



ACTIVE INGREDIENTS

FEEL GOOD BEAUTY

Advanced Biotechnologies dedicated to
SKIN/HAIR BEAUTY & WELLBEING

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 BIOTECHNOLOGIES
GREENTECH

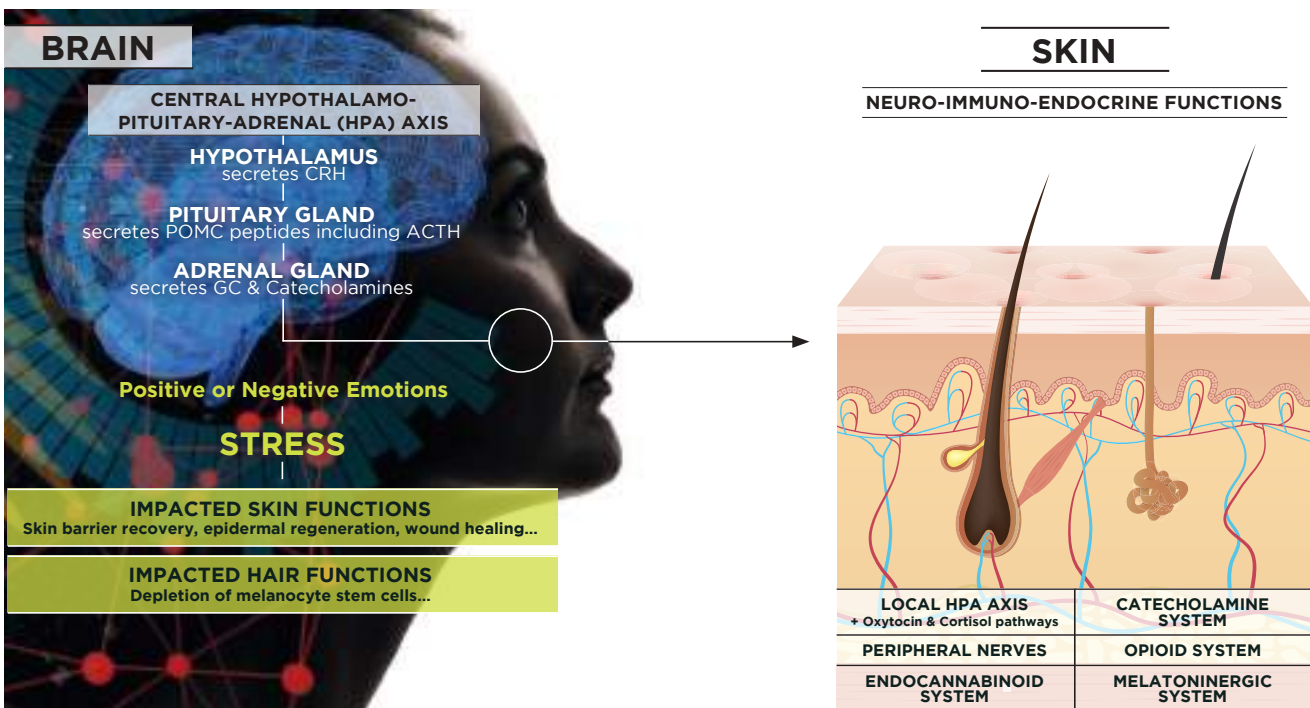
THE SCIENCE OF FEEL GOOD BEAUTY

TODAY IS A GOOD DAY TO HAVE A GOOD DAY

Since few years and today more than ever, **mental health and self-care** have been identified as **rising trends** in our societies and especially **in cosmetics**. People want to see the beauty industry focusing more on making them feel better, than just looking better, and say that using beauty products help **to feel better**, to **improve self-esteem** or to **reduce stress**.

