Akott® Evolution
DANCE&CHEMISTRY

AKOSKY™ MINDLIGHT

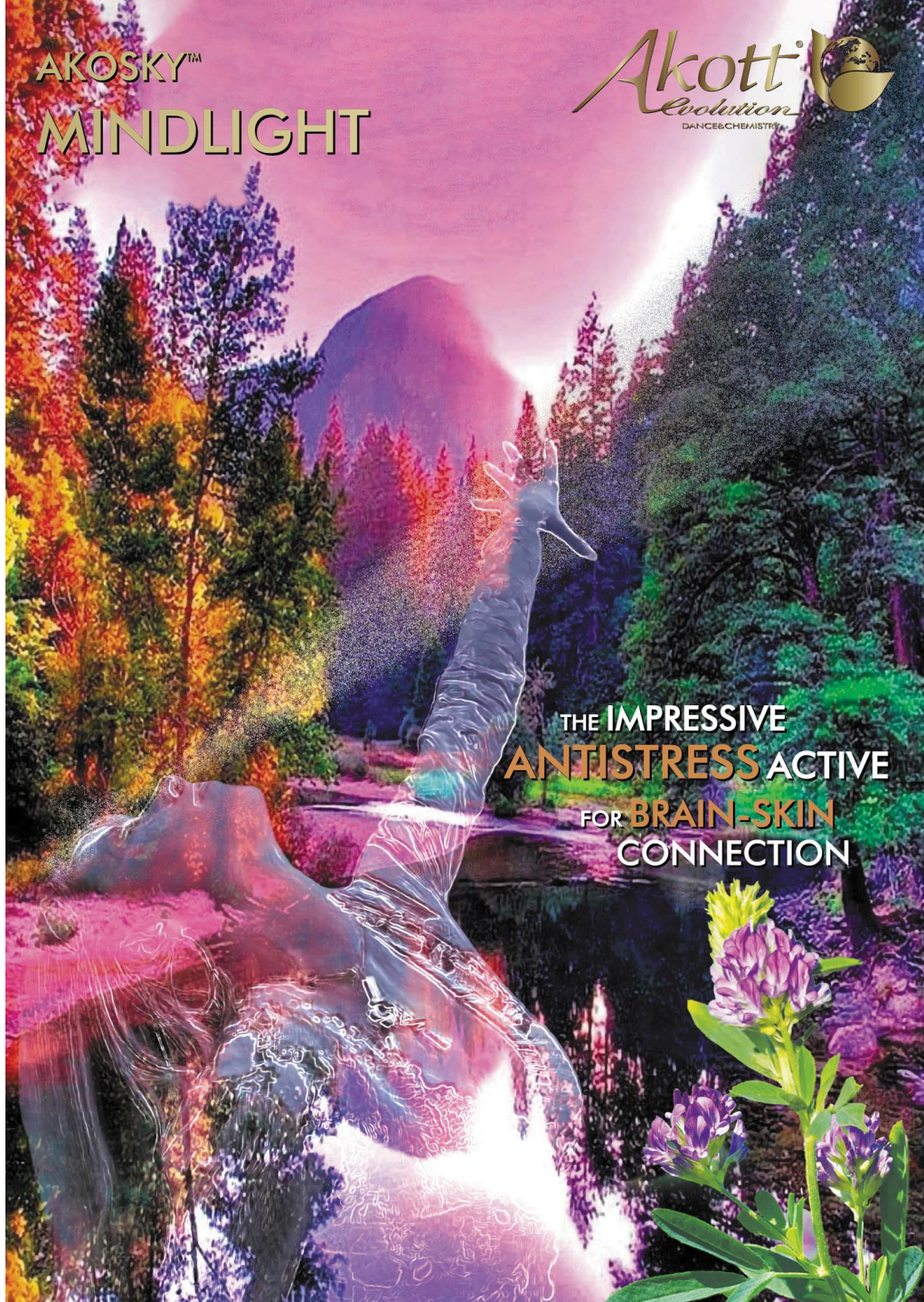
The natural stress reliever active for restoring the hormonal skin balance and preserving the skin's mechanical properties with Alfalfa Sprouts

AkottBrandConcepts™

CELLREBIRTH™

COSMOS Compliant · CRUELTY Free · HALAL Compliant · VEGAN Friendly · CHINA Approved

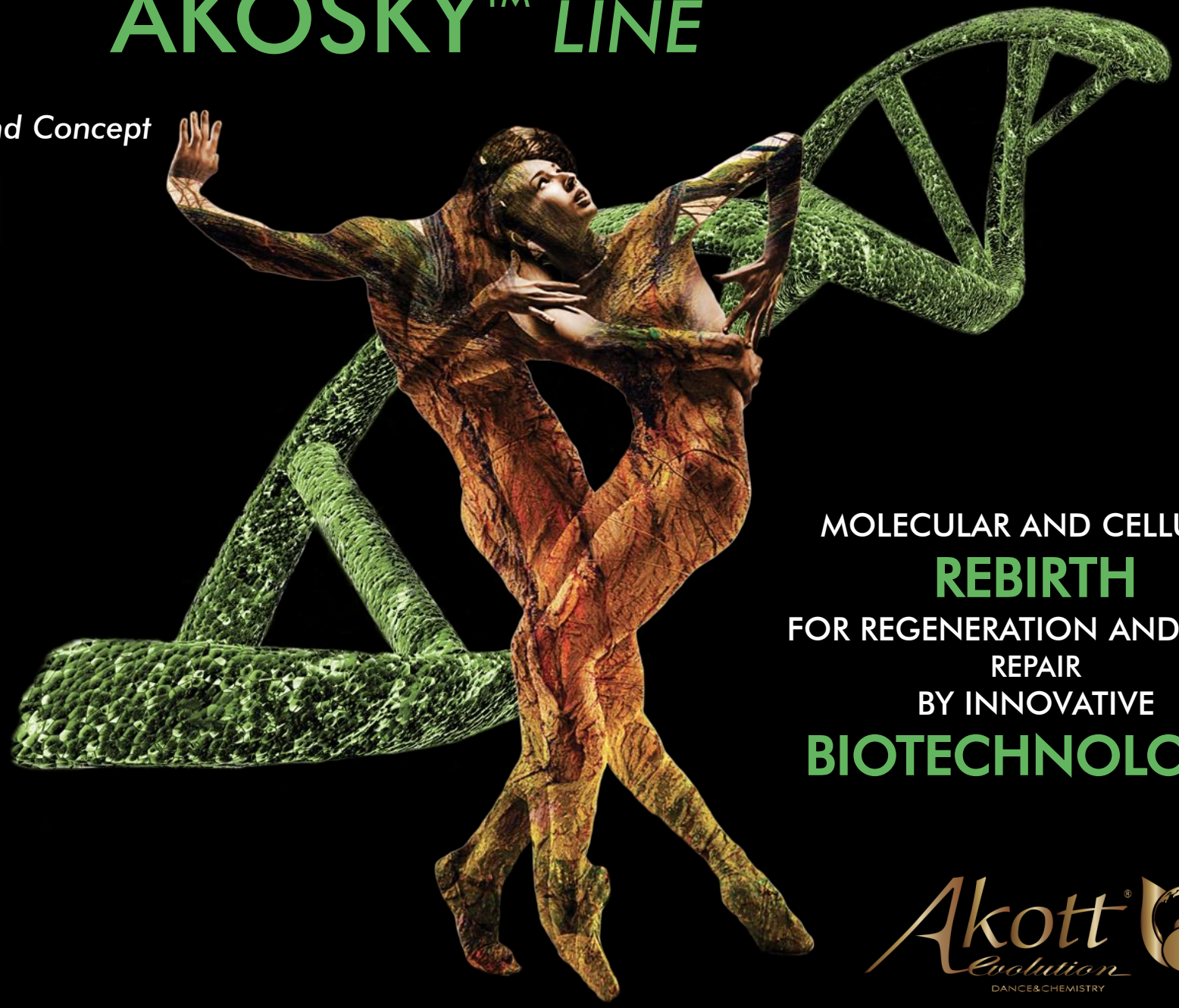
AKOSKY™ LINE
CELLREBIRTH™



AKOSKY™ *LINE*

The SkinArtNature™ Brand Concept

CELLREBIRTH™



CELLREBIRTH™

FROM THE DANCING
MOLECULES
*THE **KINETIC MOVEMENT***
***OF NATURE** FOR*
MULTIFUNCTIONAL &
POWERFUL ACTIVES

MOLECULAR AND CELLULAR
REBIRTH
FOR REGENERATION AND TISSUE
REPAIR
BY INNOVATIVE
BIOTECHNOLOGY

Akott® Evolution
DANCE&CHEMISTRY

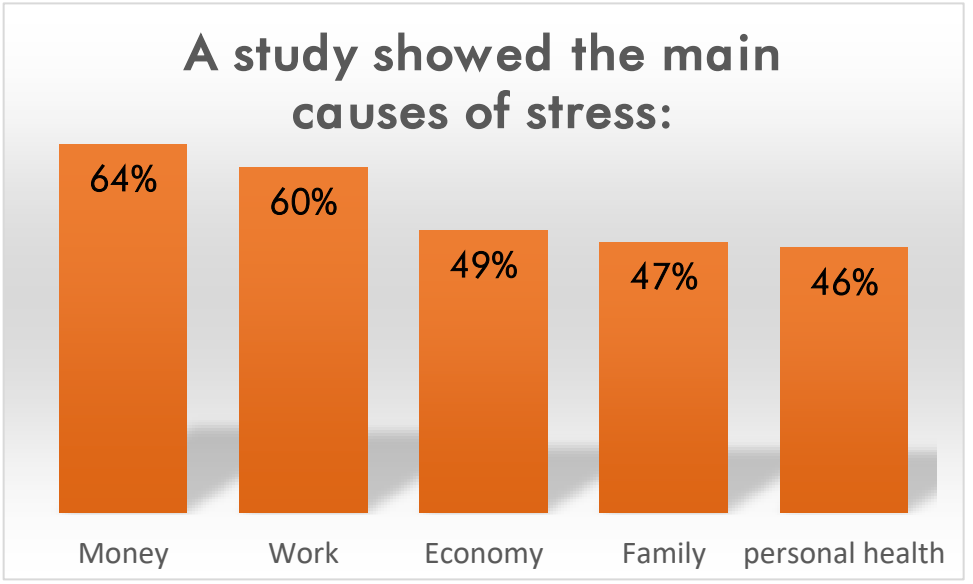
CONCEPT

WHO AND WHY IS STRESSED?

