Clinical Evidence

PRODUCT, DESCRIPTION AND EVIDENCE | REFERENCE: FS11-88 | PUBLISH DATE: 30/07/2026

SUPERP

SKIN PEPTIDE-STACK SHOTS

Your weekly ritual for smoother, firmer-looking skin.

Super-P Skin Peptide-Stack Shots deliver an advanced 14-peptide skincare formula in a once-a-week at-home ritual. Each 2.5 ml shot combines advanced peptides with innovative vegan spicules – microscopic, needle-like structures that work at the skin's surface to help optimise the application and distribution of active ingredients.

The result? Skin that feels firmer and looks smoother and more youthful.

Copper Tripeptide-1 and sh-Oligopeptide-1, alongside a targeted combination of neuropeptides that help soften the appearance of expression lines. Structural peptides, including Palmitoyl Tripeptide-1 and Palmitoyl Tetrapeptide-7, help support smoother, firmer-looking skin.

Together, this multi-peptide formula helps improve the appearance of fine lines, wrinkles, loss of firmness and uneven skin texture, leaving the complexion looking smoother, plumper and more radiant.

KEY BENEFITS

- Creates microchannels to enhances penetration of active ingredients
- Boosts collagen production by up to +400%
- Increases hyaluronic acid by up to +174%
- Skin appears up to 28% plumper
- Reduces oxidative damage by up to 87%
- Reduces wrinkles by up to −31% (Depth, density and volume)
- Improves skin firmness by up to +30%
- Improves skin elasticity by up to +25%
- Reduces crow's feet by up to −12.6%

DIRECTIONS FOR USE

1. Cleanse face & neck thoroughly.
2. Shake the vial well, then open one shot.
3. Dispense two pipettes into your palm.
4. Massage into face, neck & décolletage in upward circular motions to activate the bio-spicules.
5. Allow to absorb for 1–2 minutes.
6. Repeat steps 3 and 4 until the vial is empty.

WARNINGS

For external use only. Avoid contact with eyes. If irritation occurs, discontinue use. Store this product below 30°C and away from direct sunlight.

INGREDIENTS

Aqua (Water), Glycerin, Propylene Glycol, Copper Tripeptide-1, Calcium Aluminum Borosilicate, Tripeptide-29, Panthenol (Provitamin B5), Acetyl Hexapeptide-38, Hexapeptide-11, Acetyl Octapeptide-3, Dunaliella Salina (Microalgae) Extract, Acetyl Hexapeptide-30, Leuconostoc/Radish Root Ferment Filtrate, Sodium Hyaluronate, Dipeptide Diaminobutyroyl Benzylamide Diacetate, Acetyl Tetrapeptide-2, Palmitoyl Tripeptide-5, Acetyl Hexapeptide-8, Palmitoyl Tripeptide-38, Palmitoyl Tripeptide-1, Palmitoyl Tetrapeptide-7, Sh-Oligopeptide-1, Butylene Glycol, Pentylene Glycol, Cellulose Gum, Xanthan Gum, Inulin, Mannitol, Carbomer, Parfum (Fragrance), Cellulose, Fructose, Glucose, Sodium Lactate, Hydroxypropyl Cyclodextrin, PPG-26-Buteth-26, PEG-40 Hydrogenated Castor Oil, Polysorbate 20, Phenoxyethanol, Ethylhexylglycerin, Sodium Benzoate, Citric Acid, Acetyl Cedrene, Linalool, Citronellol.

ACTIVE INGREDIENTS

Glycerin 9%
Copper Tripeptide-1 1%
Calcium Aluminium Borosilicate 0.5%
Tripeptide-29 0.98%
Panthenol 0.35%
Acetyl Hexapeptide-38 0.5mg/mL
Hexapeptide-11 0.5mg/mL
Acetyl Octapeptide-3 0.5mg/mL
Dunaliella Salina Extract 0.5mg/mL
Acetyl Hexapeptide-30 0.5mg/mL
Leuconostoc/Radish Root Ferment Filtrate 0.2mg/mL
Sodium Hyaluronate 0.1mg/mL
Dipeptide Diaminobutyroyl Benzylamide Diacetate 0.1mg/mL
Acetyl Tetrapeptide-2 0.05mg/mL
Palmitoyl Tripeptide-5 0.03mg/mL
Acetyl Hexapeptide-8 0.011mg/mL
Palmitoyl Tripeptide-38 0.005mg/mL
Palmitoyl Tripeptide-1 0.003mg/mL
Palmitoyl Tetrapeptide-7 0.0015mg/mL
Sh-Oligopeptide-1 0.0001mg/mL

This advanced multi-peptide formulation delivers a comprehensive anti-ageing approach by targeting all major biological mechanisms involved in skin ageing. Through a synergistic combination of signal peptides, neuromodulating peptides, structural peptides, and regenerative growth factors, the formula helps reduce both dynamic and static wrinkles, improve skin firmness and elasticity, and restore dermal density. It also supports skin regeneration, enhances cellular resilience, and protects against oxidative stress, while unique volumizing peptides contribute to improved skin plumpness and facial contour.
The result is smoother, firmer, more lifted and youthful-looking skin, with both immediate visible effects and long-term structural and biological benefits.

The efficacy of this multi-peptide system is further enhanced by the inclusion of vegan spicules (Calcium Aluminum Borosilicate), which act as a micro-scale delivery technology to optimize ingredient performance. Through controlled mechanical interaction with the stratum corneum, these microstructures facilitate the penetration of active peptides by creating transient microchannels in the epidermis. This enhances the bioavailability of key actives while simultaneously stimulating skin renewal processes, resulting in improved texture, radiance, and overall skin quality.

By combining advanced peptide technology with a microneedling-inspired delivery system, the formulation maximizes both immediate and long-term visible results.

PEPTIDE SYSTEM			
Category	**Peptide**	**Mode of Action**	**Key Benefits / Claims**
Structural Peptides (Collagen & ECM)	**Palmitoyl Tripeptide-1**	Stimulates collagen I & III synthesis (signal peptide)	Improves firmness, reduces wrinkles, supports skin repair
	Palmitoyl Tetrapeptide-7	Anti-inflammatory, reduces cytokines, supports ECM	Reduces inflammation, improves skin quality, anti-ageing
	Palmitoyl Tripeptide-38	Stimulates collagen, HA, fibronectin (ECM booster)	Plumps skin, reduces wrinkles, improves density
	Palmitoyl Tripeptide-5	Activates TGF-β → collagen synthesis	Improves firmness, elasticity, reduces wrinkles
	Tripeptide-29	Collagen fragment → fibroblast stimulation	Boosts collagen, improves texture, reduces fine lines
	Copper Tripeptide-1 (GHK-Cu)	Gene modulation + ECM synthesis + repair	Improves firmness, regenerates skin, reduces wrinkles
Neuromodulating Peptides (Expression Wrinkles)	**Acetyl Hexapeptide-8**	Inhibits SNARE complex → ↓ acetylcholine	Reduces expression wrinkles, smooths skin
	Acetyl Octapeptide-3 (SNAP-8)	SNAP-25 analogue → inhibits neurotransmitter release	Reduces dynamic wrinkles, “Botox-like” effect
	Acetyl Hexapeptide-30	SNARE modulation → reduces muscle contraction	Softens expression lines, prevents wrinkle formation
	Dipeptide Diaminobutyroyl Benzylamide Diacetate	Mimics Waglerin-1 → inhibits muscle contraction	Relaxes facial tension, reduces deep wrinkles
Firmness & Elasticity Peptides (Anti-sagging)	**Acetyl Tetrapeptide-2**	Stimulates elastin assembly (fibulin-5, LOXL1)	Improves elasticity, firmness, lifting effect
Volume & Contour Peptide	**Acetyl Hexapeptide-38**	Activates PGC-1α → adipogenesis & lipid storage	Restores volume, plumps skin, reduces hollow areas
Cellular Longevity Peptide	**Hexapeptide-11**	Activates proteostasis (proteasome, autophagy, Nrf2)	Improves resilience, elasticity, antioxidant protection
Regeneration/ Growth Factor Peptide	**Sh-Oligopeptide-1 (EGF)**	Stimulates cell proliferation & regeneration	Accelerates repair, improves elasticity, reduces wrinkles

DETAILED MECHANISMS OF ACTION BY PEPTIDE CATEGORY

1. Structural Peptides (Collagen & ECM Stimulation)
These peptides act as “messenger molecules” (signal peptides) that mimic natural fragments produced when the skin is damaged. In normal physiology, when collagen breaks down, small peptide fragments are released and signal fibroblasts to produce new extracellular matrix components. These peptides reproduce this signal artificially, activating fibroblasts to synthesize collagen, elastin, and glycosaminoglycans (such as hyaluronic acid). At the same time, some peptides help regulate enzymes responsible for collagen degradation (MMPs), ensuring balanced skin remodeling. This results in improved dermal density, increased firmness, and a visible reduction in wrinkles.

2. Neuromodulating Peptides (Expression Wrinkle Control)
These peptides target the communication between nerves and muscles, which is responsible for facial expressions. Normally, nerve cells release a neurotransmitter called acetylcholine through a protein system known as the SNARE complex, which includes the key protein SNAP-25. This neurotransmitter triggers muscle contraction, and repeated contractions over time lead to expression wrinkles. Neuromodulating peptides interfere with this process by partially inhibiting the SNARE complex, reducing acetylcholine release. As a result, muscle micro-contractions are softened, leading to a relaxation of facial tension and a visible smoothing of dynamic wrinkles, without affecting natural facial expressions.

3. Firmness & Elasticity Peptides (Anti-Sagging Mechanism)
This category specifically targets the elastic fiber network, which is essential for skin’s ability to return to its original shape after deformation. With ageing, proteins such as elastin and fibulin-5 become disorganized or degraded, leading to loss of firmness and sagging. These peptides stimulate the production and proper assembly of elastic fiber components, including fibulin-5 and enzymes like LOXL1 that are responsible for cross-linking elastin fibers. By restoring the structure and functionality of elastic fibers, they improve skin elasticity, firmness, and resistance to sagging.

4. Volume & Contour Peptides (Adipogenesis Mechanism)
Unlike most cosmetic actives, this category works at the level of subcutaneous adipose tissue, which plays a key role in facial volume. With age, fat compartments shrink, leading to hollow areas and deeper wrinkles. These peptides stimulate adipocyte differentiation and lipid accumulation through activation of pathways such as PGC-1α, a regulator of cellular energy metabolism and fat cell formation. This results in increased lipid storage within adipocytes and improved tissue volume beneath the skin. The visible effect is a plumper, fuller appearance with reduced depth of wrinkles and improved facial contours.

5. Cellular Longevity Peptides (Proteostasis & Stress Resistance)
These peptides act at a deeper biological level by supporting the skin’s protein maintenance system (proteostasis). Over time, damaged or misfolded proteins accumulate in skin cells, contributing to ageing and loss of function. These peptides activate key cellular pathways such as proteasome activity (protein degradation), autophagy (cellular recycling), and antioxidant defenses (via Nrf2). This helps remove damaged proteins, protect cells from oxidative stress, and maintain optimal cellular function. As a result, skin becomes more resilient, better able to resist environmental stress, and maintains a healthier, more youthful state over time.

6. Regeneration & Growth Factor Peptides (Cell Renewal Mechanism)
Growth factor peptides, such as EGF, act by binding to specific receptors on skin cells (EGFR), triggering signaling cascades that promote cell proliferation, migration, and differentiation. This accelerates epidermal renewal and stimulates fibroblast activity in the dermis. These processes enhance tissue repair, improve skin structure, and support regeneration following damage. The overall effect is improved skin quality, faster recovery, enhanced elasticity, and a visible reduction in signs of ageing.