An increasing number of scientific studies established a **bidirectional link between skin/hair** aspect or disorders and the **psychological state** of people. Skin and hair are the most noticeable parts of our body and thus important for self-image and mental health (Chen and Lyga, 2014; Jafferany, 2007). Skin has revealed itself to be a complex organ involved in multiple neuro-immuno-endocrine functions, **connecting skin and brain**, and involved in many skin and hair functions (Huang and Rompolas, 2020; Nejati *et al.*, 2013).

BRAIN-SKIN AXIS



Zhang *et al.*, 2020; Baswan *et al.*, 2020; Chen and Lyga, 2014; Nejati *et al.*, 2013.

PSYCHOBIOLOGY : A GREENTECH R&D EXPERTISE

Since many years, psychobiology is a **key Greentech R&D expertise** and our scientists are **pioneer in the development of cosmetic active ingredients based on a psychobiological approach**. Today, 4 active ingredients are based on this **systemic approach**, addressing different skin and hair issues, supported by articles published in international scientific journals.

GREENTECH INNOVATIONS FOR FEEL GOOD BEAUTY

- CIRCALYS®**: to counteract the impacts on skin & mood of fatigue & modern lifestyles.
- HEBELYS®**: to address skin and emotional need of the silver generation women.
- EXPOZEN®**: to sooth visible and perceived signs of skin sensitivity.
- ARCOLYS®**: to restore natural hair color and boost self-esteem.

CIRCALYS® CHRONO-DETOX FEEL GOOD ENERGIZER

NEW LAUNCH
2021

GREENTECH INNOVATION

- CONCEPT OF CHRONOBIOLOGY
- BRAIN-SKIN AXIS MODULATION
- PSYCHOBIOLOGICAL APPROACH

MOLECULES

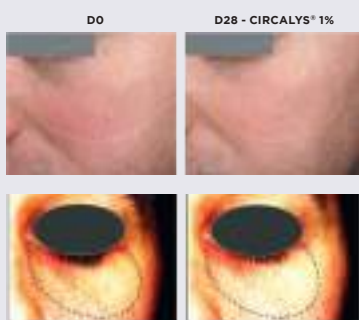
Andrographolide, identified by Greentech to counteract circadian disruption and fatigue induced by **modern lifestyles**. Obtained from Green Chiretta *Andrographis paniculata*, a major Ayurvedic detoxifying plant, native from India.



IN VIVO

Study on 48 night/shift workers (30-59 yo) with visible signs of fatigue (dark circles, eye bags, wrinkles, dull tone). Gel with CIRCALYS® 1% (n=24) or placebo (n=24). Application twice a day during 28 days.

1. REDUCES FACIAL SIGNS OF FATIGUE



CLINICAL SCORING (D28)

EYE BAGS -28%****

Analysis on subjects with D0 score ≥ 1.5 (n=14 for each group). ****p<0.0001 vs D0 - Significant effect vs placebo (p<0.05)

DARK CIRCLES -13%****

Analysis on subjects with D0 score ≥ 1.5 (n=19 for CIRCALYS® 1%, n=21 for placebo). ****p<0.0001 vs D0

UNDER-EYE WRINKLE -21%**

**p<0.01 vs D0

SELF-ASSESSMENT (D28)

RESTORES SKIN RADIANCE 75%

SMOOTHES SKIN (wrinkles, fine lines) 75%

MAKES SKIN RESTED & COMFORTABLE 88%

2. FEEL GOOD ENERGIZER

Psychological evaluation at D28 with 3 scientifically recognized psychological tests

FEELING OF WELL-BEING

TRAIT EMOTIONAL INTELLIGENCE QUESTIONNAIRE SHORT FORM (TEIQue-SF) (Cooper and Petrides, 2010)

+8%*

D28 vs D0

NEGATIVE AFFECT

POSITIVE AFFECT AND NEGATIVE AFFECT SCHEDULE (PANAS) (Watson et al., 1988)

-17%*

D28 vs D0

PERCEIVED STRESS

PERCEIVED STRESS SCALE (PSS) (Cohen and Williamson, 1988)