Stress may be best defined as a psychophysiological process, usually experienced as a negative emotional state. The source of stress is rooted in change: a big move, a new project, a wedding, etc. It can also arise from a person's surroundings, as a tense circumstance.

Despite our best efforts, stress is often a part of life that many people have simply learned to tolerate.





American Psychological Association, 2017

- ✓ Italy, France and Japan, are the country with a perception of stress among the highest globally. Women are worse than men.
- ✓ In 2021, people worldwide felt more worried, stressed and sad than at any time in the past 16 years. They also had fewer positive experiences than they did in 2020.

Global Emotions Report – Gallup
American Psychological Association (APA)
https://corporate.axa.it/-/axa-mind-health-report-2023#:~:text=AXA%20Mind%20Health%20Report%202023%20Prosegue%20l%E2%80%99impegno%20del,e%20i%2074%20anni%20in%2016%20Paesi%20%2A.

CONCEPT

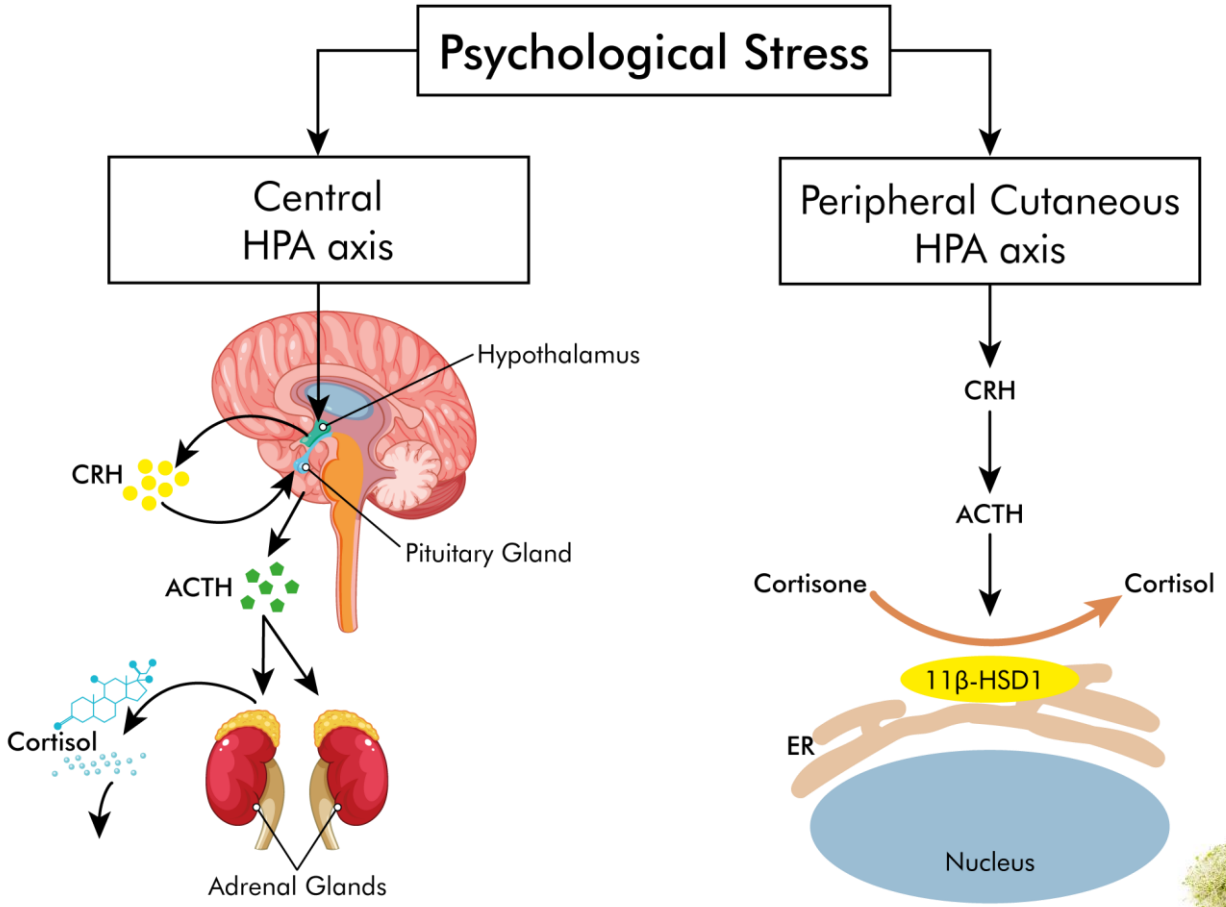
STRESS AND HPA-AXIS

Stress may be best defined as a psychophysiological process, usually experienced as a negative emotional state.

The hypothalamic-pituitary-adrenal axis (HPA axis) is the central coordinator of the neuroendocrine stress response system.

- In response to stress the hypothalamus secretes corticotropin-releasing hormone (CRH), which stimulates the release of adrenocorticotropic hormone (ACTH) from the pituitary gland and **cortisol** from the adrenal cortex.
- Skin has neuroendocrine properties, and it is present a peripheral HPA axis similar to the central axis.

- **Local cortisol activation** by 11β-hydroxysteroid dehydrogenase (**11βHSD1**) in **skin cells** (keratinocytes and fibroblasts) plays a role in **regulating local stress.**
- Emotional stress increases the level of **active cortisol in skin** by stimulating the expression of **11β-HSD1.**



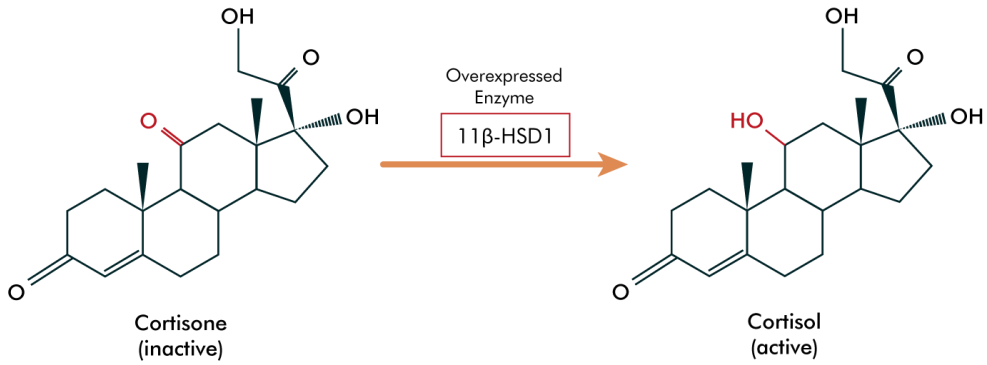
CONCEPT

LINKS BETWEEN ENDOGENOUS STRESS AND SKIN PROBLEMS

CONSEQUENCES :

- Damage to the skin barrier and the skin cell proliferation
- Collagen atrophy which induces aging (reduction of collagen synthesis and density)
- Decrease in epidermal thickness
- Loss of elastin
- Local inflammation/ skin redness





CONCEPT

STIFFENING OF HUMAN FIBROBLASTS WITH AGE

CORRELATION BETWEEN MECHANICAL PROPERTIES OF FIBROBLAST AND DERMAL AGING BIOMARKER:

↓

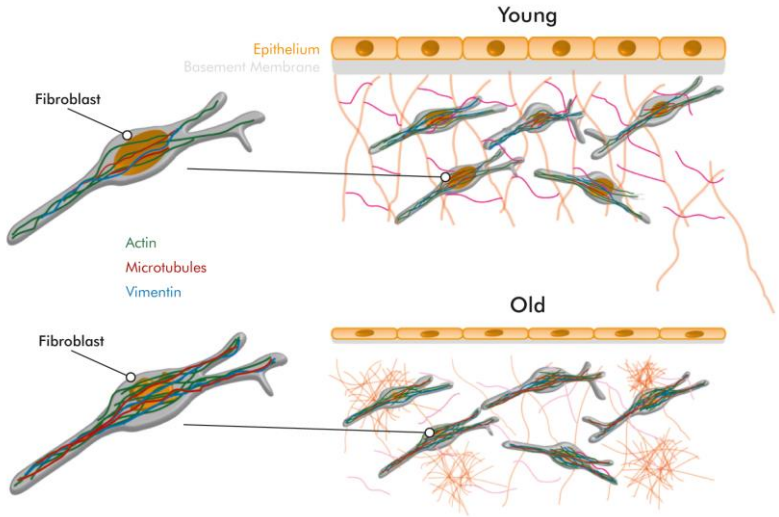
Cell stiffening
(Young's modulus/Elastic modulus increases with age of cells)

↙ ↕ ↘

directly altered the viscoelastic properties of the collagen matrix

Alteration in the density of ECM components and in its gene expression (pro-collagen, elastin, fibrillin)

Upregulation of collagen degrading matrix metalloproteinases production



WHY OLD FIBROBLASTS ARE STIFFER?

- Increased the concentration of actin fibers
- altered polymerization of the actin connected with the loss of cell flexibility
- increased volume and cross-linking of the cytoskeleton.

CONCEPT

STRESS-RELATED CHANGES IN CELL STIFFNESS

DOES STRESS INDUCED BY CORTISOL LEAD TO AN INCREASE IN ELASTIC MODULUS (STIFFNESS INCREASE)?