Summary:
Each peptide category targets a different biological layer of ageing:

- Muscle → wrinkles
- Collagen → structure
- Elastin → firmness
- Fat → volume
- Cells → longevity
- Growth factors → regeneration

Together, they create a complete and synergistic anti-ageing system

MULTI-PEPTIDE MECHANISM OF ACTION (SKIN LAYERS)

Surface Layer: Visible effects
- Neuromodulating Peptides → Reduce expression wrinkles

Epidermis:
- Regeneration Peptides (EGF) → Skin renewal & repair

Dermis:
- Structural Peptides → Collagen & ECM
  → Firmness & wrinkles

Dermis: Elastic Network
- Elasticity Peptides → Elastin & lifting

Subcutaneous Layer:
- Volume Peptides → Adipogenesis & plumping

Cellular Level:
- Longevity Peptides → Proteostasis & resilience

CALCIUM ALUMINUM BOROSILICATE (VEGAN SPICULES)

Ingredient Claims

Created microchannels thanks to the micro-needle structure.	Enhances penetration of active ingredients.
Promotes skin renewal and exfoliation.	Improves skin texture and smoothness.
Boosts skin radiance and brightness	Supports skin revitalisation
Helps improve overall skin appearance	Provides a micro-needling inspired cosmetic effect

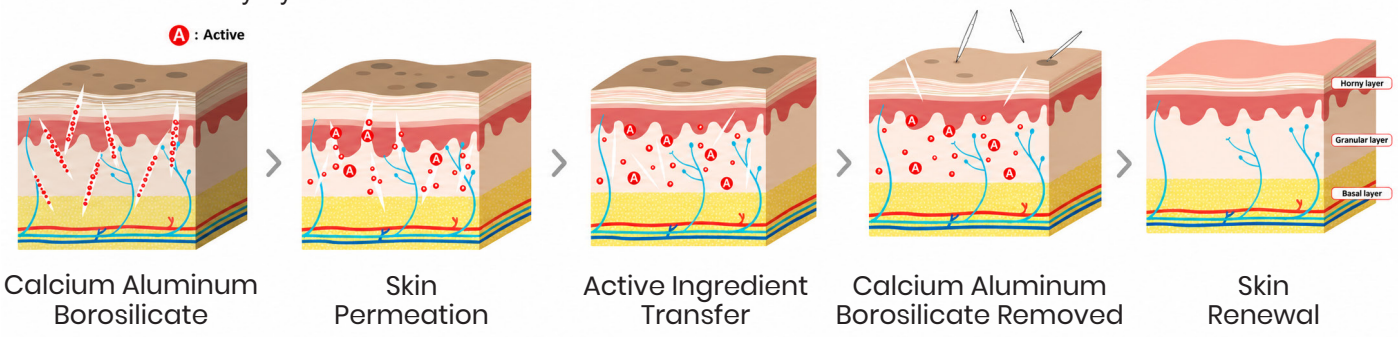
Calcium Aluminum Borosilicate, when engineered into micro-needle structures ("vegan spicules"), functions as a mechanical transdermal delivery system inspired by natural sponge spicules. These synthetic, mineral-based microstructures are designed to interact with the skin surface to enhance active ingredient penetration, stimulate epidermal renewal, and improve skin texture. Unlike biological spicules, they offer controlled morphology, consistent quality, and a vegan, sustainable alternative.

Scientific Background: Skin Barrier & Transdermal Delivery

The outermost layer of the skin, the stratum corneum, is the primary barrier to active ingredient penetration. It consists of tightly packed corneocytes embedded in lipid matrices, limiting passive diffusion of most cosmetic actives.

- Average epidermal thickness ≈ ~200 µm
- Transdermal delivery technologies (TDS) aim to overcome this barrier through:
- Mechanical disruption
- Microchannel formation
- Enhanced diffusion pathways

Transdermal Delivery System



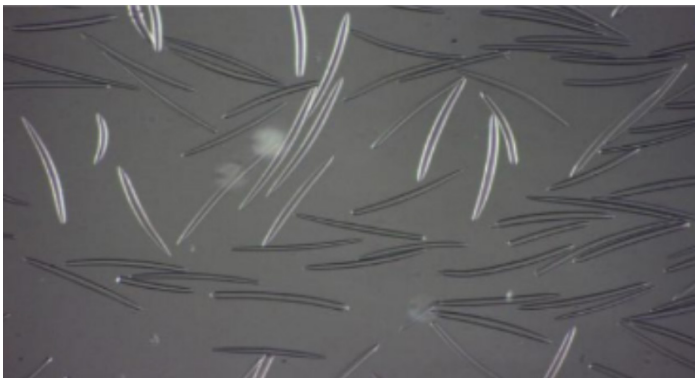
How does Spicules work?

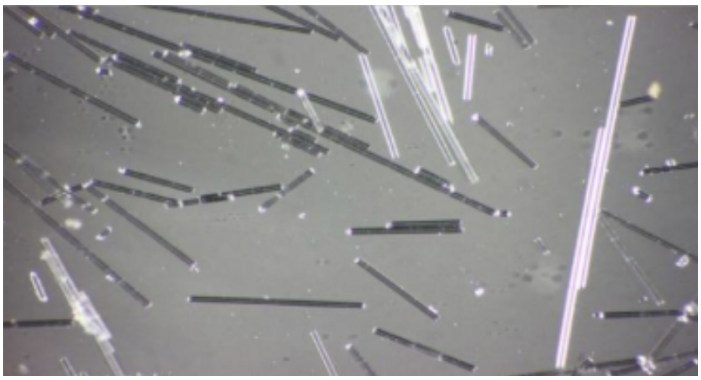
Spicules made from Calcium Aluminum Borosilicate function as micro-scale, needle-like structures that interact mechanically with the skin surface to enhance both skin renewal and active ingredient delivery. Due to their elongated, rigid morphology (approximately ~10 µm in diameter), these structures are able to create controlled micro-disruptions in the stratum corneum, the outermost barrier layer of the skin.

When applied topically with gentle massage, the spicules temporarily embed into the superficial layers of the epidermis, forming microchannels that increase skin permeability. This mechanism facilitates the deeper penetration of active ingredients that would otherwise be limited by the skin barrier. Peer-reviewed literature on microneedling and transdermal delivery systems confirms that such micro-scale mechanical pathways significantly enhance the diffusion and bioavailability of topically applied compounds.

At the same time, the presence of these microstructures induces a controlled mechanical stimulation of the skin, which activates natural repair processes. This includes increased keratinocyte turnover, stimulation of epidermal renewal, and activation of signalling pathways associated with skin regeneration. As the skin responds to these micro-stimuli, it promotes smoother texture, improved radiance, and enhanced overall skin quality. Over time, the spicules are naturally shed along with the normal desquamation process, leaving behind a renewed skin surface. This dual mechanism—mechanical exfoliation combined with enhanced transdermal delivery—positions vegan spicules as a cosmetic, non-invasive alternative to microneedling-inspired technologies, improving both the efficacy of formulations and the visible results on the skin.

Sponge Spicules – Vegan Spicules comparison:





CATEGORY	Sponge Spicule	Vegan Spicule
ORIGIN	Sponge Body (Animal)	Synthetic
INCI NAME	Hydrolyzed Sponge	Calcium Aluminum Borosilicate
STRUCTURE	Thin & long needle-like	Thin & long rod-like
PURIFICATION METHOD	Acid-alkali purification	None
LENGTH CONTROL	X	O
SKIN PENETRATION	O	O
VEGAN STATEMENT	X	O

Transdermal Delivery Systems (TDS)

- The thickness of the epidermis of the facial area is approximately 200μm.
- Vegan spicules are designed with a similar strength and thickness (10μm) to sponge spicules.
- Vegan spicules penetrate the skin and deliver active to the epidermis similarly to sponge spicules.

Facial Region	Sponge Spicule	Vegan Spicule
Epidermis (mm)		
Forehead	0.22 ± 0.03	0.20 ± 0.03
Glabella	0.21 ± 0.03	0.19 ± 0.02
Temple	0.19 ± 0.02	0.18 ± 0.02
Eyelid	0.18 ± 0.03	0.17 ± 0.02
Nasal dorsum	0.20 ± 0.03	0.19 ± 0.02
Zygoma	0.19 ± 0.03	0.20 ± 0.18
Submandibular	0.21 ± 0.09	0.18 ± 0.03
Neck	0.19 ± 0.03	0.17 ± 0.03

Unlike sponge-derived spicules, Calcium Aluminum Borosilicate spicules are synthetically produced, allowing precise control over size, shape, and performance, while ensuring consistent safety and efficacy. They also provide a vegan and environmentally sustainable alternative, avoiding ecological concerns associated with natural sponge harvesting.

Mechanisms of Action & Associated Skin Benefits:

Mechanical Micro-Exfoliation & Skin Renewal
Vegan spicules made of Calcium Aluminum Borosilicate act as micro-scale rigid structures that interact with the stratum corneum to induce controlled mechanical exfoliation. Their rod-like, needle-inspired morphology enables localized disruption of corneocyte cohesion, promoting desquamation and accelerating epidermal turnover. This mechanism leads to smoother skin texture, improved radiance, and enhanced surface uniformity, similar to microdermabrasion or mild microneedling approaches.

Enhanced Transdermal Delivery of Actives
Due to their micro-needle-like structure (~10 µm scale), vegan spicules create temporary microchannels in the epidermis, facilitating deeper penetration of active ingredients. Peer-reviewed literature on microneedling and transdermal delivery systems confirms that such micro-disruptions significantly increase permeability and improve bioavailability of topically applied compounds. The supplier document confirms that these spicules are designed to penetrate the skin and deliver actives effectively to the epidermis.

Skin Stimulation & Regenerative Response
The controlled micro-stimulation induced by spicules triggers a biological repair response, similar to low-level mechanical stimulation seen in microneedling. This includes activation of keratinocytes and fibroblasts, increased cell turnover, and stimulation of skin renewal processes. Peer-reviewed studies on mechanical skin stimulation show improved epidermal regeneration and enhanced skin quality following such micro-injuries.

Improvement of Skin Texture & Radiance
By combining exfoliation and enhanced active delivery, vegan spicules contribute to improved skin texture, reduced roughness, and increased radiance. This highlights visible improvements in skin smoothness, brightness, and revitalization, supporting their use in tone-up and brightening formulations.

Links:
Data on file
Prausnitz MR. Microneedles for transdermal drug delivery. Nature Reviews Drug Discovery - https://www.nature.com/articles/nrd2323
Prausnitz MR. Microneedles for transdermal drug delivery. Nature Reviews Drug Discovery - https://www.nature.com/articles/nrd2323
Ita K. Transdermal delivery of drugs with microneedles—potential and challenges. Drug Delivery and Translational Research - https://link.springer.com/article/10.1007/s13346-015-0233-0
Kim YC, Park JH, Prausnitz MR. Microneedles for drug and vaccine delivery. Advanced Drug Delivery Reviews - https://pubmed.ncbi.nlm.nih.gov/17935823/
Meng Y. et al. Application of high-frequency ultrasound to assess facial skin thickness. BMC Medical Imaging - https://pmc.ncbi.nlm.nih.gov/articles/PMC9273159/

PALMITOYL TETRAPEPTIDE-1 & PALMITOYL TETRAPEPTIDE-7

Ingredient Claims:

Decreased wrinkle depth by up to 19.9%	Upregulates collagen synthesis for firmer, more elastic looking skin
Decreased wrinkle density by up to 32.9%	16% improvement in skin complexion
Skin appears up to 16% smoother	15.5% improvement in skin tone

A blend of two peptides: Palmitoyl Tripeptide-1 and Palmitoyl Tetrapeptide-7. Peptides are short chains of amino acids that can have various benefits for the skin. Peptide can benefit the skin in several ways, such as:

- Stimulate collagen production: Collagen is a protein that gives the skin its elasticity and firmness. Peptides can stimulate the production of collagen, which can help improve the appearance of fine lines and wrinkles and make the skin look more youthful.
- Improve skin texture: Peptides can also improve the texture of the skin by increasing its thickness and density. This can help reduce the appearance of fine lines, wrinkles, and other signs of ageing.
- Boost skin hydration: Peptides can help boost skin hydration levels by improving the skin's ability to retain moisture. This can help keep the skin soft, supple, and plump.
- Enhance skin elasticity: Peptides can also help enhance the skin's elasticity, which can help prevent sagging and improve the overall appearance of the skin.
- Reduce inflammation: Peptides can have anti-inflammatory properties, which can help reduce redness, irritation, and other signs of inflammation in the skin.

A blind, randomised clinical study with 28 volunteers twice daily applying cream including the active compound to half their face and one of their forearms and a placebo cream to the other half of the face and other forearm confirmed anti-wrinkle efficacy, reduction of wrinkle depth, volume and density, skin roughness and complexity, as well as a decrease of the area occupied by deep wrinkles, and an increase in skin tone.