-12%*

D28 vs D0

No effect with placebo, *p<0.05

IN VITRO/EX VIVO

1. MODULATES SKIN CIRCADIAN CLOCK (CLOCK GENES, MODULATORS)

2. BOOSTS BRAIN-SKIN AXIS-RELATED PATHWAYS

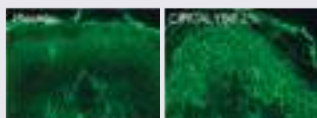
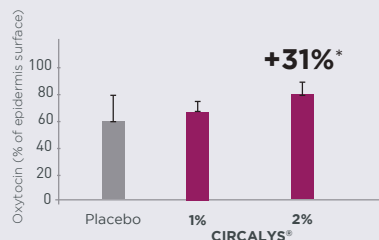
♥ OXYTOCIN

Related to positive emotions and skin aging prevention.
↑ Level - ↓ Skin stress (Cho et al., 2019)

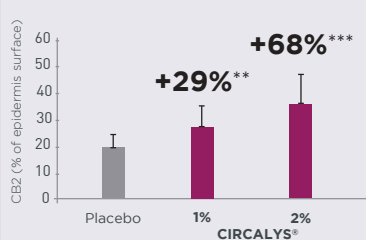
😊 ENDOCANNABINOIDS

Stress & mood modulators, related to skin homeostasis and anti-inflammatory pathways (Lafaye et al., 2019; Agapito et al., 2010)

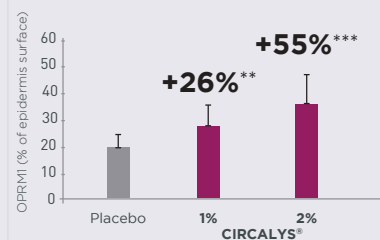
😊 ENDORPHINS



● Oxytocin immunostaining



● CB2 ● Cell nucleus



● OPRM1 ● Cell nucleus

Skin explants, CIRCALYS® 1% or 2%, or placebo, during 5 days. Immunolabelling at day 6, quantification in epidermis.

COSMETIC USES

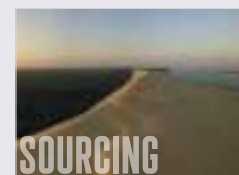
- ENERGIZING/ANTI-FATIGUE OR DETOX SKIN CARE
- NIGHT REGENERATING SKIN CARE
- HOLISTIC OR RELAXING FACE OR BODY CARE, FOR SPA OR HOME

GREENTECH INNOVATION

- PSYCHOBIOLOGICAL APPROACH
- TACKLES THE ROOT OF SKIN AGING
- SKIN & MOOD UPLIFTER

MOLECULES

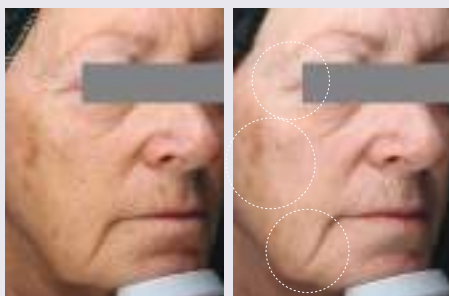
Contains **polar lipids**, obtained by **optimized fermentation** of *Sphingomonas sp.*, a **golden extremophilic microorganism** isolated from water samples from the Silver Coast (France). Active ingredient designed using a **systemic approach** to address skin and emotional needs of the silver generation.