- Fibroblasts connected to the collagen network provide dermal support to the epidermis and give rise to the elastic properties of tissue.
- Fibroblasts are major cell type present in the dermis, which are able of producing collagen and elastin fibers.
- Increase in fibroblast stiffness leads to a decrease in the synthesis of ECM fibers.
- The mechanical properties of the skin cells change not only with aging but for exposure to stress factors.

FROM WHAT EMERGED, WE HAVE INVESTIGATED A NEW STUDY APPROACH TO DEMONSTRATE THAT OUR **AKOSKY™ MINDLIGHT** HAS A **GREATER ANTI-AGING EFFECT** BY **COUNTERACTING THE EFFECT OF CORTISOL AND ACTING ON FIBROBLAST STIFFNESS**

ANTI-STRESS PRODUCTS ON THE MARKET



DR IRENA ERIS

BIO-CHRONOCELL COMPLEX

Removes signs of stress following the circadian rhythm of the skin



VERALAB

HYDROLYZED GLYCOSAMINOGLYCANS

HYALURONIC ACID

Restructuring and reparative action



EISENBERG

BISABOLOL

It is an anti-reddering substance. Chemically, it is a monocyclic sesquiterpene alcohol



REVISION SKINCARE

RETINOL

PEPTIDES

Reduce expression lines



LANCOME

NEUROCALM COMPLEX

MEDICAGO SATIVA

Medicago Sativa is a perennial flowering plant (Fabaceae), that originated in Asia, but it is cultivated in different parts of the world: Africa , Europe, Australia, New Zealand, North America, South America



It is also known as **Alfalfa** (North America) or **Lucerne** (United Kingdom, South Africa, Australia and New Zealand)

It is commonly known as the "**father of all foods**" because it is the most ancient plant, cultivated throughout the world as a fodder plant

TECHNOLOGY

MEDICAGO SATIVA

It grows in approximately 45 million hectares worldwide

It is rich in a multitude of phytochemicals (**amino acids, minerals, organic acid, phenolic compounds, polyamines, saponins, vitamins, flavonoid glycosides**)

The most reputed medicinal plant traditionally used as **rejuvenator, antidiabetic, antioxidant, anti-inflammatory, antimicrobial, and in CNS** (Central Nervous System) **disorders**



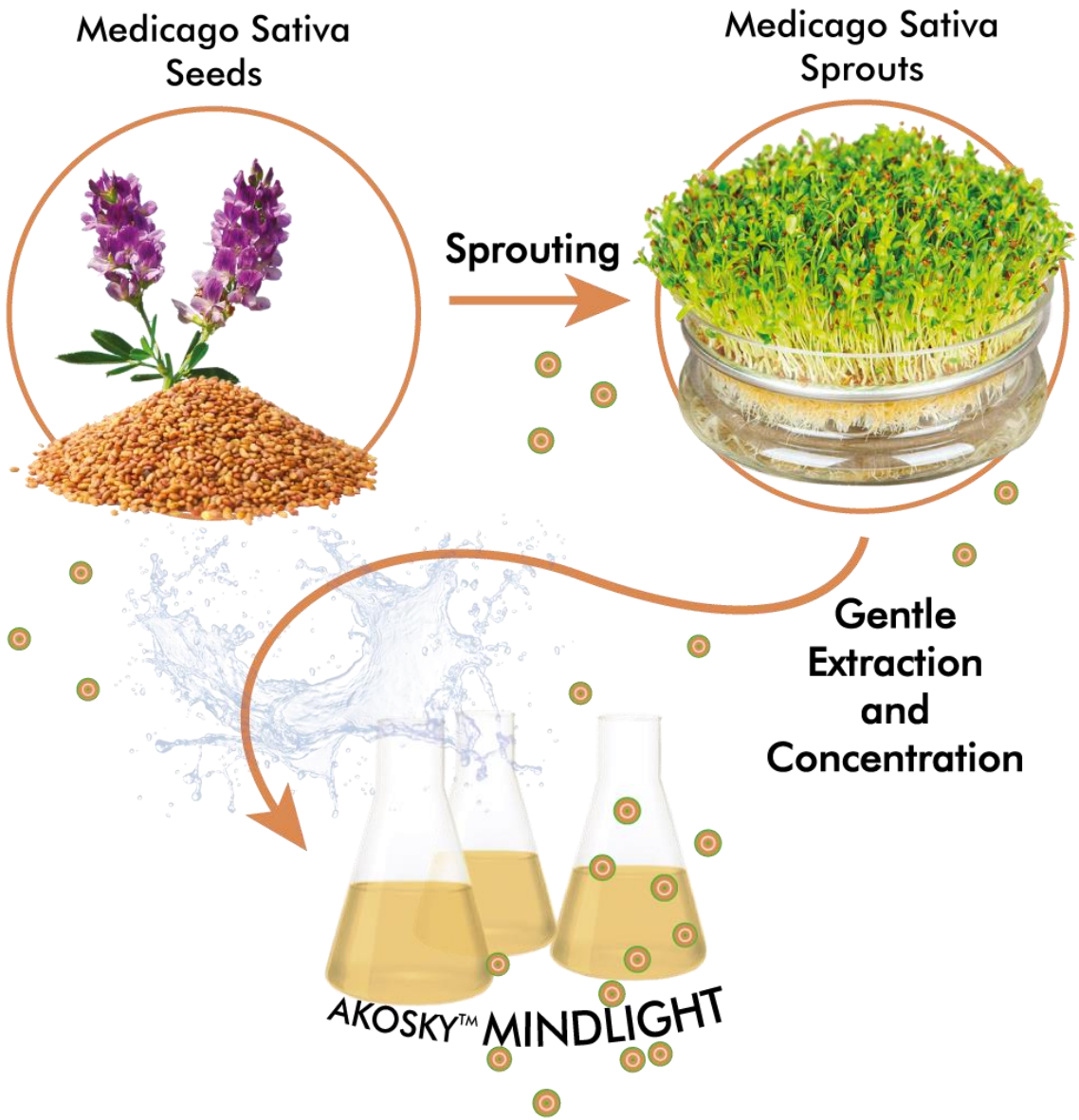
MEDICAGO SATIVA HEALTHY SPROUTS

- Sprouts are one of the richest sources of **SECONDARY METABOLITES** from plant origin
- Compared with their mature counterparts, sprouts are usually **richer in health-promoting phytochemicals**
- The antioxidant activity of seeds, thanks also to an increase of **phenolic compounds** was increased by germination





TECHNOLOGY – Production Process

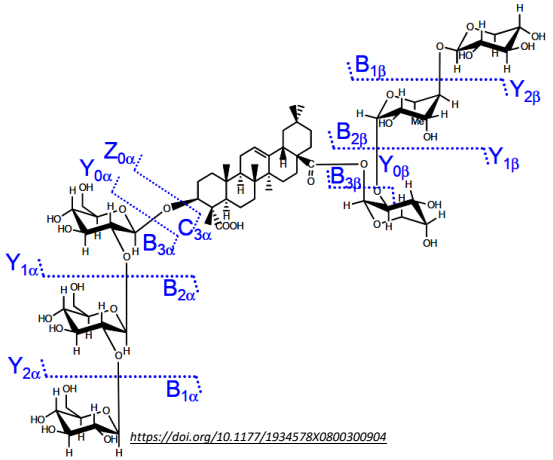


- ❖UAE (Ultrasound Assisted Extraction) enhances the rates and extent of mass transfer to and from the interfaces
- ❖The penetration of the solvent is enhanced due to the disruption of the cell walls produced by acoustical cavitation

UAE RESULTS IN A HIGHER YIELD OF BIOACTIVE COMPOUNDS

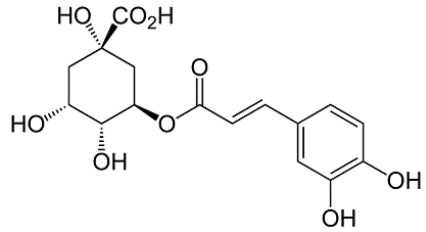
TECHNOLOGY

CHEMICAL CONTENT



https://doi.org/10.1177/1934578X0800300904

AKOSKY™ MINDLIGHT, thanks to the synergistic action of different active molecules, suggests PROTECTION MECHANISMS against increased cortisol levels induced by 11βHSD1, thus preventing skin aging and damage.