Repair of the papillary dermis

28 female volunteers aged from 51 to 72 years, mean age 59. Twice daily application of cream containing 3% of Palmitoyl Tripeptides for 2 months to one half of the face and the forearm (inner and UV-exposed outer forearm) against placebo.

after 2 months	Inner Forearm	Outer Forearm
THICKNESS	**-9.8%/TO** up to **-23%**, p<0.01	**-9.8%/TO** up to **-33%**, p<0.01
	93% volunteers	86% volunteers
	-11%/placebo, p<0.01	**-14.4%/placebo**, p<0.01
DENSITY	**+11.4%/TO** up to **+44%**, p<0.01	**+11.5%/TO** up to **+45%**, p<0.01
	68% volunteers	82% volunteers
	+15.2%/placebo, p<0.01	**+15.1%/placebo**, p<0.01
AGE GAIN	**-3.8 YEARS**	**-5.5 YEARS**

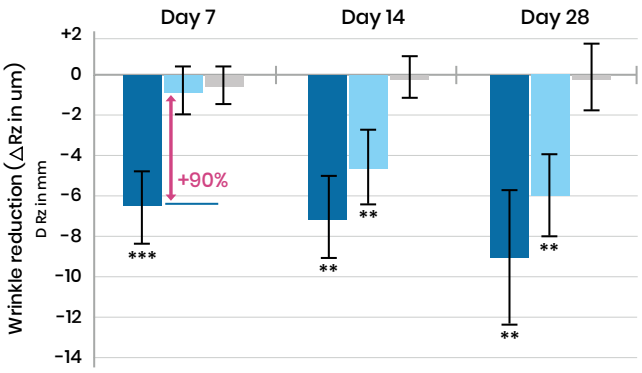
Comparison of the effects of
Palmitoyl Tripeptides vs. placebo after 56 days (2 months)

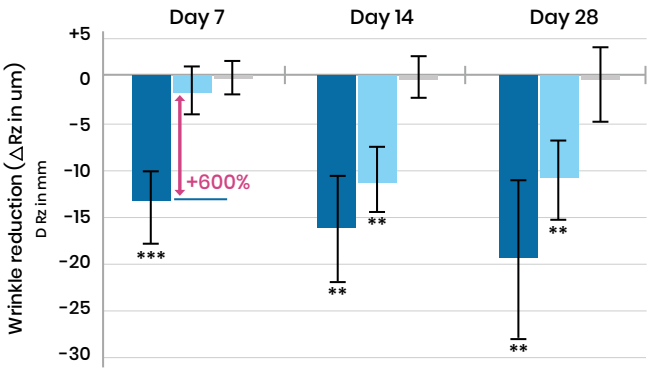
Compared to TO (%)	Palmitoyl Tripeptides	Placebo
Surface occupied by deep wrinkles	-39.4**	4.3$^{n.s.}$
Main wrinkle density	-32.9**	-9.9$^{n.s.}$
Main wrinkle average depth	-19.9**	-3.2$^{n.s.}$
Main wrinkle average volume	-23.3**	-8.7*
Roughness	-16.0**	-1.4$^{n.s.}$
Complexity (Lifting effect)	-16.2**	4.2$^{n.s.}$
Elasticity	+5.5*	4.1$^{n.s.}$
Skin tone	+15.5**	6.5$^{n.s.}$

Comparison of the effects of
Palmitoyl Tripeptides vs. placebo after 56 days (2 months)

Parameters	Palmitoyl Tripeptides	Placebo
% area occupied by wrinkles > 200 um	-39.4**	4.3$^{n.s.}$
Wrinkle density	-32.9**	-9.9$^{n.s.}$
Roughness	-16.0**	-1.4$^{n.s.}$
Complexity	-16.2**	-4.2$^{n.s.}$
Mean volume of a main wrinkle	-23.3**	-8.7*
Mean depth of a main wrinkle	-19.9**	-3.2$^{n.s.}$

n.s.: non-significant
*: significant ($p < 0.05$)
**: highly significant ($p < 0.01$)

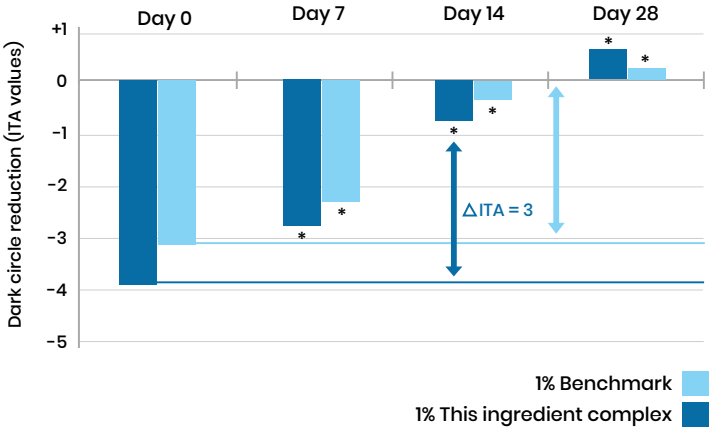




Significant effects compared to benchmark and placebo and day 0

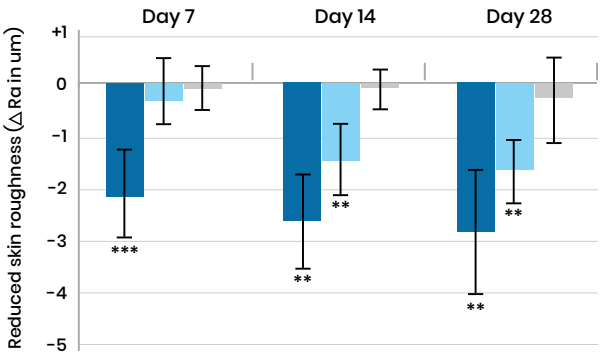
**vs. day 0 & Placebo
***vs. day 0, Benchmark & Placebo p<0.05

Placebo
1% Benchmark
1% This ingredient complex



1% Benchmark
1% This ingredient complex

Significant compared to benchmark and placebo



**vs. day 0 & Placebo
***vs. day 0, Benchmark & Placebo p<0.05

Placebo
1% Benchmark
1% This ingredient complex

Anti-wrinkle efficacy, skin tone and elasticity

23 female volunteers aged from 42 to 67 years / Twice daily application on one half of a cream containing 3% of Palmitoyl Tripeptides against placebo, for 2 months. Assessment of the anti-wrinkle efficacy by profilometry, cutometry and photography compared to TO

Compared to TO (%)	Palmitoyl Tripeptides	Placebo
Surface occupied by deep wrinkles	-39.4**	4.3$^{n.s.}$
Main wrinkle density	-32.9**	-9.9$^{n.s.}$
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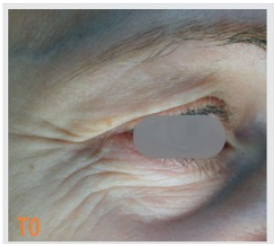
Roughness	-16.0**	-1.4$^{n.s.}$
Complexity (Lifting effect)	-16.2**	4.2$^{n.s.}$
Elasticity	+5.5*	4.1$^{n.s.}$
Skin tone	+15.5**	6.5$^{n.s.}$





n.s. : non-significant
*: significant/TO (p<0.05)
**: significant/TO (p<0.01)

Variation in DEJ macromolecules/papillary dermis with age;
effect of **Palmitoyl Tripeptides** on these components 5 days after topical application

	Collagen I	Collagen IV	Collagen VII	Collagen XVII	Nidogen-1
Variation with age (in %)	(↓) -8%; p<0.2	(↓) -11%; p<0.05	(↓) -17%; p<0.01	(↓) -31%; p<0.01	(↓) -15%; p<0.01
Placebo (AFU)	20.80 + 4.02	10.51 + 2.95	12.56 + 2.01	4.64 + 1.05	5.09 + 2.55
Palmitoyl Tripeptides 3% (AFU)	23.79 + 2.96	11.18 + 2.28	14.99 + 3.75	5.37 + 2.29	5.83 + 4.04
Variation (%) vs. placebo	(↑) +14.40%; p<0.01	(↑) +6.4%; p<0.05	(↑) +20.30%; p<0.01	(↑) +15.84%; p<0.01	(↑) +14.49%; p<0.01

AFU: Arbitrary Fluorescence Unit; (↑) = increase (↓) = decrease

After 2 months of daily application of Palmitoyl Tripeptides, the following points were observed:
• reduction in the mean depth of the main wrinkle (-19.9%) and in its volume (-23.3%).
• reduction in roughness (-16%) and complexity (-16.2%), a surface “lifting” parameter.
• decrease in the area occupied by deep wrinkles (>200 µm)
(-44%), giving rise to a decrease in density (-32.9%).
• increase in skin tone (+15.5%).

A blind, randomised clinical study with 28 volunteers twice daily applying cream including the active compound to half their face and one of their forearms and a placebo cream to the other half of the face and other forearm confirmed anti-wrinkle efficacy, reduction of wrinkle depth, volume and density, skin roughness and complexity, as well as a decrease of the area occupied by deep wrinkles, and an increase in skin tone.

Links:
https://www.mdpi.com/2079-9284/4/2/16#B16-cosmetics-04-00016
Data on file

PALMITOYL TRIPEPTIDE–1

The various forms of peptides act upon collagen found in the body and particularly the skin. The most abundant form of collagen in the body is type collagen I, which is the collagen primarily responsible for repairing the skin. Collagen type III is found alongside collagen type I and works much in the same way, though it is not as tough as collagen I. Palmitoyl Tripeptide–1 mimics the relationship between the growth factors involved in the skin’s healing process and the production of collagen. Essentially, Palmitoyl Tripeptide-1 tricks the skin into producing more collagen to repair the skin, improve elasticity and minimise the appearance of fine lines and wrinkles. Palmitoyl Tripeptide–1 is a powerful skincare ingredient to combat ageing, but like most skincare ingredients it works more effectively when used in combination with other anti-ageing peptide ingredients. When used as part of a good skin-care routine, Palmitoyl Tripeptide–1 can help skin repair damage by stimulating collagen production. The result is younger, smoother and stronger skin.

In a study with 15 women, a cream containing palmitoyl tripeptide-1 was applied twice daily for four weeks, leading to statistically significant reductions in wrinkle length, depth and skin roughness. Another study applied both vehicle and palmitoyl tripeptide-1 to the skin of 23 healthy female volunteers for four weeks.

Links:
https://www.mdpi.com/2079-9284/4/2/16/html
https://farma.com.ro/articles/2021.3-4/RJPhP_2021_3-4_Art-01.pdf
https://pubmed.ncbi.nlm.nih.gov/18503476/

PALMITOYL TETRAPEPTIDE-7

Palmitoyl Tetrapeptide-7 (It was also formerly known and marketed as Palmitoyl Tetrapeptide-3. Palmitoyl Tetrapeptide-7 consists of a short chain of four amino acids (a.k.a. GQPR peptide or glycineglutamineproline-arginine) connected to palmitic acid.
Palmitic Acid is a fatty acid added to improve the peptide's oil solubility and thus skin penetration. Palmitoyl Tetrapeptide-7 serves as an anti-inflammatory after exposure to UVB-irradiation. In vivo reflectance confocal microscopy studies indicated that a blend of Palmitoyl Oligopeptide and Palmitoyl Tetrapeptide-7 enhanced the extracellular matrix structure compared to placebo. Sixty healthy photoaged volunteers were tested over 12 months with a formulation containing Palmitoyl Tetrapeptide-7. A reduction of facial wrinkles was documented by this long-term use.

Palmitoyl Tetrapeptide-7 used in conjunction with Palmitoyl-Oligopeptide. They can boost the growth of the connective tissues and naturally increasing the production of collagen in the skin; when the production of collagen is increased, the skin can heal and rejuvenate itself.

It serves as an anti-inflammatory after exposure to UVB-irradiation. In vivo reflectance confocal microscopy studies indicated that a blend of palmitoyl oligopeptide and palmitoyl tetrapeptide-7 enhanced the extracellular matrix structure compared to placebo.

A reduction of facial wrinkles was documented by this long-term use. Better skin appearance was related to the deposition of fibrillin-rich microfibrils in the papillary dermis of treated skin.

Sources
https://pubmed.ncbi.nlm.nih.gov/25817264/
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4950680/
https://pubmed.ncbi.nlm.nih.gov/19438432/

PALMITOYL TRIPEPTIDE-38

Ingredient Claims:

Increases collagen 1 production by 111%	Increases collagen 3 production by 104%
Increases hyaluronic acid production by 174%	Increases production of collagen 4 by 42%
Reduces appearance of wrinkles by up to 31%	Reduces the appearance of crow's feet by 12.6%
Skin felt 13% smoother	Skin appeared 28% plumper

Palmitoyl tripeptide-38 is a highly sought after ingredient for anti-ageing products. As the name suggests, palmitoyl tripeptide-38 is a peptide that is stimulates the production of macromolecules within the skin such as collagen and hyaluronic acid.