IN VIVO

Study on 24 silver generation women (60-70 yo).
Gel with HEBELYS® 1% vs placebo. Applications 2x/day - 56 days. Evaluations at D0 & D56.
Effect on skin appearance: standardized full face picture by VISIA®

1. VISIBLE SUBLIMATING EFFECT ON MATURE SKIN



D0 - HEBELYS® 1%

D56 - HEBELYS® 1%

SMOOTHS WRINKLES: DEPTH -8%*

(Crow's feet; roughness (Ra): -9%; Depth (Rz): -8%*)

AWAKES DULL & UNEVEN SKIN TONE

LUMINOSITY 74% - UNIFORMITY 83%

(Self-assessment; % of agreement)

IMPROVES COARSE SKIN TEXTURE +14%*

(Cheek; isotropy)

TIGHTENS SAGGY SKIN +12%***

(Jaw; suppleness (Ue))

*p<0.05 vs control; ***p<0.001 vs control

2. MOOD UPLIFTING EFFECT

Psychological evaluation at D56
with 2 scientifically recognized psychological tests

SELF-ESTEEM

+10.5%***

MOOD STATE

+9%**

ROSENBERG TEST (ROSENBERG 1965)

PROFILE OF MOOD STATE (POMS) (MC NAIR 1971)

p<0.01; *p<0.001 D56 vs D0

IN VITRO

1. COMPLETE APPROACH AGAINST SENESCENCE (ZOMBIE CELLS)

In tubo assay of lipid peroxidation (MDA) with HEBELYS® (1.2%). **p<0.01 vs control

PREVENTS
SENESCENCE INITIATION

OXIDATIVE STRESS

-34.5%**

In vitro on aged 3D full-thickness skin model, HEBELYS® 0.1% or retinoic acid (100nM) during 42 days. Results normalized by the total dermal area. ***p<0.001 vs control

LIMITS THE ACTIVATION OF KEY SIGNALLING
PATHWAYS LEADING TO SENESCENT ZOMBIE CELLS

p21 -58%***

p16 -20%***

REDUCES ZOMBIE CELLS
(SENOLYTIC ACTION)

β-gal -78%**

2. REJUVENATES DERMAL MATRISOME

In vitro on aged 3D full-thickness skin model, with HEBELYS® (0.1%) or retinoic acid (100nM) during 42 days. Results normalized by the total dermal area. *p<0.05 vs control; ***p<0.001 vs control

STRUCTURAL PROTEIN

Neocollagen I synthesis

+6%

ADHESION PROTEINS

Fibrillin expression

+22%***

PROTEOGLYCANS

Versican expression

+7%*

COSMETIC USES

- POSITIVE AGING HOLISTIC SKIN CARE
- MATURE / SILVER GENERATION SKIN CARE
- PREVENTIVE CARE FOR WOMEN AGED 50+

*Scientific articles :

- Gervason S, Napoli M, Dreux-Zigha A, Lazzarelli C, Garcier S, Briand A, Albory M, Thepot A, Berthon JY, Filaire E. Attenuation of negative effects of senescence in human skin using an extract from *S. hydrophobicum*: development of new skin care solution. Cosmetics, 2019.
- Gervason S, Dreux-Zhiga A, Demangeon J, Lazzarelli C, Berthon JY, Filaire E. A Psychobiological Approach for a Positive Skin Aging: Target Senescence Cells to Boost Emotion. IFSCC Magazine, 2020.
- Napoli M., Gervason S., Berthon JY., Filaire E., Psychobiological approach for a positive skin ageing: target senescence cells to boost emotion. IFSCC Oct. 2019 (conference).

GREENTECH INNOVATION

- SYSTEMIC APPROACH OF THE SENSITIVE SKIN CARE
- CHARACTERIZATION OF THE POORLY KNOWN SENSITIVE SKIN MICROBIOTA & ITS MODULATION
- ANTI-EXPOSOME EFFECT

MOLECULES

Anti-inflammatory **sulfated polysaccharides** obtained by radical depolymerization. Sourced from a **red algae** living off the coast of the Indian Ocean: ***Halymenia durvillei***.

Manlusoc et al., 2019



IN VIVO

Double blind study, 25 volunteers with sensitive and reactive skin (stinging test score >3). EXPOZEN® 3% vs placebo, 2x application/day, 28 days.