M. Sativa have shown to contain large amounts of
Triterpenoid saponins

The biologically active saponins in alfalfa are composed of long-chain carbohydrates attached principally to the **medicagenic acid, hederagenin, zanhic acid,** and **bayogenin**

Material	Saponins (g/kg dry material)
Leaves and stalks from Lucerne (Medicago sativa L.)	56
Lucerne sprouts (Medicago sativa L.)	87

Saponin content of food plants and some prepared foods - PubMed (nih.gov)

M. sativa L. is characterized by high content of
Phenolic compound

the main phenolic compounds present in alfalfa are **chlorogenic acid, p-hydroxybenzoic acid, vanillic acid, p-coumaric acid, ferulic acids, sinapic acids, hesperetin, naringenin, tannic acid**

Phenolic compound	AKOSKY™ MINDLIGHT
mg GAE/100g	6,67±0.07

GAE: gallic acid equivalent

Phytochemical and pharmacological potential of Medicago sativa: a review - PubMed (nih.gov)
Alfalfa Saponins and Their Implication in Animal Nutrition (researchgate.net)
Minimizing the Saponin Content of Alfalfa Sprouts and Leaf Protein Concentrates | SpringerLink
Biological Activities and Chemistry of Triterpene Saponins from Medicago Species: An Update Review - PubMed (nih.gov)

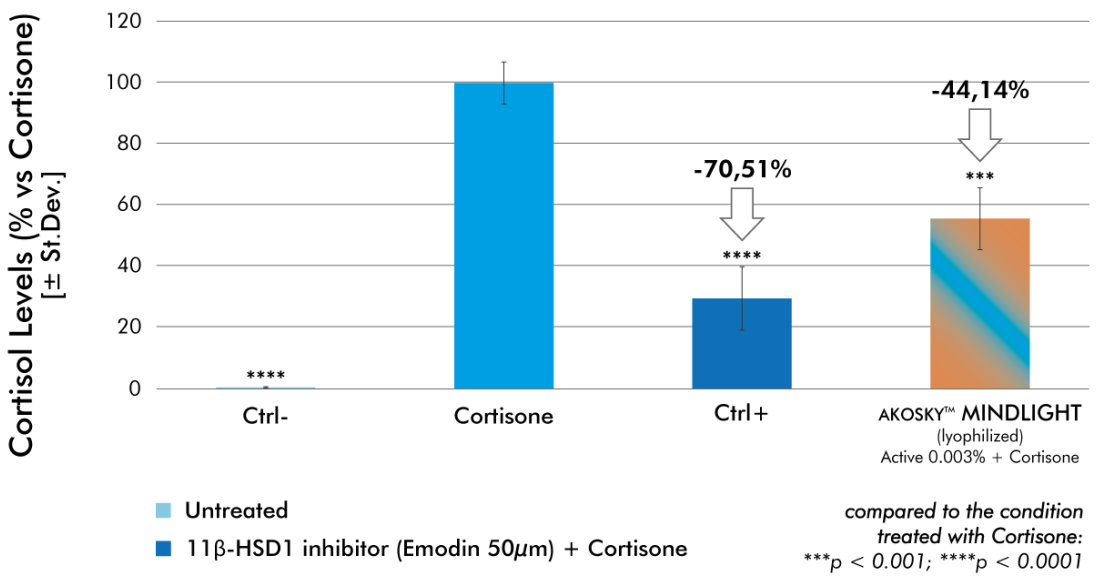
DOI:10.20959/wjpr20209-18453
https://pubmed.ncbi.nlm.nih.gov/20969516/
https://pubmed.ncbi.nlm.nih.gov/33117615/

IN VITRO EFFICACY

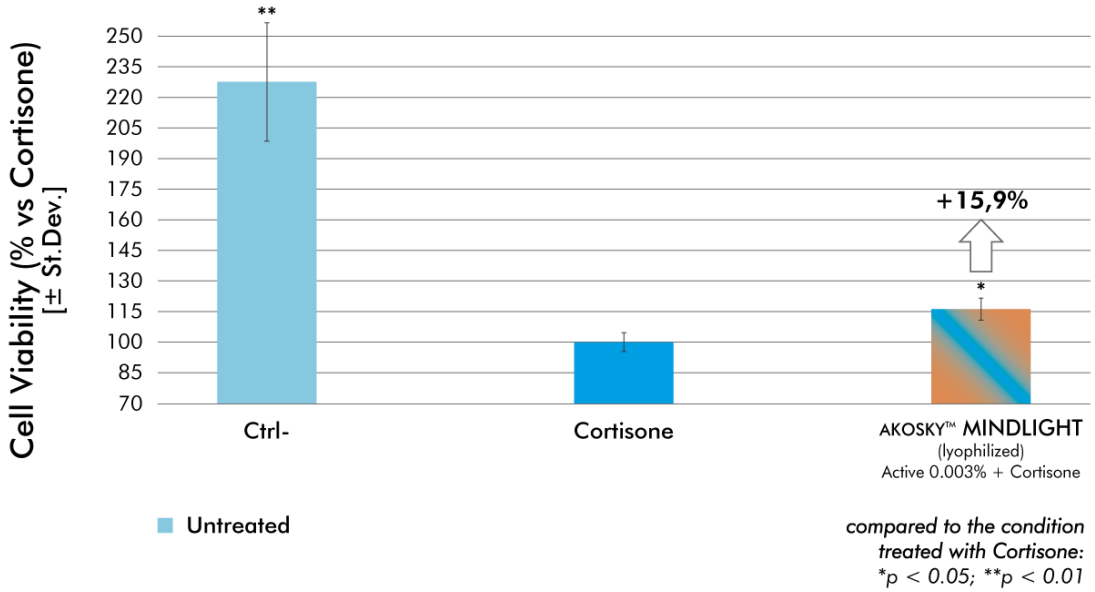
INHIBITION OF CORTISOL BIOSYNTHESIS

Normal Human Epidermal Keratinocytes (NHEK) were incubated in the presence of cortisone 10^{-3} M and **AKOSKY™ MINDLIGHT pure active powder** for 72h. Cell viability was analysed using the MTT assay and cortisol levels were quantified using a specific ELISA kit.

Cortisol Levels



Cell Proliferative Effect



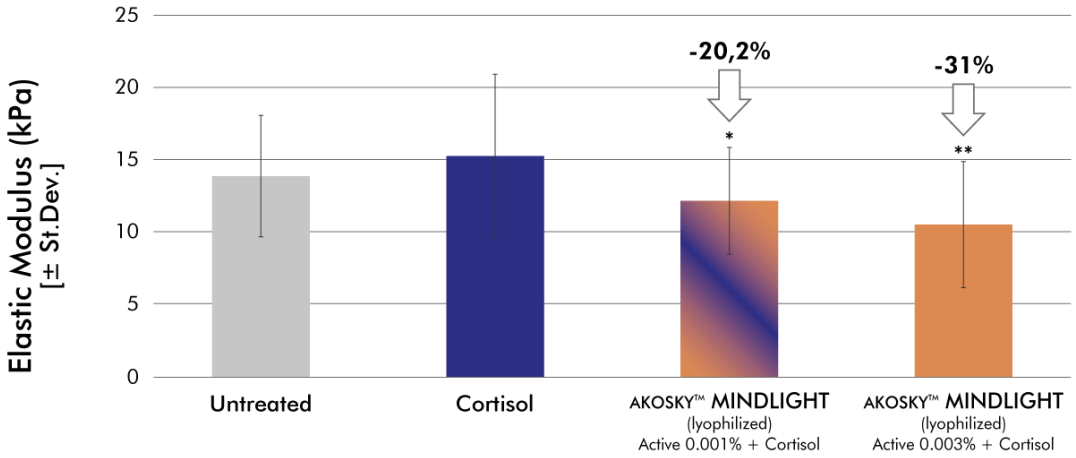
AKOSKY™ MINDLIGHT significantly reduced Cortisone-induced cortisol levels in human keratinocytess (- 44,14%), in a similar manner than observed for the 11βHSD1 inhibitor.

AKOSKY™ MINDLIGHT significantly induced the proliferation of human keratinocytes (+15,9%) compared to cortisone-treated cells

REDUCTION OF FIBROBLAST STIFFNESS

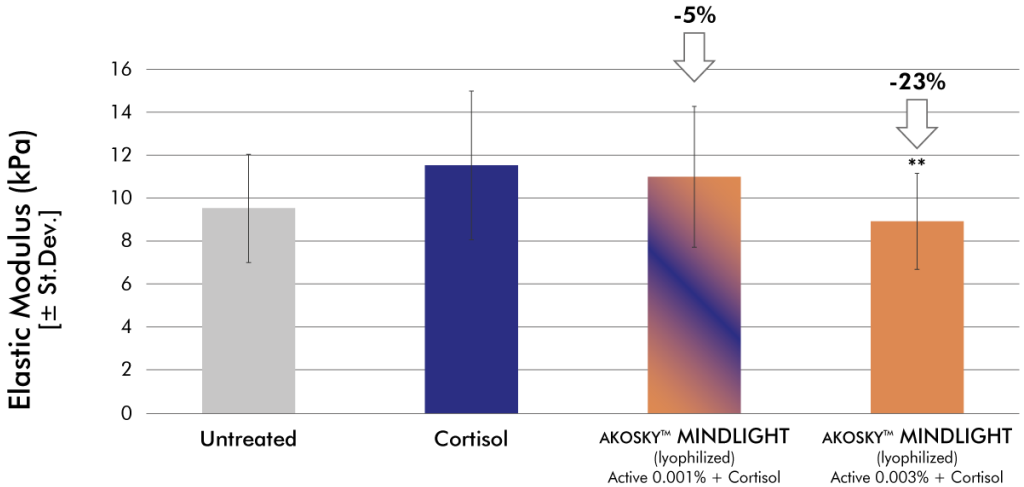
Primary fibroblasts from a 30 year old donor were incubated with cortisol and **different concentrations of AKOSKY™ MINDLIGHT pure active powders**. Cells were treated for 7 days under 37 °C and 5% CO_2. **ATOMIC FORCE MICROSCOPE** measurements (acquisition of force volume) on both nucleus and cytoplasm areas are performed to quantify the elastic modulus (mechanical properties).

Elastic Modulus (Ea) of Fibroblasts Nucleus



compared to the condition treated with Cortisol:
*$p < 0.05$; **$p < 0.005$*

Elastic Modulus (Ea) of Fibroblasts Cytoplasm



compared to the condition treated with Cortisol:
**$p < 0.005$*

AKOSKY™ MINDLIGHT significantly decreases the stiffness properties of fibroblasts in nucleus area, compared to the condition treated with cortisol.