Particularly beneficial for mature skin, studies using palmitoyl tripeptide-38 have been shown to reduce the appearance of wrinkles, especially when applied around the eyes. Palmitoyl tripeptide-38 has also been shown to have a lifting effect on the skin, for the appearance of plumper, firmer looking skin.

Demonstrated cosmetic activity

In vitro (Tests performed with 5 ppm Pal-KMO_2K equiv. to 250mg Palmitoyl Tripeptide-38)

Increase in the synthesis of matrix molecules:	
HSP47	+123%; ($p<0.01$)
Collagen I	+111% on HDF; ($p<0.01$) +37% on explants; ($p<0.01$)
Collagen III	+104%; ($p<0.01$)
Fibronectin	+59%; ($p<0.01$)
Hyaluronic Acid	+174%; ($p<0.01$)

Boosting the effect of luminotherapy on UV-aged skins:	
Collagen	+12%; ($p<0.01$)

Increase in the synthesis of molecules at the dermal-epidermal junction:	
Collagen IV	+42%; ($p<0.01$)
Laminins	+75%; ($p<0.01$)

In vivo
Clinical study to assess the smoothing and filling of forehead lines and crow's feet. Panel: 25 women who applied 250mg Palmitoyl Tripeptide-38 cream twice a day for 2 months

Anti-wrinkle effect on the forehead determined by fringe projection (FOITS):	
Reduction in the volume of a main wrinkle	-31%; ($p<0.05$)
Reduction in visible cutaneous roughness (lifting effect	-28%; ($p<0.05$)
Reduction in the maximum depth of a main wrinkle	-16.3%; ($p<0.05$)

Anti-wrinkle effect on corw's feet dtermined by fringe projection or imprinting:	
Reduction in the surface occupied by deep wrinkles	-28.5%; (p<0.05)
Reduction in the volume of a main wrinkle	-21%; (p<0.05)
Reduction in the mean depth	-15%; (p<0.05)
Reduction in visible cutaneous roughness (lifting effect)	-12.6%; (p<0.05)
Opening of the wrinkle	+8.4%; (p<0.05)

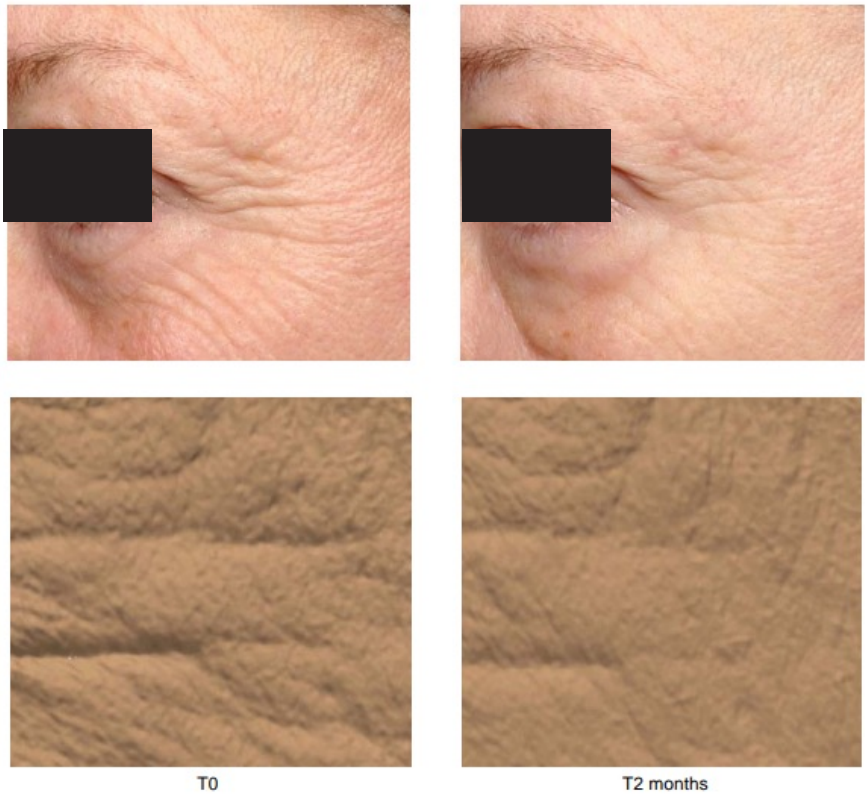
28.5% reduction in deep wrinkles

Variation in the topographic parameters of crow's feet after application of 250mg Palmitoyl Tripeptide-38 on 25 or 24* volunteers)

Surface occupied by deep wrinkles (%)	**250mg Palmitoyl Tripeptide-38**		**Placebo**	
*	T0	T 2 months	T0	T 2 months
Mean	5.28 ± 2.68	4.23 ± 2.00	4.48 ± 2.26	4.86 ± 2.91
% variation vs T0 significance Maximum	-20%; p<0.01 -71%		8.5%; ns	
Difference in variations; Significance	-28.5% p<0.05			

12.6% reduction in crow's feet

Complexity of the crow's feet; lifting effect	**250mg Palmitoyl Tripeptide-38**		**Placebo**	
	T0	T 2 months	T0	T 2 months
Mean	3.85 ± 1.04	3.54 ± 0.84	3.80 ± 1.00	3.97 ± 1.55
% variation vs T0 significance Maximum	-8.1%; p<0.05 -42%		4.5%; ns	
Difference in variations; Significance	-12.6% p<0.05			



During in vitro studies 250mg* Palmitoyl Tripeptide-38 strongly stimulated:

- The synthesis of matrix molecules (Collagen I: +111%, collagen III: +104%, fibronectin: +59% and HSP 47: +123%).
- The synthesis of molecules of the dermal-epidermal junction (Collagen IV: +42% and laminins: +75%).
- The synthesis of hyaluronic acid (+174%), which through its highly branched structure and moisture-retaining capabilities provides volume, and is found at all levels of the epidermis, dermal-epidermal junction and dermis.

A clinical study was conducted on 25 female volunteers, who applied a 250mg Palmitoyl Tripeptide-38 cream twice a day. The assessments specifically monitored the smoothing and filling effect on forehead lines and crow's feet.

The anti-ageing effect of palmitoyl tripeptide-38 was proven using predominant techniques.

On the forehead, measurement by fringe projection, also known as FOITS, demonstrated a visible, mean reduction in main wrinkle volume of 31%. This was complemented by a 28% reduction in cutaneous roughness, which can be associated with a lifting effect. Finally, the maximum depth of this main wrinkle decreased by a mean of 16.3%.

For the crow's feet, the anti-wrinkle effect was measured through a decrease in the surface occupied by deep wrinkles (-28.5%), a decrease in the volume of a major wrinkle (-21%), and a reduction in the mean depth (-15%). There was also a lifting effect, since there was an approximate -13% reduction in cutaneous roughness. The wrinkle further opened by 8.4%, which reduced the shadow effect.

Links:
https://openreviewhub.org/sites/default/files/cte/2685/sgrzybinnovativecosmeticrawmaterials.pdf
https://www.mdpi.com/2079-9284/4/2/16/htm?crsi=6624969152
https://europepmc.org/article/med/15648442

ACETYL HEXAPEPTIDE-8

Ingredient claims:

Up to 31% faster relaxation of facial muscles	Reduced appearance of fine lines by up to 14.7%
Boosts type 1 collagen by up to 25.9% in aged skin	Skin looks 13.8% more plump
Enhances synthesis of new collagen by 53.7%	1.5% reduction in skin sagginess
Wrinkle area reduced by 11% in 5 days	Facial muscles up to 11.1% more relaxed
Crow's feet appear 5.9% smoother	

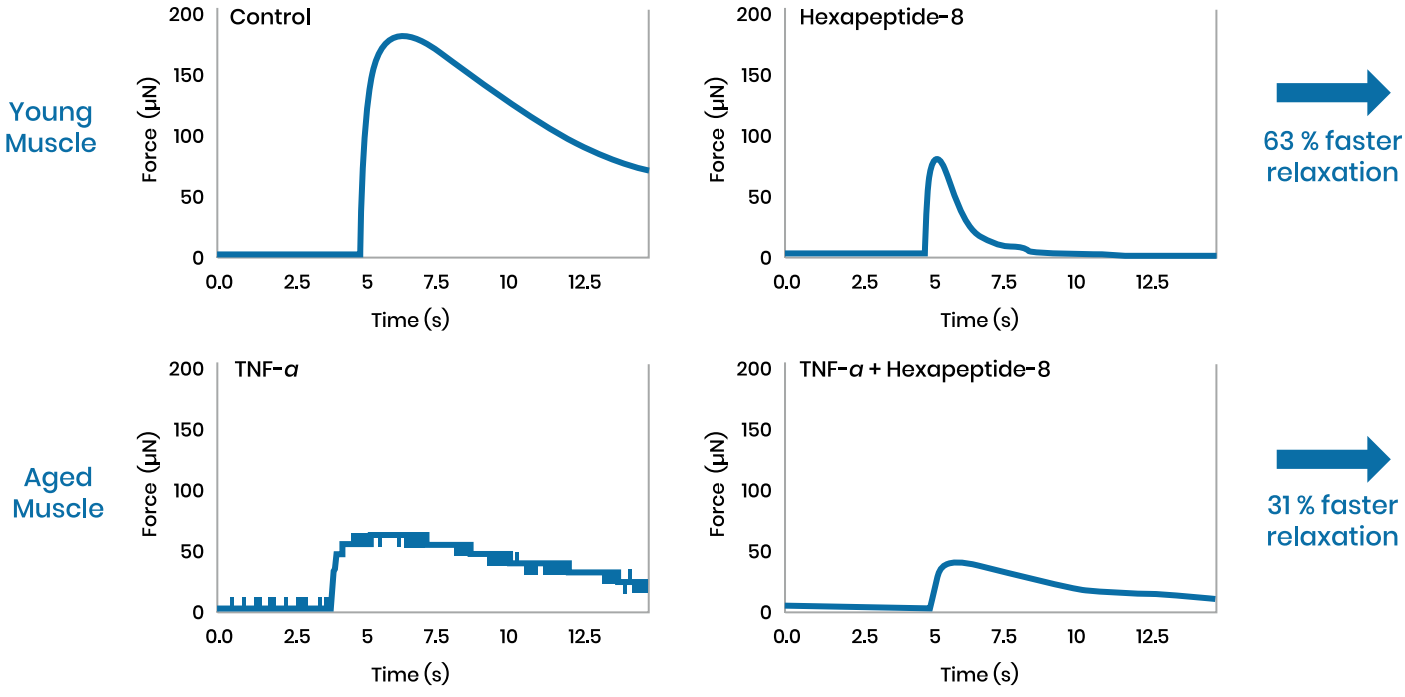
Commonly referred to as "Botox in a jar" because it inhibits the release of neurotransmitters and relaxes the facial muscles, this relaxation of facial muscles in turn reduces the appearance of expression lines and wrinkles. Acetyl Hexapeptide-8 is a peptide compound that is used to reduce the appearance of wrinkles brought on by repeated facial expressions. It is composed of chains of amino acids known as peptides. Fine lines and wrinkles around the eyes and mouth typically form due to repeated facial expressions (such as smiling, frowning, or furrowing the brow in deep concentration or frustration). Acetyl Hexapeptide-8 can temporarily remove the wrinkles by intercepting messages from the brain to facial muscles, thereby preventing muscle contractions that can lead to wrinkles.

In addition to reducing the appearance of expression lines, Acetyl Hexapeptide-8 can also improve the texture of the skin. It stimulates collagen production, which helps to firm and tighten the skin, giving it a smoother and more youthful appearance.

Skin hydration also improves with Acetyl Hexapeptide-8 application. It increases the production of hyaluronic acid, which is a natural moisturiser that helps to keep the skin hydrated and plump.