1. INTENSIVE DISCOMFORT RELIEF

REDUCES VISIBLE & PERCEIVED SIGNS OF SKIN SENSITIVITY

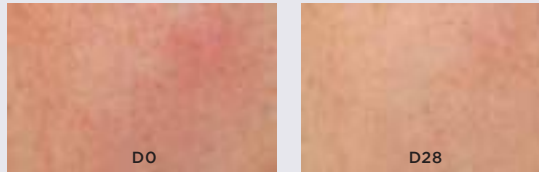
(Sensitive scale SS-10, Misery et al. 2014)

Irritability -34%*	Pain -33%*	Heat sensations -40%*
Sensitivity -19%*	Flushes -37%*	Redness -24%***

VISIBLE ANTI-REDNESS EFFECT

(Videocapillaroscope)

*p<0.05; ***p<0.001, D28 vs D0.



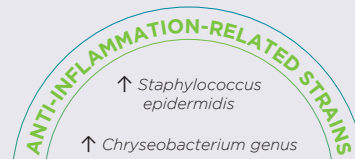
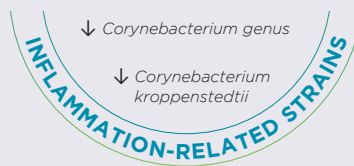
90% OF WOMEN

FELT A SOOTHING EFFECT 5 MINUTES AFTER APPLICATION

(Stinging test at D28)

2. MICROBIOTA MODULATION

Microbiota analysis: samples at D-1, D15 and D28 + 16S RNA sequencing



EX VIVO

On human explants. Treatment with EXPOZEN® 5% during 6 days. **p<0.01; ***p<0.001 vs control

LESS NEUROGENIC INFLAMMATION

Reduces **itching**-related substance P receptor : **NK1-R** **-43%****

Limits neurogenic **inflammation** : **TRPV1** **-67%*****

COSMETIC USES

- INTENSIVE ANTI-REDNESS SKIN CARE
- SOOTHING & REPAIRING PRODUCTS
- ANTI-EXPOSOME SKIN CARE
- FEEL GOOD COSMETICS

GREENTECH INNOVATION

- PSYCHOBIOLOGICAL APPROACH
- EXPERTISE IN BIOLOGICAL & CELLULAR PATHWAYS, ETHNOPHARMACOLOGY
- MOLECULES SCREENED FOR THEIR PRO-MELANOGENIC ACTIVITY

MOLECULES

Picroside II sourced from the *Picrorhiza scrophulariiflora* roots native from Asia, used in Ayurvedic medicine & vitiligo treatment.

Gianfaldoni et al., 2018



IN VIVO

Study on 44 volunteers with 20-50% of white hair. Mean age: 49yo. ARCOLYS® 1% (n=21) vs placebo (n=23). Twice daily application during 5 months. Evaluation at month 0, after 2.5 months & 5 months. Clinical scoring

1. RESTORES THE NATURAL HAIR COLOR



WHITE HAIR PROPORTION	- 9%****	- 15%****
WHITE HAIR DENSITY	- 16%**	- 19%***

p<0.01, *p<0.001, ****p<0.0001 vs M0

2. INCREASES POSITIVE EMOTIONS

Psychological evaluation at M0 & M5.

SELF-ESTEEM	+8%*	ROSENBERG SCALE, Rosenberg, 1965
UNPLEASANT EMOTIONS	+22%**	BMIS, Mayer & Gaschle, 1988

*p<0.05, **p<0.01 vs M0

IN VITRO

1. LOWER OXIDATIVE STRESS IN HAIR FOLLICLE CELLS

ROS production



*p< 0.05 vs control

Incubation of Human dermal papilla cells with ARCOLYS® during 24 hours. Oxidative stress was applied: 250µM H₂O₂ during 30 min. Intracellular ROS were measured using a fluorogenic probe (n=3).