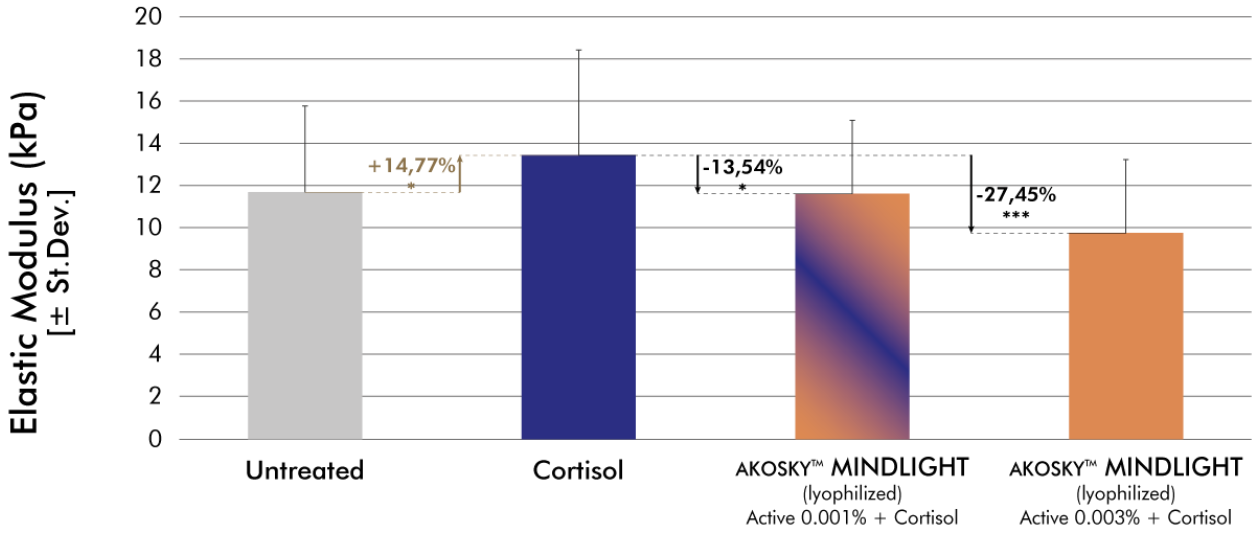
AKOSKY™ MINDLIGHT significantly decreases the stiffness properties of fibroblasts in cytoplasm area, compared to the condition treated with cortisol.

IN VITRO EFFICACY

REDUCTION OF FIBROBLAST STIFFNESS

Primary fibroblasts from a 30 year old donor were incubated with cortisol and **different concentrations of AKOSKY™ MINDLIGHT pure active powders** . Cells were treated for 7 days under 37 °C and 5% CO_2. **ATOMIC FORCE MICROSCOPE** (acquisition of force volume) on both nucleus and cytoplasm areas are performed to quantify the elastic modulus (mechanical properties).

Global Cell Elastic Modulus (Ea) of Fibroblasts



compared to the condition treated with Cortisol:
*$p < 0.05$; ***$p < 0.0005$*
compared to the Untreated condition:
$p < 0.05$

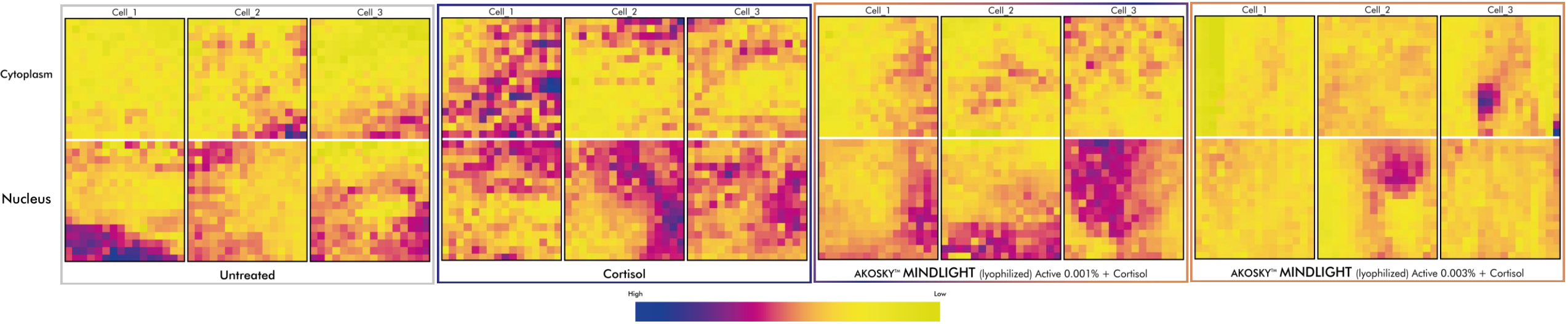
Cortisol increases in a significant manner the stiffness of fibroblast

AKOSKY™ MINDLIGHT 0,001% counteract the effect of the cortisol

AKOSKY™ MINDLIGHT 0,003% shows a great anti-age effect in addition to counteract the effect of the cortisol

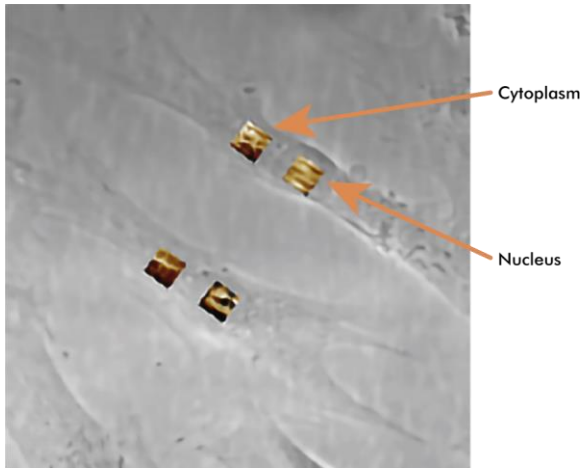
IN VITRO EFFICACY

REDUCTION OF FIBROBLAST STIFFNESS



Representation of stiffness maps of all conditions. Colorimetric scale illustrating the stiffness profile

These images come from the **AFM** where each pixel corresponds to a **stiffness value**.
All the stiffness values are distributed according to a **color scale** generated by the software analysis, spreading stiffness value from yellow (less stiff) to purple (stiffer).

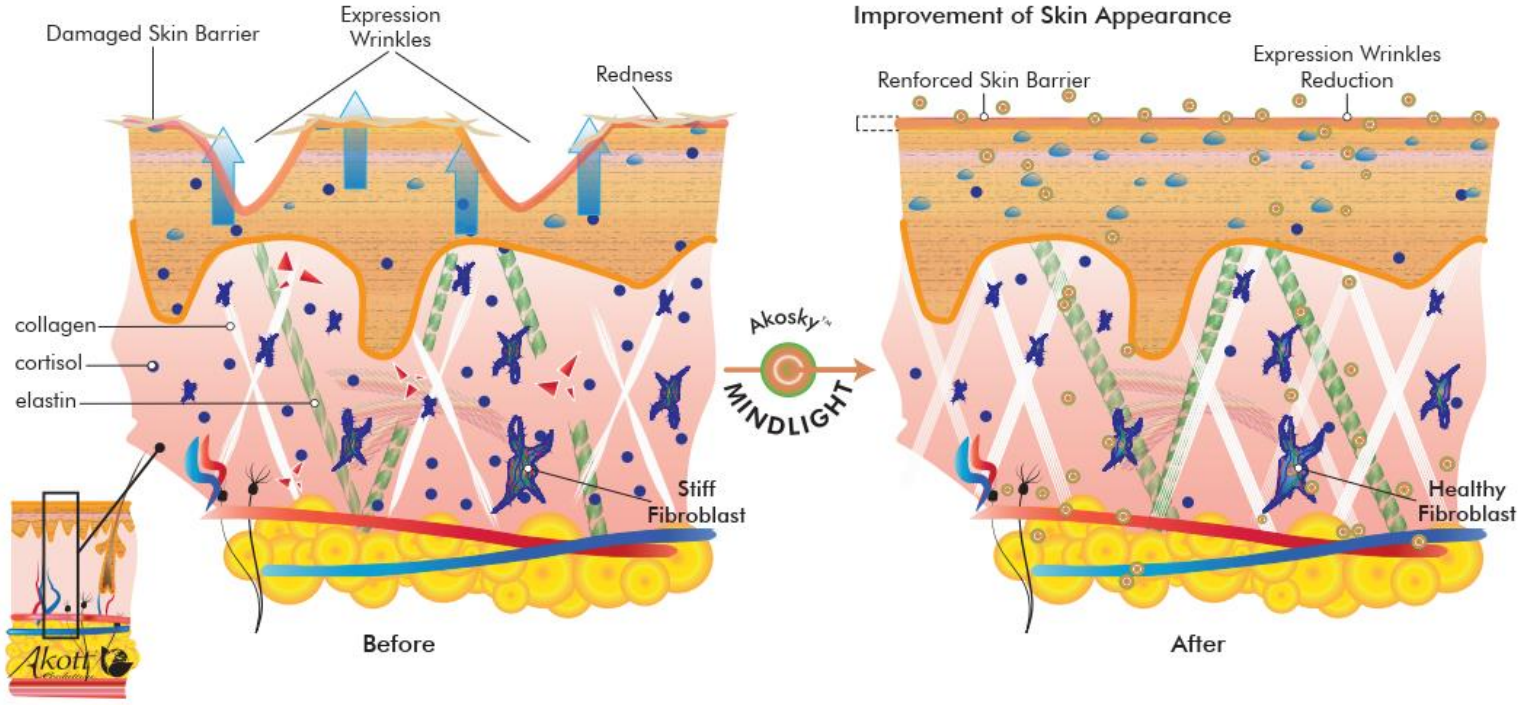


The color code allows highlighting the difference of stiffness in the measurement of the areas, demonstrating that **AKOSKY™ MINDLIGHT** significantly **decreases the stiffness properties of fibroblasts in both areas**, compared to the condition treated with cortisol, thus demonstrating the **ANTI-AGE EFFECT INDUCED BY CORTISOL**.

MECHANISM OF ACTION

AKOSKY™ MINDLIGHT reduces cortisol levels, promoting cell proliferation, and preserving the mechanical property of dermal cells, thus preventing skin aging and skin damage.

Triterpenoid saponins and phenolic compounds in AKOSKY™ MINDLIGHT counteract skin signs induced by psychological stress acting on cortisol biosynthesis (inhibiting 11b-HSD1 enzymes). The decrease in cortisol levels leads to a decrease in fibroblast stiffness.



