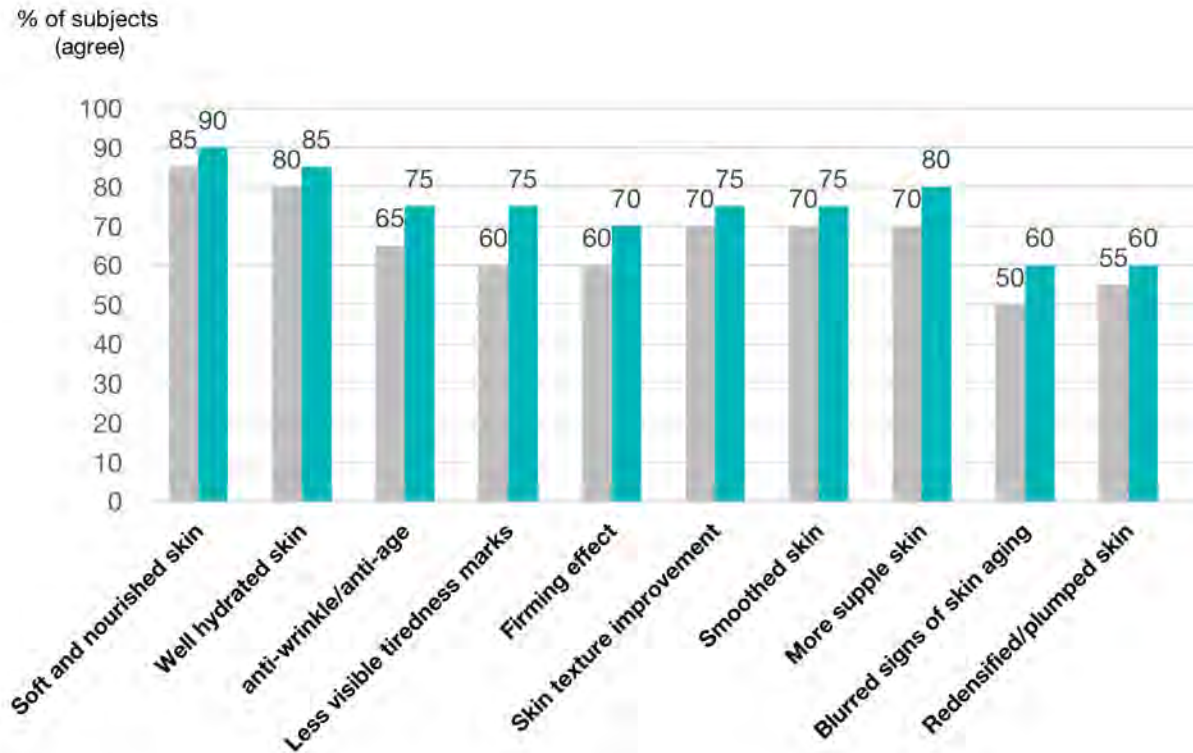
**+ 8 % FIRMING**  
**+ 12 % TONING**  
**+ 4,1 % SMOOTHING**