Antioxidant gene expression

UNDER STRESS

NFR2	+ 16%
HMOX1	+ 35%
SLC7A11	+ 144%

NFR2 : nuclear factor erythroid 2-related factor

HMOX1: Heme oxygenase 1

SLC7A11: Solute Carrier Family 7 Member 11

Melanocytes treated with ARCOLYS® 0.1% during 48 hours. Oxidative stress H₂O₂ after 24 hours of treatment. Gene expression evaluated by RT-qPCR.

2. STIMULATES MELANOGENESIS

Tyrosinase gene expression	Tyrosinase activity	Melanin synthesis
UNDER STRESS +52%	-22%**	+25%**

**p<0.01 vs control

Test on melanocytes (gene expression, activity) & on melanocytes/keratinocytes co-culture treated with ARCOLYS® 0.2%. Oxidative stress with H₂O₂

COSMETIC USES

- REPIGMENTING HAIR PRODUCTS
- PREVENTIVE ANTI-GRAYING HAIR CARE
- ANTI-AGING HAIR CARE
- EMOTIONAL ANTI-GRAYING HAIR CARE

TECHNICAL INFORMATION



CIRCALYS®

CIRCALYS (001246)
INCI: Propanediol, Aqua/Water, Andrographis paniculata leaf extract

Use	Preservative	ECOCERT COSMOS APPROVED	APPROVED	Natural origin content (ISO 16128)
1%	None	✓	✓	100%



HEBELYS®

HEBELYS (001219)
INCI: Propanediol, Aqua/Water/Sphingomonas ferment extract

Use	Preservative	ECOCERT COSMOS APPROVED	APPROVED	Natural origin content (ISO 16128)
1%	None	✓	✓	100%



EXPOZEN®

EXPOZEN (001227)
INCI: Glycerine, Aqua/Water, Hydrolyzed Rhodophyceae Extract

Use	Preservative	ECOCERT COSMOS APPROVED	APPROVED	Natural origin content (ISO 16128)
3%	None	✓	✓	100%



ARCOLYS®

ARCOLYS (001241)
INCI: Aqua/Water, Propanediol, Picrorhiza scrophulariiflora Root Extract

Use	Preservative	ECOCERT COSMOS APPROVED	APPROVED	Natural origin content (ISO 16128)
1%	None	✓	✓	100%

INSPIRATIONAL FORMULAS



EYE'LIGHT

2 in 1 hybrid eye powder-to-cream

Instant beautifying effect:
 ALOE VERA Organic/Fair for Life
 +
 Reflective powder

Anti-fatigue effect:
 CIRCALYS®



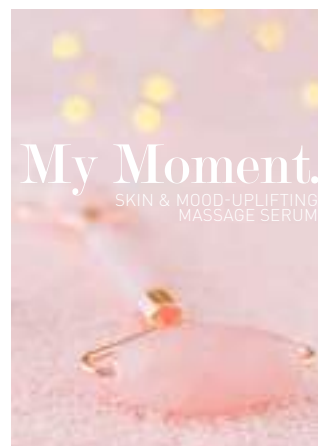
HYDRA MIST

Instant energizing shot

Flash energizing effect:
 LIFTISS®
 +
 ALOE VERA Organic/Fair for Life

Progressive energizing effect:
 CIRCALYS®

Screen light protection:
 SOLIBERINE®



MY MOMENT

Skin & Mood uplifting massage serum

Skin & Mood sublimating effect:
 HEBELYS®
 +
 CIRCALYS®
 Apply in massaging motions or with facial roller to potentiate the effect of CIRCALYS® on brain-skin axis pathways



COLORLIFE

Light foam to massage scalp

Repigmenting & self-esteem boosting effect:
 ARCOLYS®
 +
 CIRCALYS® (endorphin pathway)

Nourishing effect:
 AQUASILOIL INCA INCHI®

Raw material approved by ECOCERT GREENLIFE, according to COSMOS Standard.

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WE SOURCE NATURE TO RESOURCE THE FUTURE



BIOTECHNOLOGIES

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