CLINICAL TEST

SKIN DAMAGE IN STRESSED SUBJECTS

30 healthy female volunteers of aged between 30-45, who declare to be stressed or anxious*. **were divided into two groups.** The first group applied twice a day a face product containing **AKOSKY™ MINDLIGHT at 2%,** the other one applied a placebo formulation for 56 days.

* Subjects claiming low (50%) to moderate (50%) stress according to the "Perceived Stress Scale" questionnaire

The protocol evaluates the efficacy of **AKOSKY™ MINDLIGHT** TO IMPROVE SKIN ELASTICITY, SKIN PROFILOMETRY (forehead, glabellar and nasolabial wrinkles), THE EPIDERMIS THICKNESS, THE SKIN REDNESS and SKIN RADIANCE after 0, 14, 28, and 56 days of product use compared to placebo.

Measurements:

Skin Elasticity: measurement is based on the suction/elongation method and the subsequent release of the skin inside the opening of the instrument (Cutometer® MPA 580, Courage+Khazaka, electronic GmbH). In this study, the following elasticity parameters are evaluated: • R2 (it represents the gross-elasticity)• R9 (it represents the tiring effects of the skin)

Skin profilometry: The profilometric features of skin are quantitatively measured by Primos 3D. Primos 3D is a non-contact in vivo skin measurement device based on structured light projection. In conjunction with a comprehensive 3D measurement and evaluation software, the sensor allows to evaluate skin surface properties. In this study, the WRINKLE DEPTH parameter is evaluated. The technique allows to: take a high-resolution image of the skin, take 3-dimensional image and analyze by means of image analysis the profilometrical informations of the 3D image.

Trans Epidermal Water Loss: is measured using a Tewameter® TM 300 (Courage+Khazaka, electronic GmbH).

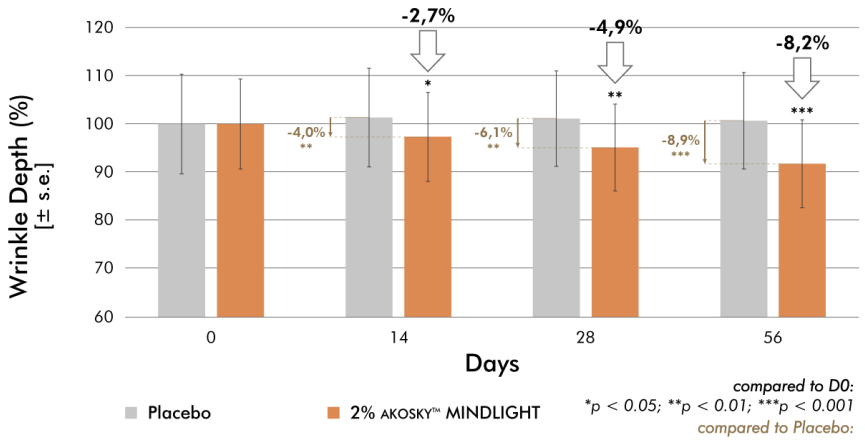
Skin thickness: is measured on transversal picture at level of the cheeks by means of DeepLive™ (DAMAE Medical) which integrates LC-OCT (Line-field Confocal Optical Coherence Tomography) technology

CLINICAL TEST - Results

EXPRESSION WRINKLE DEPTH
SKIN PROFILOMETRY

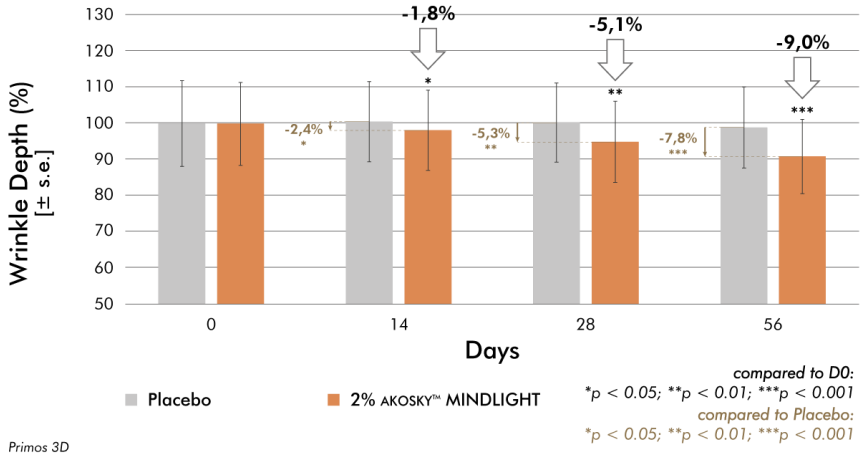
Primos 3D is a non-contact in vivo skin measurement device based on structured light projection. In conjunction with a comprehensive 3D measurement and evaluation software, the sensor allows to evaluate skin surface properties. In this study, the **WRINKLE DEPTH** parameter is evaluated. The technique allows to: take a high-resolution image of the skin, take 3-dimensional image and analyze by means of image analysis the profilometrical information of the 3D image.

Forehead Wrinkles



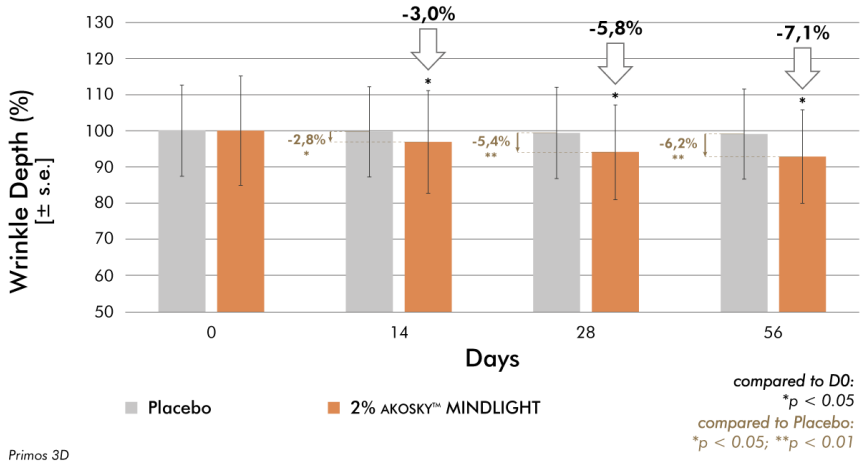
Primos 3D

Glabellar Wrinkles



Primos 3D

Nasolabial Wrinkles



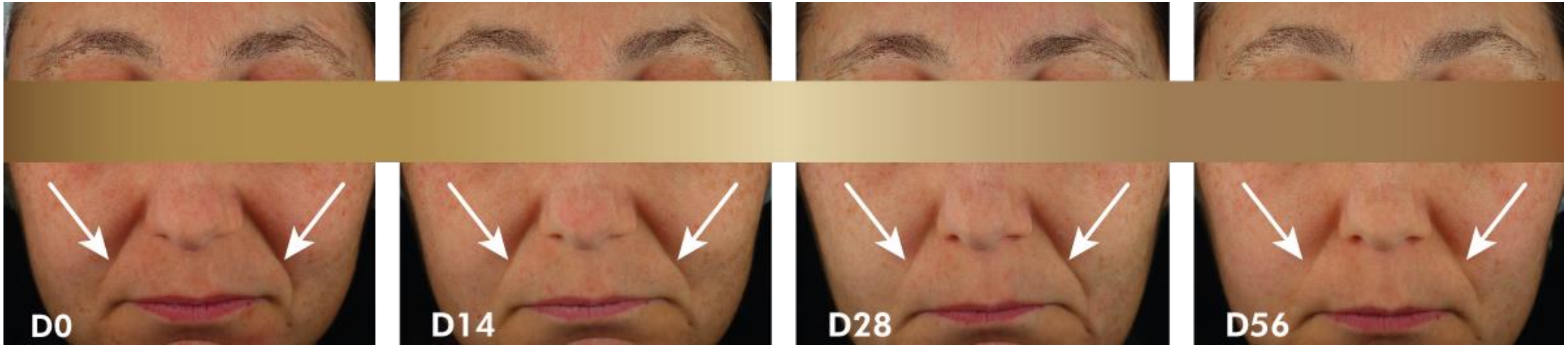
Primos 3D

AKOSKY™ MINDLIGHT at 2%
DECREASE SIGNIFICANTLY **EXPRESSION WRINKLES** ALREADY AFTER 14 DAYS, and the effect increases going forward with treatment