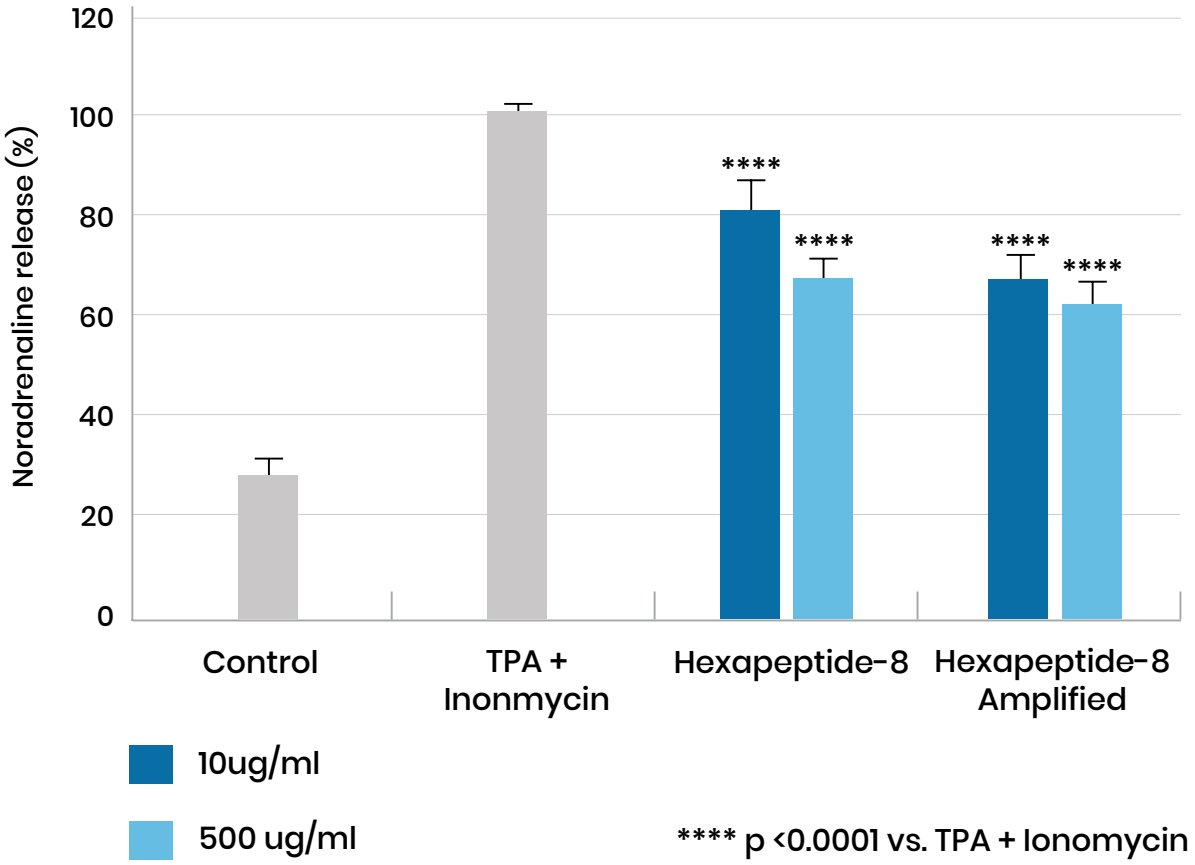
Reduced muscle contraction in 3D bioprinted muscles in both young and aged muscle. Faster muscle relaxation in both groups.

TPA + Ionomycin= calcium binding agent



The peptide helped decrease the relaxation half-time of young and aged muscles by 63% and 31%, respectively.

The peptide reduced the strength of muscle contraction, while also providing a faster muscle relaxation, helping to recover the skin appearance after facial expressions.

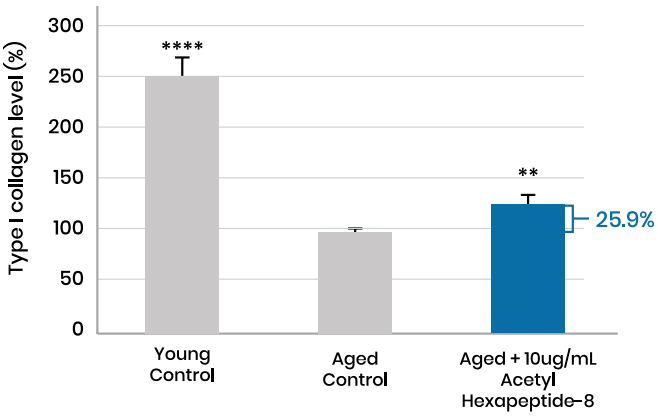


Collagen boosting in aged conditions

This test was performed to evaluate the ability of the peptide to induce type I collagen synthesis even under ageing conditions.

Replicative senescence was induced in human dermal fibroblasts while these were treated with 10µg/ml Hexapeptide-8 peptide or were left untreated control underwent half of the passages of the aged non-treated control.
Type I collagen levels were quantified by alphaLISA assay, and ß-galactosidase staining was performed to ensure the state of senescence of the culture.
ß-galactosidase is an enzyme considered a biomarker of senescence. When cells are treated with the substrate of galactosidase previously linked to a dye, if galactosidase is present and yields an insoluble coloured compound that stains the cells in blue colour. Therefore, the higher the number of senescent cells, the more blue colour in the images.

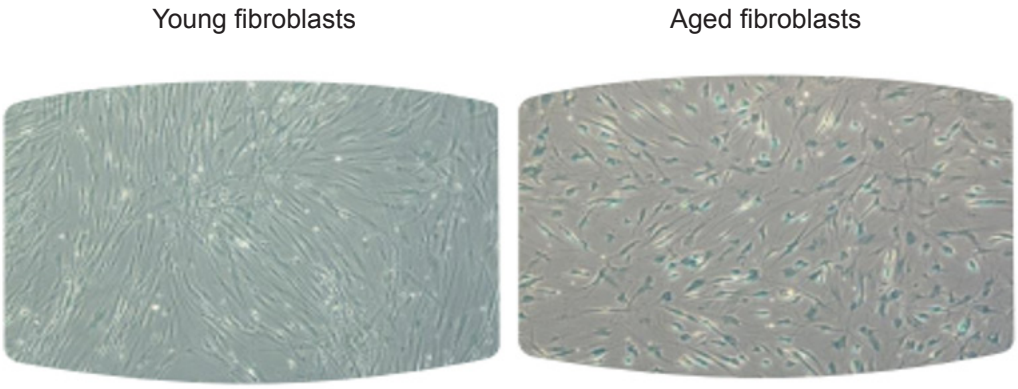
Collagen boosting in aged conditions



25.9% higher type I collagen levels even under aging conditions

Control non-treated cells
vs. Aged control: **p<0.01 / ****p<0.0001

Senescence marker (ß-galactosidase)



Human fibroblasts stained with ß-galactosidase (in blue), a biomarker to identify senescent cells.

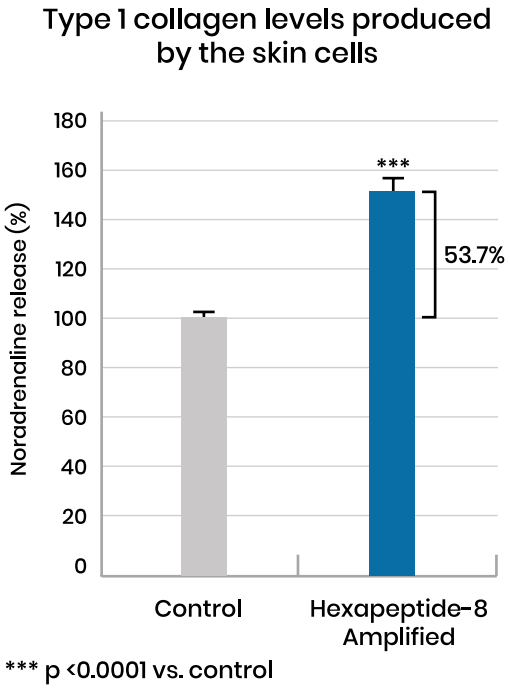
Increase in Type 1 collagen production

This test was performed to evaluate the ability of Acetyl Hexapeptide 8 to enhance the production of new collagen by non-senescent skin cells.

Human dermal fibroblasts co-cultured with human keratinocytes were incubated with 0.5µ/ml Hexapeptide-8 for 48hr or were left with only the medium as a control.

Then, the protein levels of type I collagen were evaluated by using an alphaLISA assay.

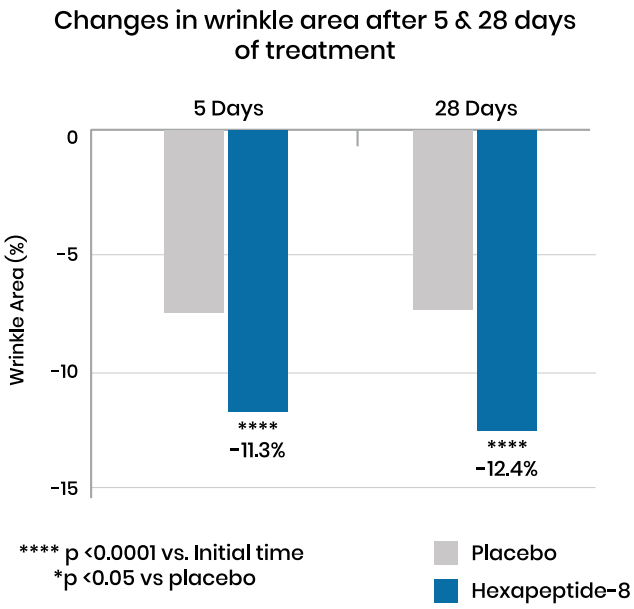
A notable increase in the level of new type 1 collagen was found after the treatment with Acetyl Hexapeptide 8. It has the ability to enhance the synthesis of new collagen by 53.7%.

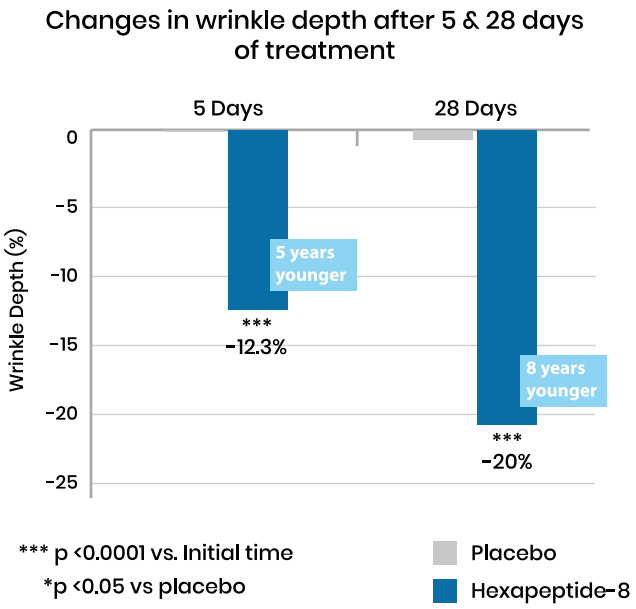


Improving the appearance of expression wrinkles

In-Vivo Efficacy
The aim of this study was to evaluate the ability of Acetyl Hexapeptide 8 to minimise expression wrinkles.

Two panels of 41 and 40 female volunteers between 34 and 60 years old applied either a cream containing 2% or 5% Acetyl Hexapeptide 8 solution on half face and a placebo cream on the other half, twice a day for 28 days.





After only 5 days the area (tested at 2%) and depth (tested at 5%) of wrinkles decreased by an average of 11.3% and 12.3%, respectively.



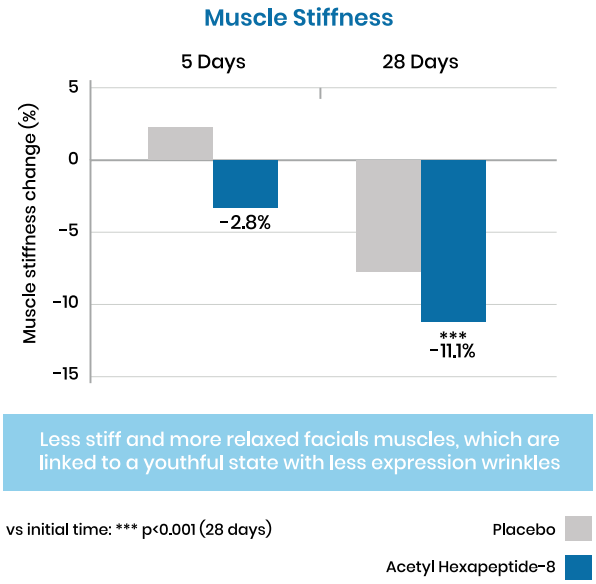
Reduced muscle relaxation at 5 days and 28 days of treatment vs placebo.

The ability of Acetyl Hexapeptide 8 to recover and relax the skin appearance after facial expressions was assessed by evaluating muscle stiffness and expression wrinkles after smiling.