*Smoothing effect of Marine Bamboo  
(Visia CR)*

# MARINE BAMBOO TG

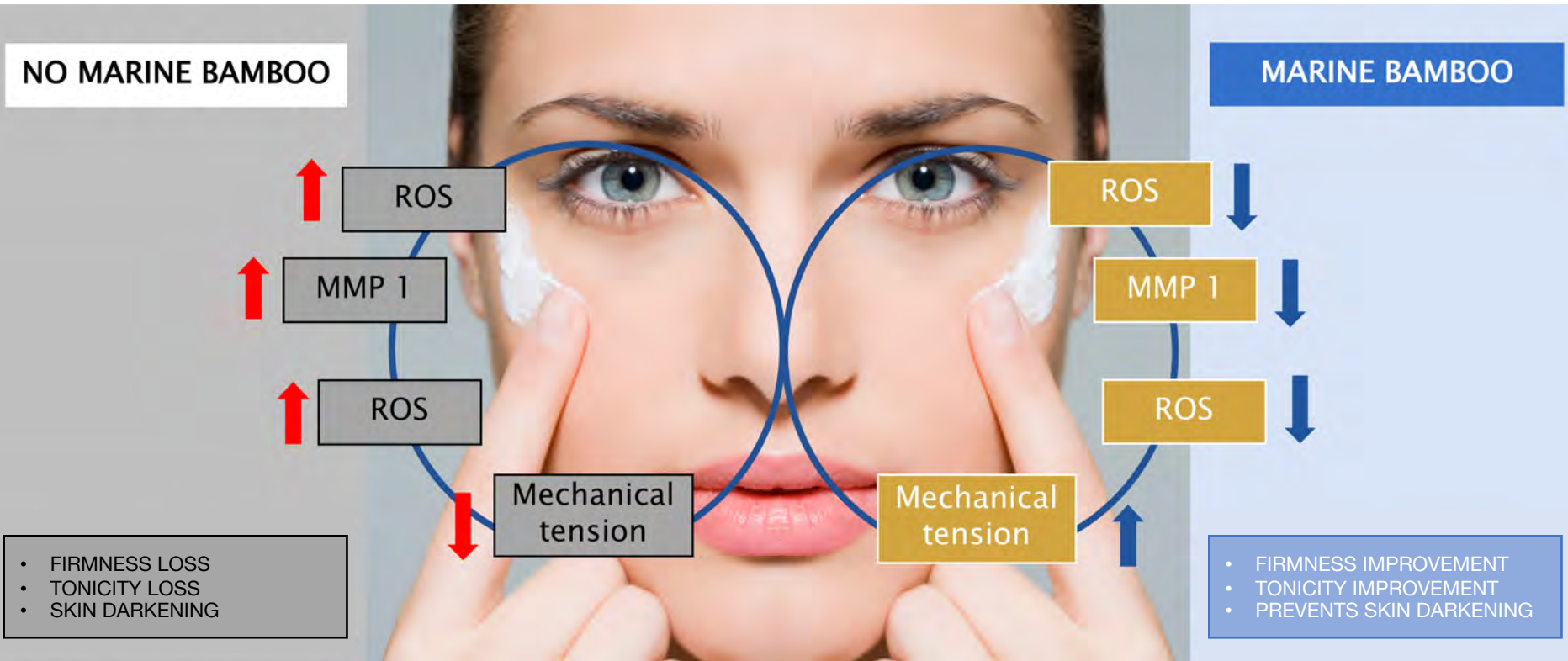
## In-vivo studies



The results of the auto-evaluation are in favor of marine Bamboo TG for all these parameters.

# MARINE BAMBOO TG

## Summary





# MARINE BAMBOO TG

## Press review

PRIX IN-COSMETICS

### Odycea récompensée

Lors du dernier salon In-Cosmetics 2018, l'ingrédient **Marine Bamboo** formulé par Odycea a reçu le Bronze Green Ingredient Award. Issue d'un sourcing durable en Bretagne, l'algue *Himanthalia elongata* est le cœur de cet actif liposoluble. Résultat de deux ans de recherche, cet ingrédient agit comme stimulant des fibroblastes pour lutter contre le processus de vieillissement cutané et protège de la lumière bleue. Il entre ainsi dans la composition de soins anti-âge, mais aussi de solaires ou du maquillage. Présente dans 40 pays, dont les États-Unis, la Chine et en Europe, Odycea arrive sur le marché français en partenariat avec le distributeur de matières premières DKSH. Originaires de Lannion en Bretagne, Odycea a été fondée en 2014 par Fidji Briand. Après une formation à la Grenoble Graduate School of Business, elle s'est spécialisée dans la recherche d'actifs végétaux pour le secteur de la cosmétique. Aujourd'hui, Odycea compte dix produits brevetés à son actif.