CLINICAL TEST - Results

NASOLABIAL WRINKLES REDUCTION – VOLUNTEERS IMAGES

Nasolabial wrinkles reduction on a 45 years old volunteer

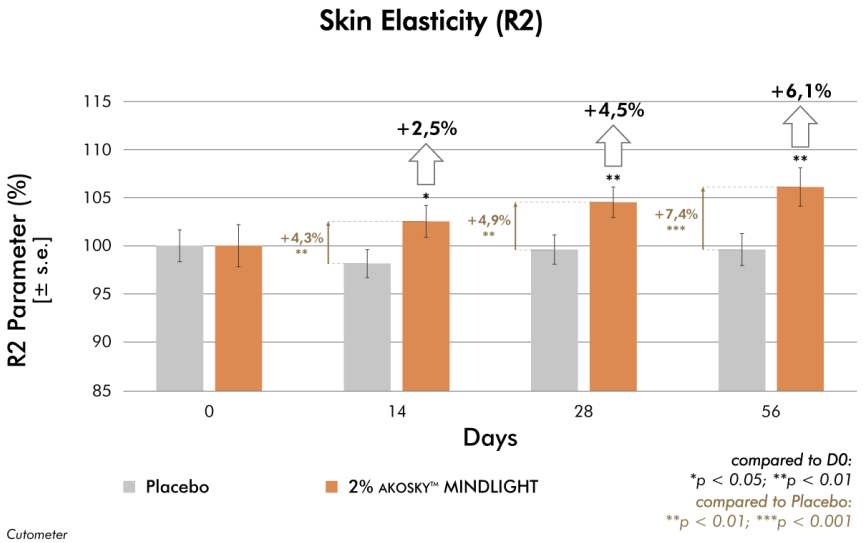


Nasolabial wrinkles reduction on a 37 years old volunteer

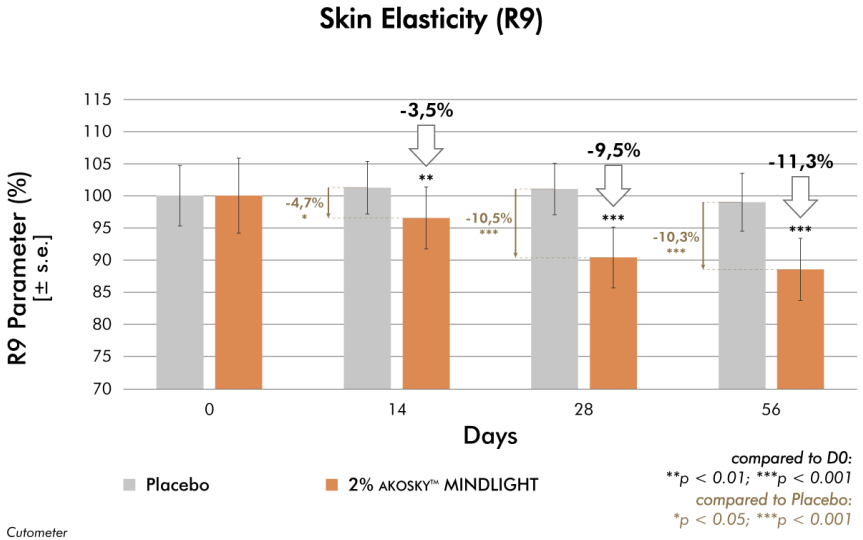


CLINICAL TEST - Results

SKIN MECHANICAL PROPERTIES IMPROVEMENT



Cutometer



Cutometer

SKIN ELASTICITY

Measurement is based on the suction/elongation method and the subsequent release of the skin inside the opening of the instrument. In this study, the following elasticity parameters are evaluated: R2 and R9.

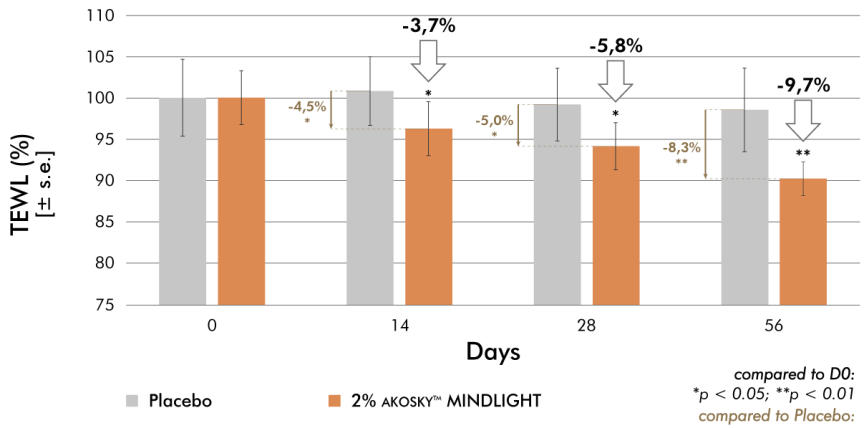
R2 represents the gross elasticity. AKOSKY™ MINDLIGHT at 2% shows an improvement of R2 values, which indicates an improvement of SKIN ELASTICITY.

R9 represents the tiring effect of the skin after repeated sucking in the skin. The smaller the value of R9, the smaller the tiring effect is AKOSKY™ MINDLIGHT at 2% shows a decrease of SKIN TIRING.

CLINICAL TEST

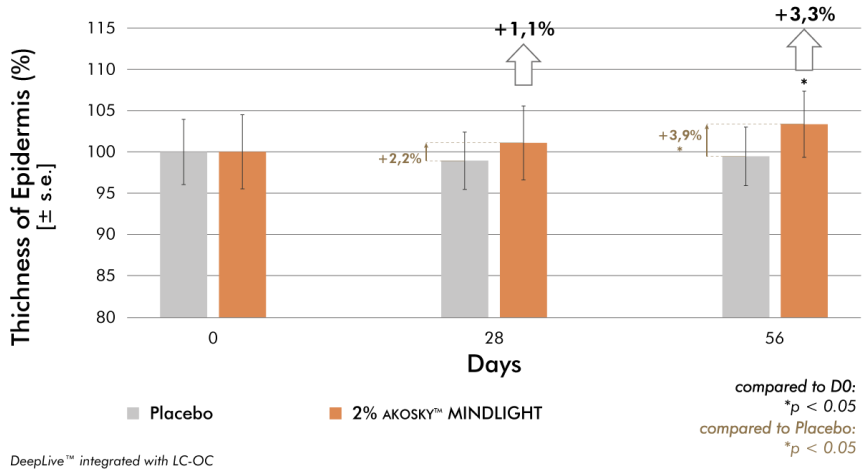
SKIN BARRIER PROTECTION

Trans Epidermal Water Loss



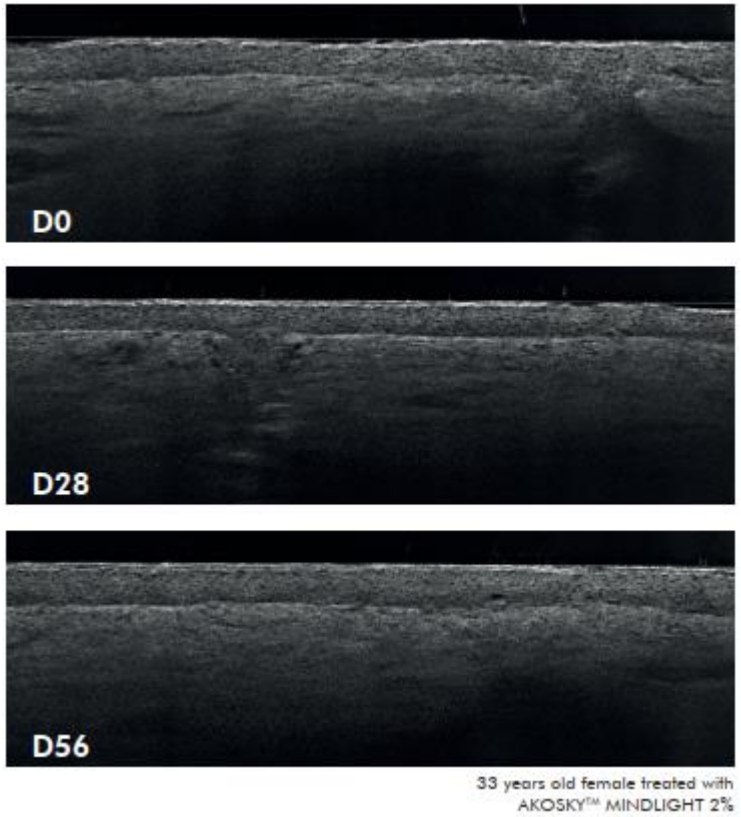
Tewameter

Epidermis Thickness



DeepLive™ integrated with LC-OC

LINE-FIELD CONFOCAL OPTICAL COHERENCE TOMOGRAPHY (LC-OCT) TECHNOLOGY



33 years old female treated with AKOSKY™ MINDLIGHT 2%

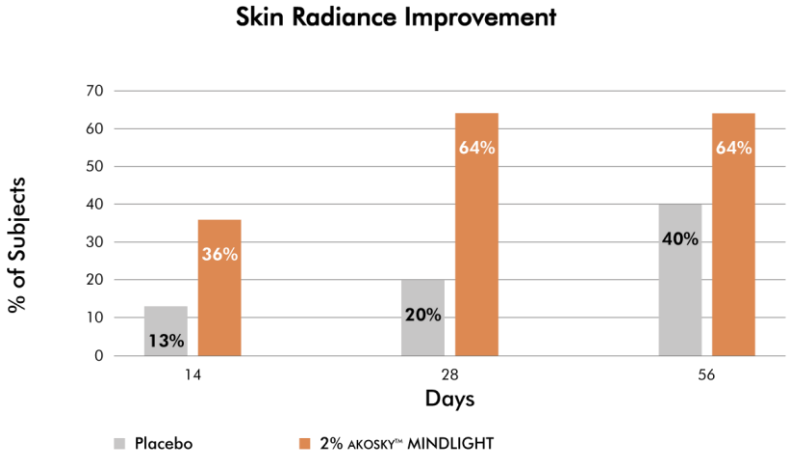
Epidermis thickness is measured by LC-OCT technology, which provides a unique 3D imaging modality, allowing a histology-like vertical mode and recording a 3D stack of tissue volumes in situ.

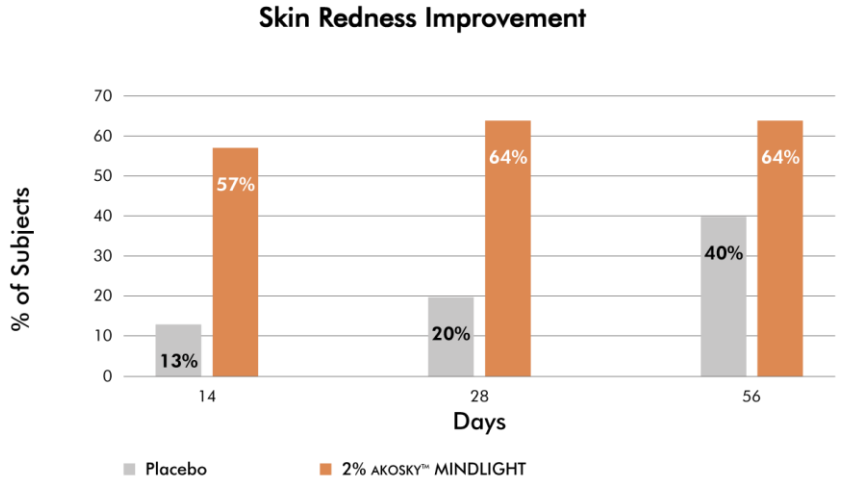
AKOSKY™ MINDLIGHT at 2%

strengthens the skin barrier, acting on the regeneration of the EPIDERMAL THICKNESS and on the improvement of TEWL.