Muscle Stiffness

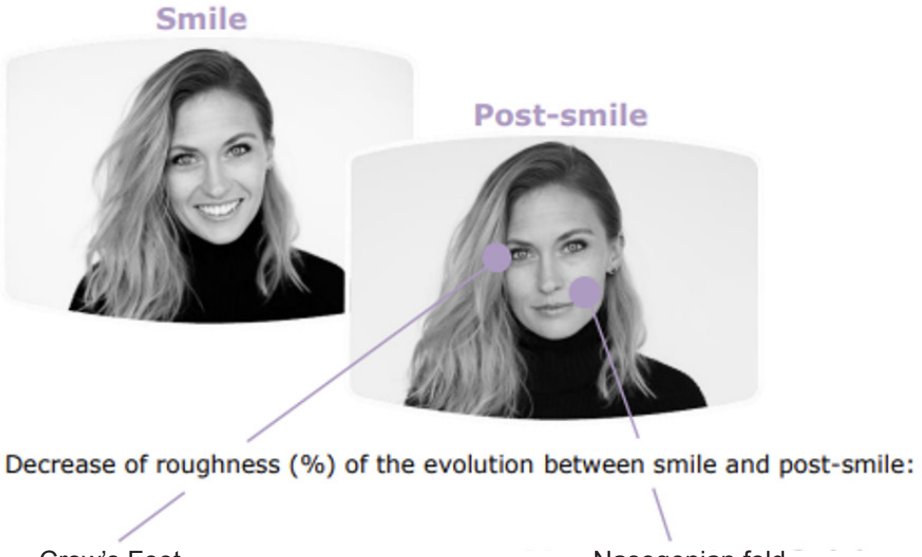
41 female volunteers between 35 & 59 years old applied a cream containing 2% Acetyl Hexapeptide 8 solution on half face and a placebo cream on the other half, twice a day for 28 days.

The stiffness of facial muscles, which increases with ageing and reflects the loss in the capacity to relax after a contraction, was measured by myotonometry on the masseter muscle.



Relaxation of facial expressions

43 female volunteers between 35 & 60 years old applied either a cream containing 2% Acetyl Hexapeptide 8 solution or a placebo cream on the whole face, twice a day for 28 days. The reduction in skin roughness was analyzed by means of 3D microtopography imageing system based on fringe projection (PRIMOS) 60 seconds after relaxing smiling facial expressions. The same evaluation was performed before and after 28 days of treatment.





Images of the crow's feet and nasogenian fold of two different volunteers 60 seconds after smiling.

Improved post-expression relaxtion, so you won't stop smiling.

Multi-level improvement in tissue functionality

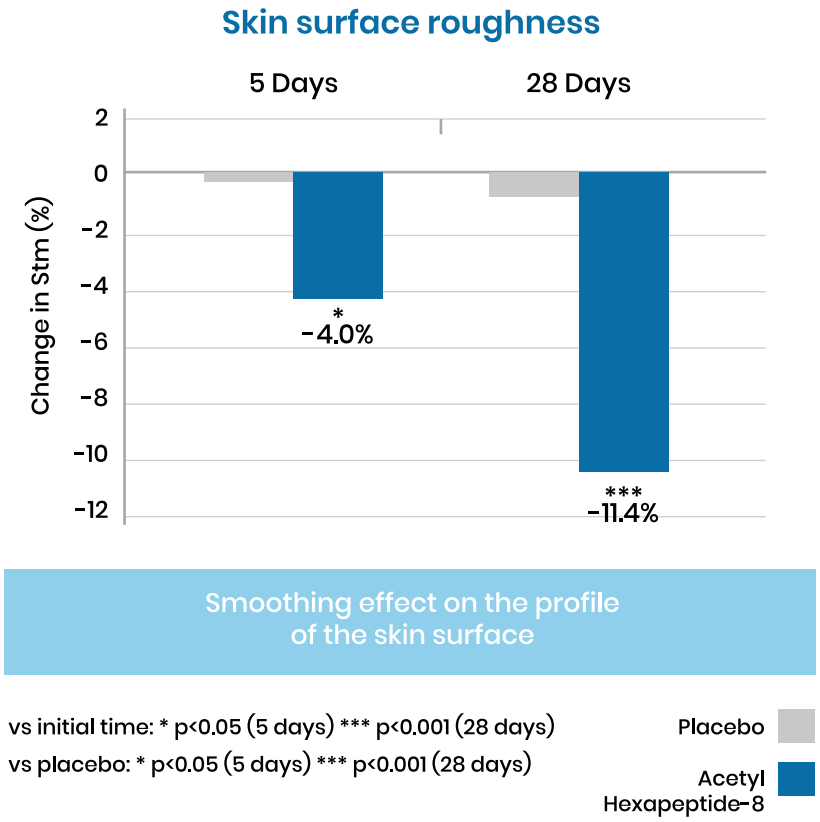
The multifunctionality of Acetyl Hexapeptide 8 was evaluated in this complete clinical study.

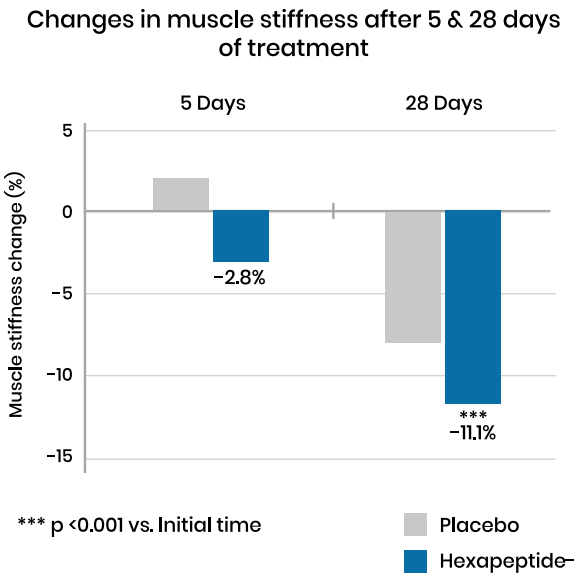
Two panels of 41 and 40 female volunteers between 35 and 60 years old applied a cream containing 2% Acetyl Hexapeptide 8 solution on half face an a placebo cream on the other half, twice a day for 28 days.

Different parameters related to a better and younger-looking skin were evaluated at different time points during the treatment.

Skin surface roughness

The homogeneity of the skin was assessed by measuring the skin surface roughness by means of 3D microtopography imageing system based on fringe projection (PRIMOS). The change in the average maxium height (Stm) of the skin profile, which corresponds to the average of the vertical distance between the 5 highest and 5 lowest points, was calculated.



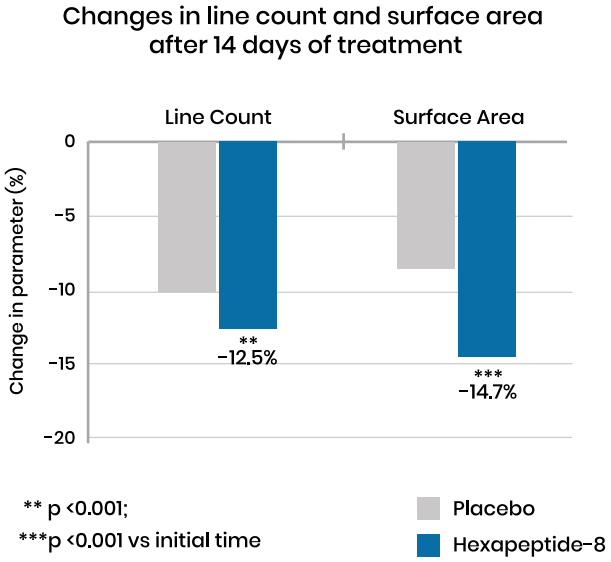


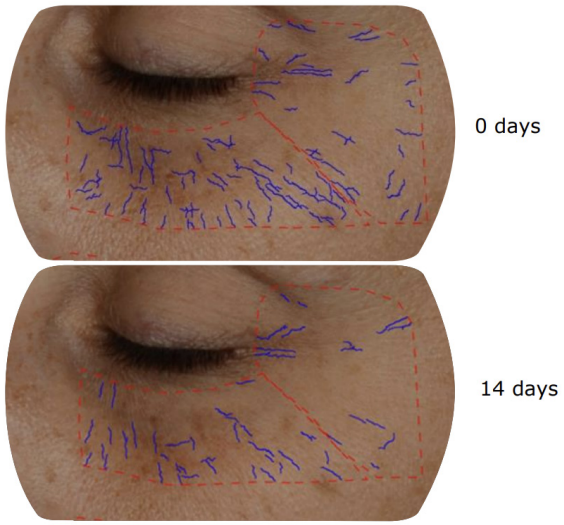


Less stiff and more relaxed facial muscles, which are linked to a youthful state with less expression wrinkles.

Fine lines

The presence of fine lines in the skin surface was measured on the crow's feet area and underneath the eye, after 14 days.

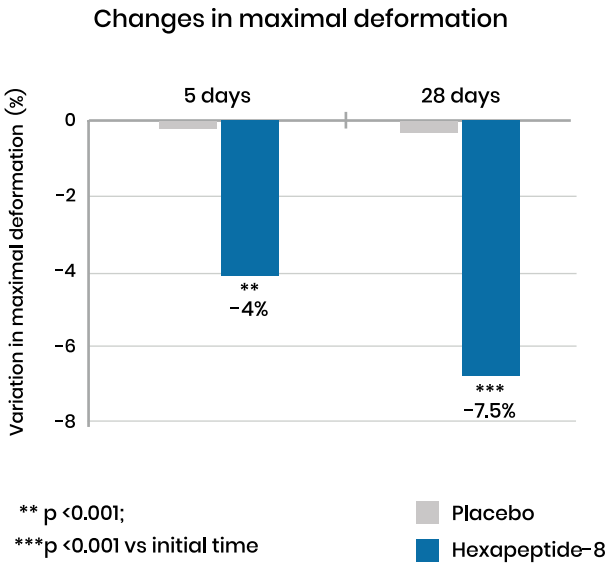




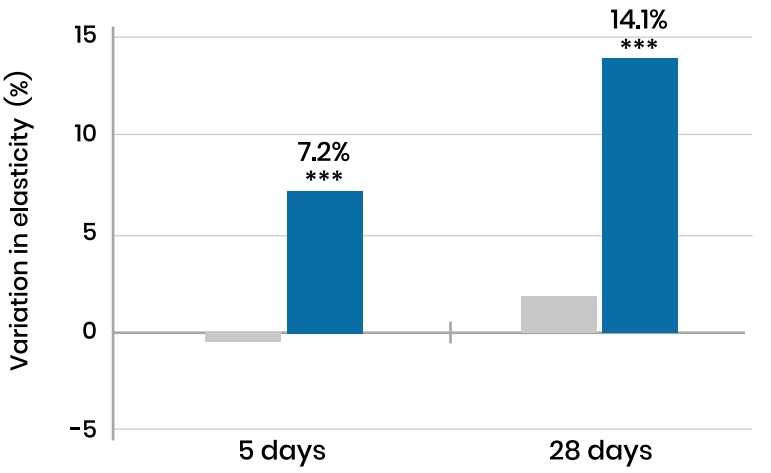
Global reduction of visible fine lines.

Firmness and elasticity

Maximal deformation (R0): represents the passive behaviour of the skin when a pulling force is applied. It is inversely related to firmness.



Elasticity (R2): gross elasticity of the skin. It corresponds to how easily the skin returns to its original state after releasing a suction force.



Increase in firmness and elasticity for a tenser effect.