ANÀIS ENGLER

### Odycea awarded

At the last In-Cosmetics 2018 show, the ingredient Marine Bamboo Formulated by Odycea was awarded the Bronze Green Ingredient Award. Resulting from sustainable sourcing in Brittany, the alga *Himanthalia elongata* is the heart of this liposoluble active ingredient. Result of two years of research, this ingredient acts as fibroblasts stimulator to fight against the skin aging process and protects from blue light. It thus enters into the composition of anti-aging skincare, but also of sunscreen product or makeup.

Present in 40 countries, including the United States, China and Europe, Odycea arrives on the French market in partnership with the distributor of raw materials DKSH. Originally from Lannion in Brittany, Odycea was founded in 2014 by Fidji Briand. After training at the Grenoble Graduate School of Business, she specialized in the research for plant actives for the cosmetics sector. Today, Odycea has ten patented products to its credit.

# MARINE BAMBOO TG

## Press review

### Expression Cosmétique

The global information  
on cosmetics & fragrances



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[www.univar-personal-care.com](http://www.univar-personal-care.com)

Bimestriel  
Bimonthly  
N°50  
Mai - Juin  
May - Jun  
2018

#### DKSH Marine Bamboo TG Stand H18

Marine Bamboo TG est une fraction enrichie en fucostérol et en phyco-caroténoïdes extraits d'une algue brune (*Himanthalia elongata*). L'actif rééquilibre la perte en bêta-carotène et renforce le potentiel anti-oxydant de la peau. Par ailleurs, il inhibe l'expression des gènes de collagénase (MMP-1), protège et maintient la force contractile des fibroblastes exposés à la lumière bleue et stimule l'expression des gènes codant pour l'élastine. Marine Bamboo TG présente ainsi des propriétés anti-âges mais protège et répare aussi la peau des effets de la lumière bleue et des infrarouges de type A.



Marine Bamboo TG is an enriched fraction of fucosterol and phyco-carotenoids extracted from brown seaweed, *Himanthalia elongata*. It rebalances the skin beta-carotene loss and reinforces the skin anti-oxidative potential. It down-regulates collagenase (MMP1) gene expression and protects and repairs the contractile forces of fibroblasts exposed to blue light. It stimulates elastin gene expression.

Marine Bamboo TG has anti-aging properties and protects and repairs skin against blue light and infra-red type A.

# MARINE BAMBOO TG

## Press review



premium beauty news .com

### cosmetic ingredients 2018

**"AGEING WELL"**  
A new strategic target for cosmetics

**TRENDS**  
The pro-ageing revolution

**INTERVIEW**  
"The genetic identity card of well-ageing"  
David Boudier, Silab

**NEW INGREDIENTS**

### DKSH AND ODYCEA fight the damages of blue light



Odycea, in partnership with DKSH, is launching its new patented active ingredient **Marine Bamboo TG**, derived from organic seaweed, which targets ageing/premature-ageing and digital pollution. It is COSMOS certified, and approved for use in China.

Studies show that it protects against blue light and IRA skin damage. In addition, it also prevents premature-ageing. In placebo-controlled clinical studies, Marine Bamboo TG improves skin firmness, tone and blurring effect.

# MARINE BAMBOO TG

## Press review

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### THE MASTER OF BLUE LIGHT PROTECTION

Odycea, in partnership with DKSH, is launching its new patented active ingredient **MARINE BAMBOO TG**, derived from organic seaweed, which targets ageing/premature-ageing and digital pollution. It is COSMOS certified, and approved for use in China.

Studies show that it protects against blue light and IRA skin damage, through the inhibition of MMP1 and the protection of the contractile forces of fibroblasts by fucosterol and phyco-carotenoids. In addition, it also prevents premature-ageing through the stimulation of p63 and elastin genes.

In placebo-controlled clinical studies, Marine Bamboo TG improves skin firmness, tone and blurring effect.