CLINICAL TEST - Results

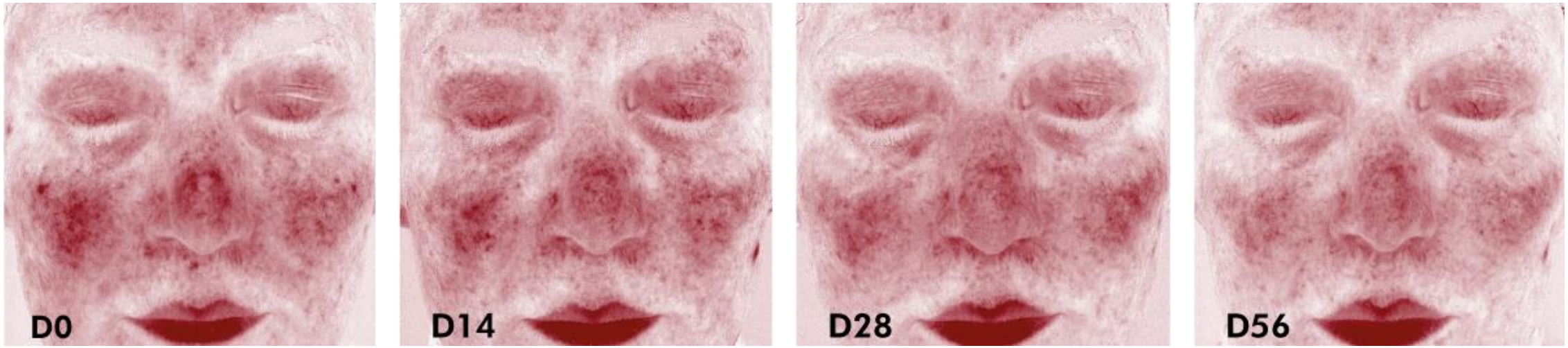
SKIN REDNESS AND SKIN RADIANCE





The dermatological analysis highlights **an improvement of SKIN REDNESS and SKIN RADIANCE** in 64% of the subjects!

The positive effect on the measured parameter is confirmed if more than 50% of the subjects register an improvement



Skin redness reduction on a 36 years old volunteer

Digital pictures acquired with VISIACR (image captured in cross-polarized light)

CLINICAL TEST

SELF-ASSESSMENT QUESTIONNAIRE

Self-Evaluation

My skin is more relaxed	93% volunteers
My skin looks more radiant	86% volunteers
My skin is more elastic	93% volunteers
My skin is more firm	93% volunteers
My skin is more hydrated	79% volunteers
My skin redness is reduced	79% volunteers
My skin is more compact	93% volunteers
The appearance of wrinkles/fine lines is reduced	86% volunteers
Expression lines on the forehead are reduced	86% volunteers
Glabellar expression lines are reduced	86% volunteers
Nasolabial expression lines are reduced	86% volunteers
My skin looks rejuvenated/younger	93% volunteers
My skin evenness is improved	86% volunteers
The treatment is suitable for my skin type	100% volunteers
Is the product well tolerated?	100% volunteers
Would you buy a cosmetic product containing an active ingredient that fights the skin signs caused by psychological stress?	100% volunteers

AKOSKY™ MINDLIGHT efficacy was well perceived by majority of the volunteers

COSMETIC PROPERTIES

- RE-EQUILIBRATION OF CELL CORTISOL LEVEL
- MINIMIZES THE APPEARANCE OF EXPRESSION LINES
- IMPROVES SKIN THICKNESS
- INCREASES SKIN ELASTICITY
- SKIN BARRIER STRENGTHENING
- REDUCES SKIN REDNESS
- IMPROVES SKIN APPEARANCE



COSMETIC APPLICATIONS

- ANTI-STRESS PRODUCTS
- DAILY AND NIGHT CARE
- ANTI-WRINKLES
- ANTI-REDNESS CREAM
- CIRCADIAN PRODUCTS
- HAIR CARE PRODUCTS
- MAKE-UP PRODUCTS



PRODUCT INFORMATION



INCI name: Glycerin, Aqua (Water), Medicago sativa (alfalfa) Seed Extract

CAS number: 56-81-5, 7732-18-5, 84082-36-0

EINECS number: 200-289-5, 231-791-2, 281-984-0

REGULATORY: EU, USA, China, Japan

APPEARANCE: Liquid from light yellow to amber

SOLUBILITY: Hydrosoluble

USE: 2%

PRESERVATIVES: Potassium sorbate, Sodium benzoate

FORMULATION TIPS: The product is liquid and easy to use. Recommended pH range is 3 – 8.

SAFETY DATA: **AKOSKY™ MINDLIGHT** has been tested for cytotoxicity and skin tolerance and has demonstrated a good safety profile

LCA value

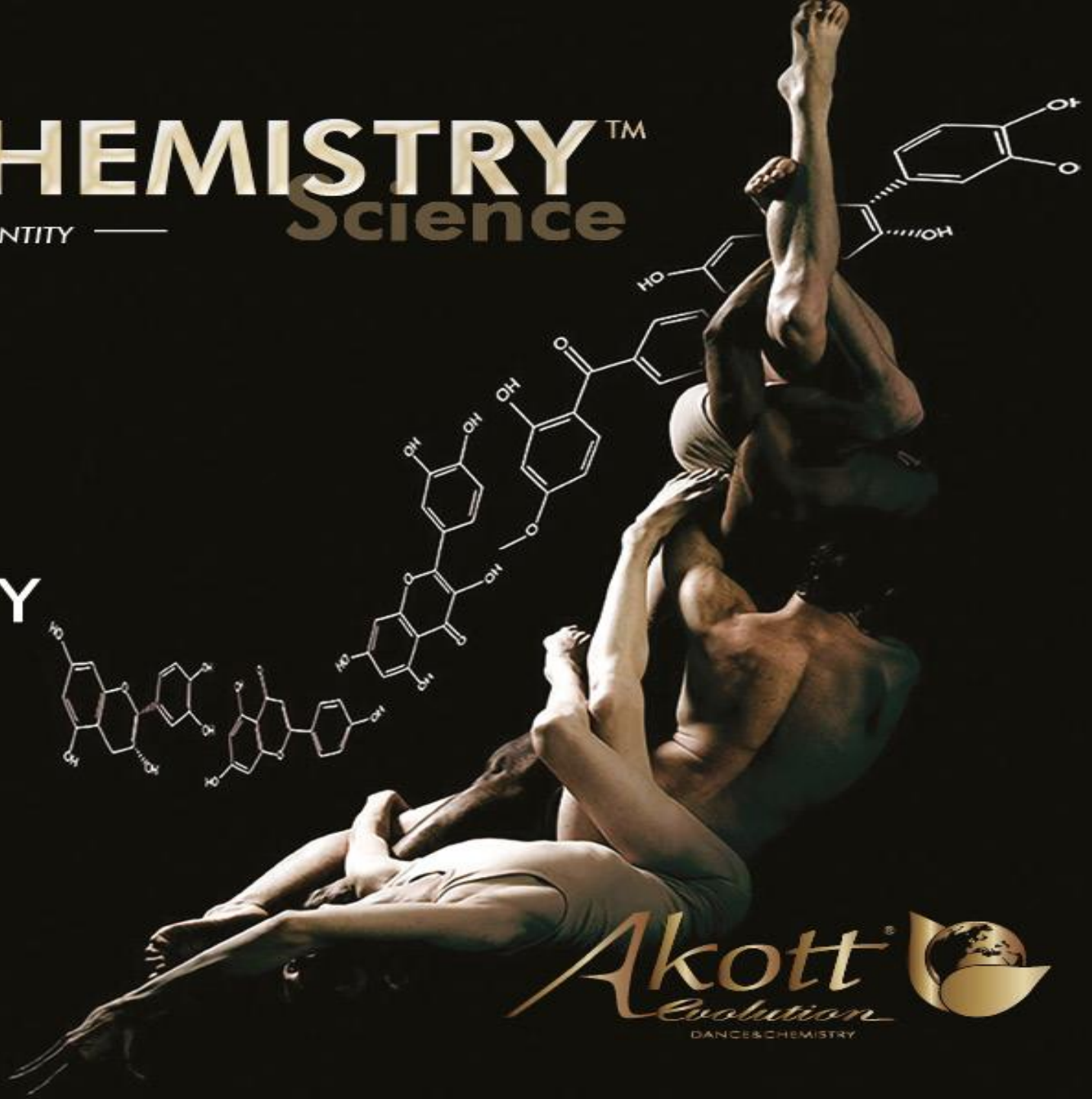
SOON!

AKOSKY™ LINE
CELLREBIRTH™

Art DANCE&CHEMISTRY™ Science

THE INSPIRED AKOTT BRAND IDENTITY

CREATIVITY
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SCIENCE
AKOTT
STORYTELLING MARKETING
ART
PHILOSOPHY
PASSION
CHEMISTRY
RESEARCH
TECHNOLOGY



"Dance is the mother of all Arts
as Chemistry is the mother of all Sciences"

Annaclaudia Ottavi
PRESIDENT & CEO

Akott® Evolution
DANCE&CHEMISTRY