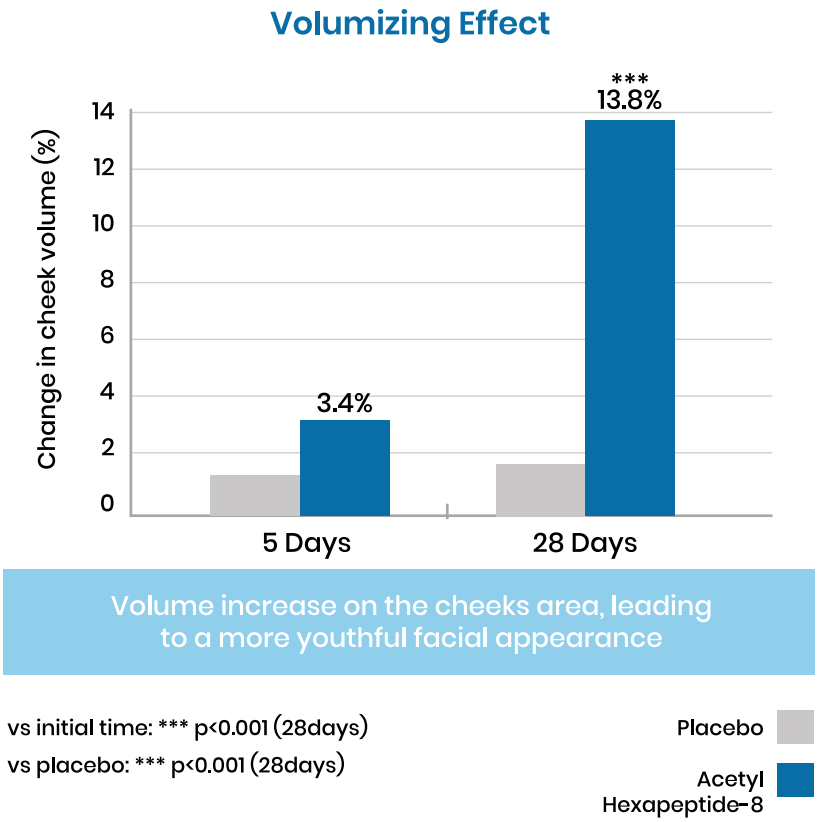
***p <0.001 vs initial time

Placebo

Hexapeptide-8

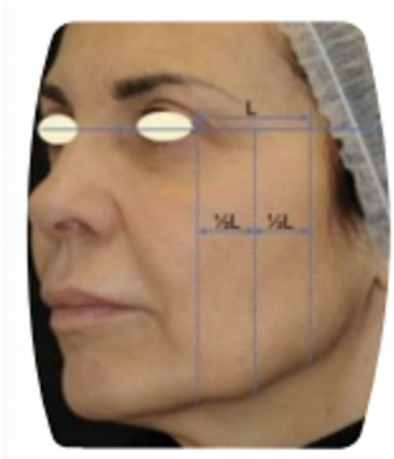
Volumising effect

Changes in facial volume were evaluated on the cheeks by means of an image analysis involving the measurement of the distance between the cheekbone profile and a line passing vertically through the ear. A decrease in cheek distances (mm) corresponds to an increase in volume (%).



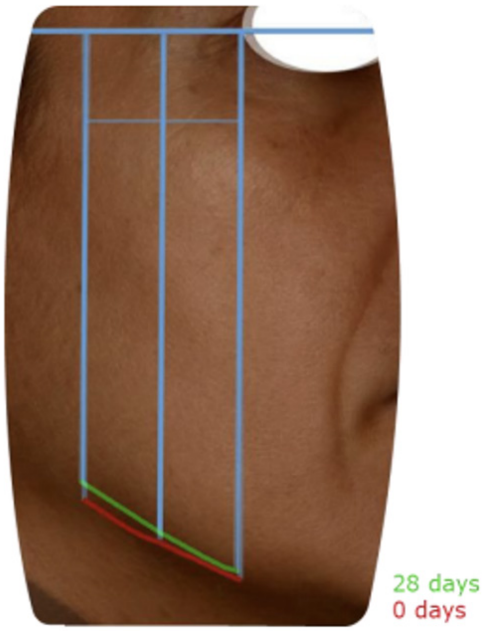
Lifting effect

An image analysis was carried out in order to determine the lifting effect of the ingredient. The analysis consisted of drawing 3 vertical lines and analyzing the lines by means of a specific software as reported in the image below.

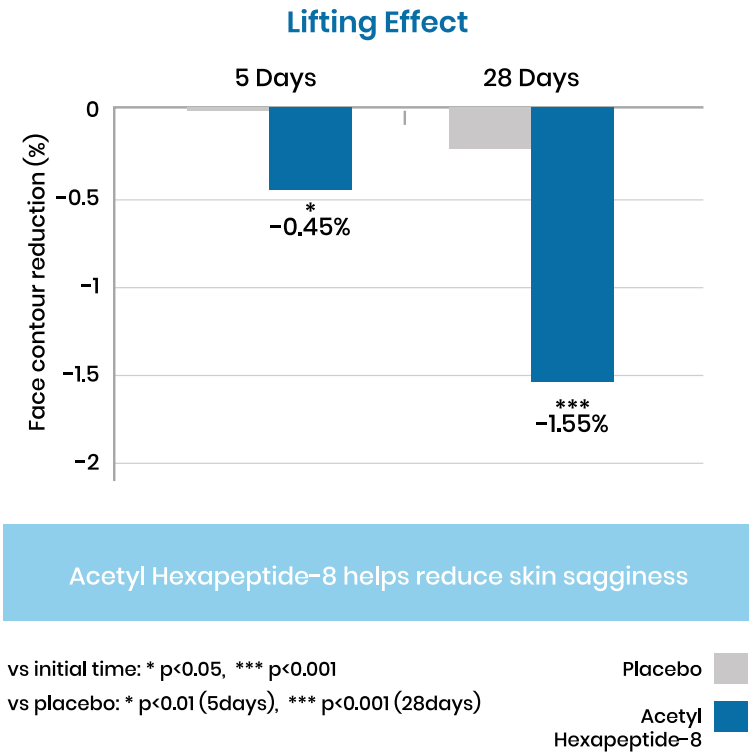


The first vertical line is drawn at the end of the eye, the third one is drawn at “the end of the face” where the sagging ends, and the second one is drawn in the middle of the distance between the first and third vertical lines.
The three vertical lines are drawn along the skin sagging on the face profile and they should cover the whole sagging in order to evaluate the tensor effect.

The shorter the distance of the 3 vertical lines, the bigger the lifting effect.



Superimposed before and after images of a volunteer, showing a visible lifting effect at the end of the treatment.



Links:
https://pubmed.ncbi.nlm.nih.gov/24754410/
https://pubmed.ncbi.nlm.nih.gov/23417317/
https://www.ncbi.nlm.nih.gov/m/pubmed/29371611/?i=1&from=Argireline
Data on file

DIPEPTIDE DIAMINOBUTYROYL BENZYLAMIDE DIACETATE

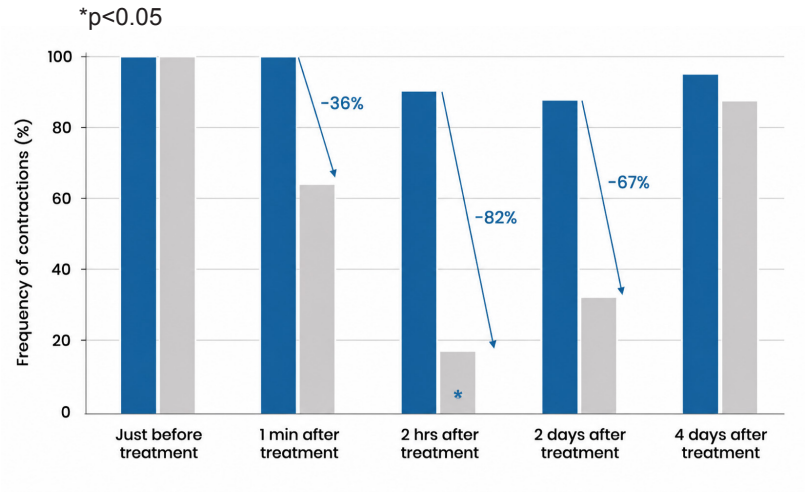
Ingredient Claims:

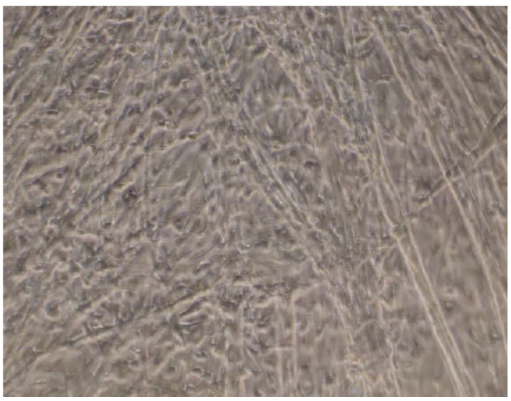
Helps your face to relax without losing the ability to express yourself	Visibly reduces deep wrinkles in just 4 weeks (-14% wrinkles length, -13.6% wrinkles volume)
-20% Forehead wrinkles in 4 weeks	Helps delaying the appearance of wrinkles, with age-freezing effects
Using it for 1 month can delay the appearance of mimic wrinkles up to 5 years	

Dipeptide Diaminobutyroyl Benzylamide Diacetate is a patented tripeptide with unique amino acid sequence (Beta-Ala-Pro-Dab-NH-Bzl) mimicking Waglerin-1 functionality, for Botox-like efficacy.

Dipeptide Diaminobutyroyl Benzylamide Diacetate helps skin to relax:

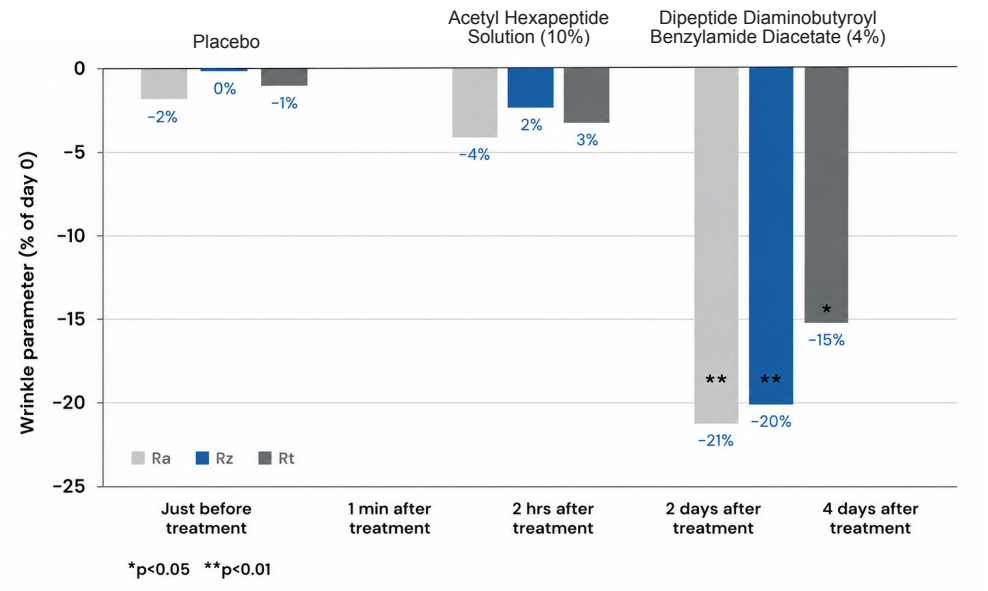
Proven in vitro to reduce muscle cell contraction immediately, long-lasting and fully reversible.





Dipeptide Diaminobutyroyl Benzylamide Diacetate (0.5mM) visbily reduces muscle cell contractions after 1 min

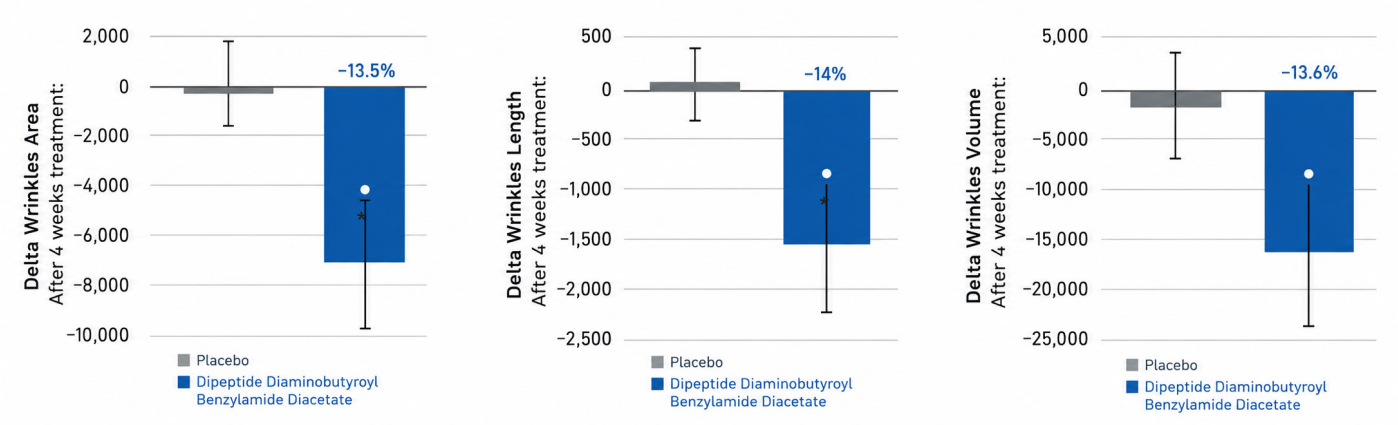
Proven in vitro to visibly reduce deep wrinkles in just 4 weeks.
-20% on forehead wrinkles, significantly outperforming competitive hexapeptide.



In vivo study. Double Blind, 15 volunteers per group (female, age 41-60), 28 days applied twice daily on face.

Results on 50+ year old:

Dipeptide Diaminobutyroyl Benzylamide Diacetate helps skin to relax without losing the ability to express.



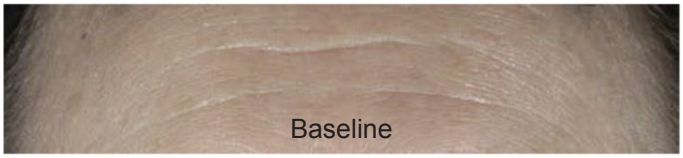
*** p<0.05 vs Placebo**
O p=0.076 vs Placebo

Glabella wrinkles, expression lines

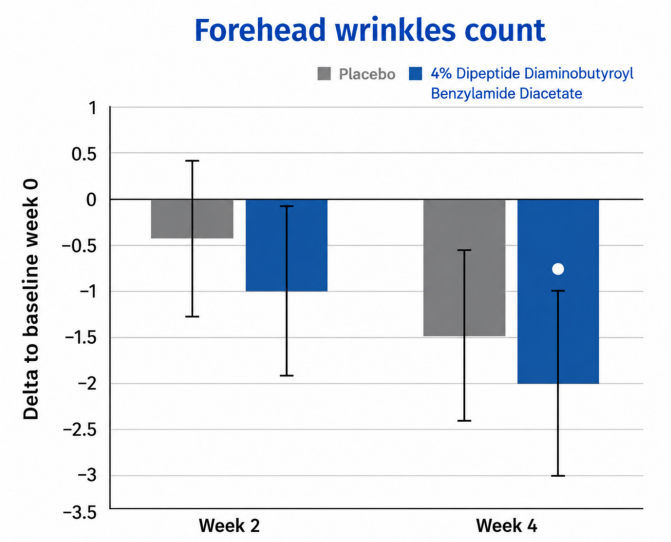
Before  After

“Worry-less” forehead
-1 wrinkle in 2 weeks, -2 wrinkles in 4 weeks

Volunteer, age 62



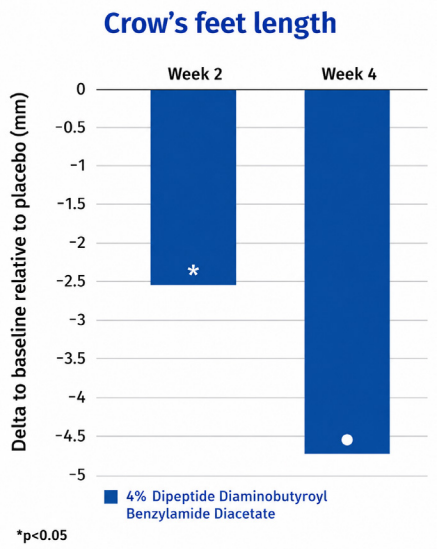




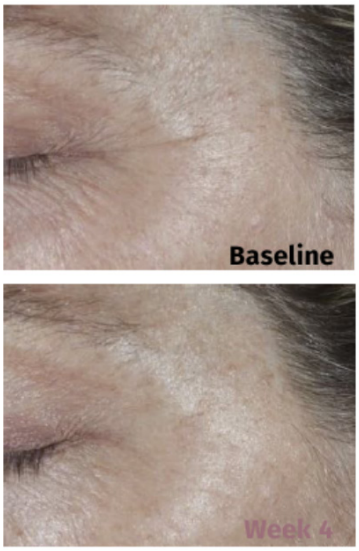
De-ageing effects on crow's feet.
Outstanding length reduction, cumulateively clost to 1/2 cm



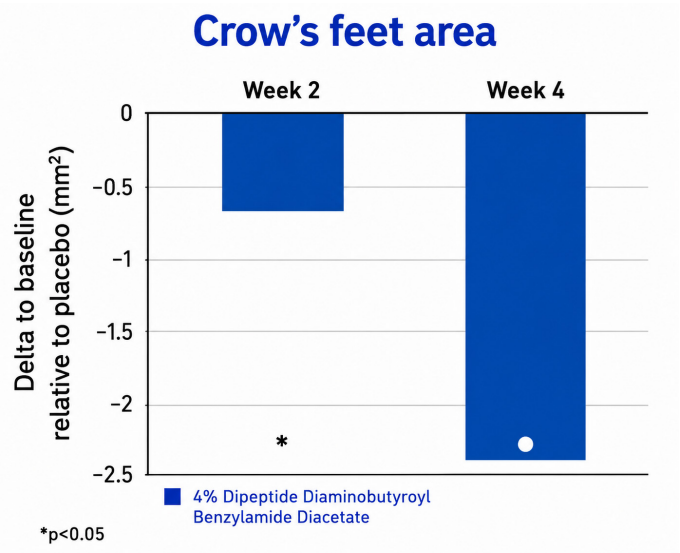
Volunteer, age 59



*** p<0.05 vs Baseline**
O p<0.1 vs Baseline

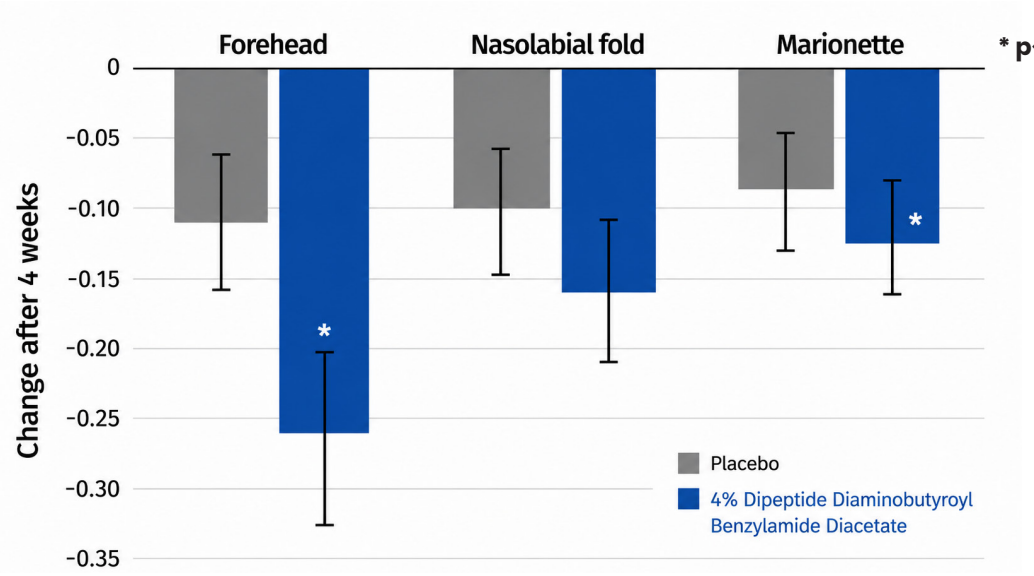


Volunteer, age 50



Dipeptide Diaminobutyroyl Benzylamide Diacetate visibily reduces wrinkles in key areas

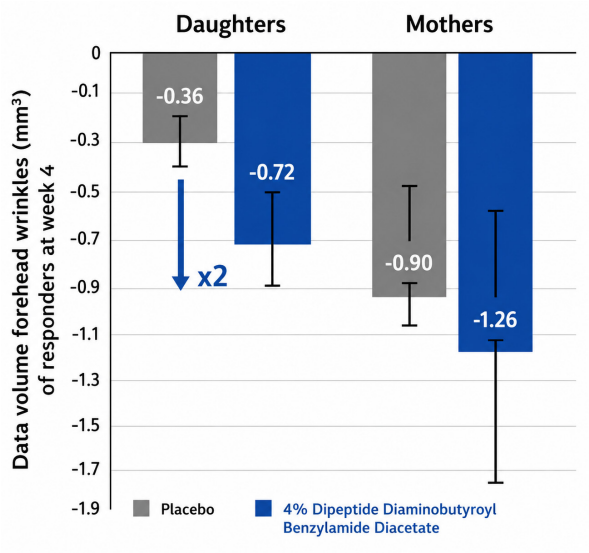
Expert grading result



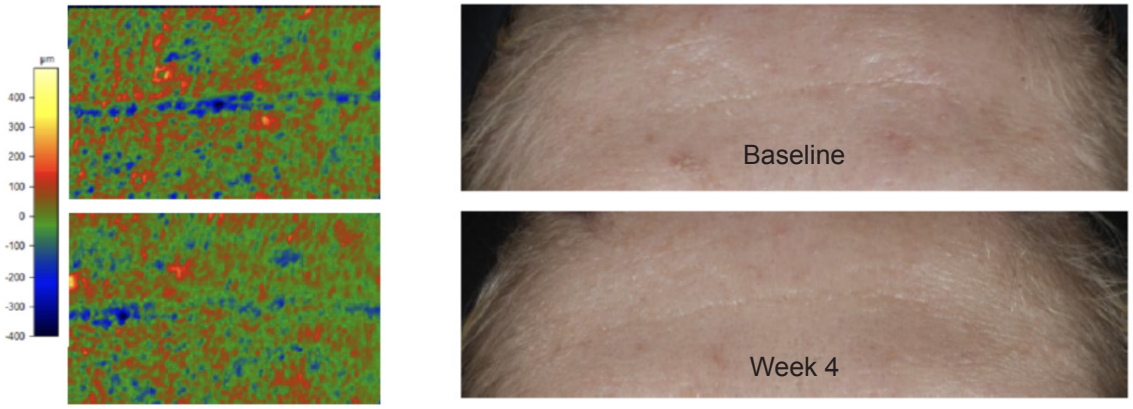
*** p<0.05 vs Baseline**

Results on 21-35 year old:

With Dipeptide Diaminobutyroyl Benzylamide Diacetate, wrinkles reduction across age groups. Dipeptide Diaminobutyroyl Benzylamide Diacetate 2x more effective than placebo on forehead wrinkles for younger target.

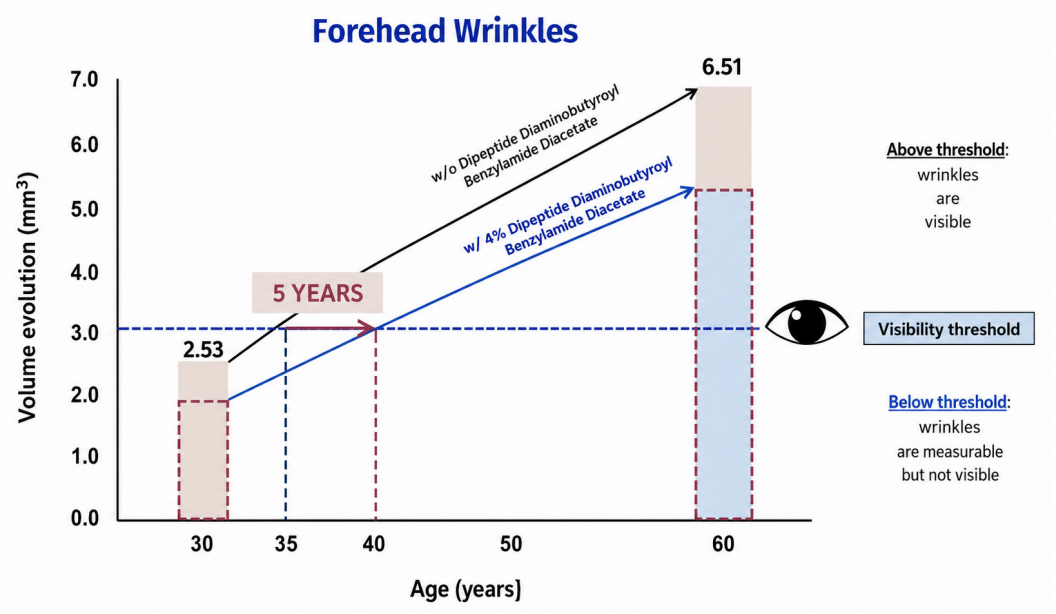


Volunteer, age 31



Dipeptide Diaminobutyroyl Benzylamide Diacetate can delay wrinkles' appearance up to 5 years.

Quantification of 1 month of product application.
Assumption: linear yearly wrinkle's progression (simplification)



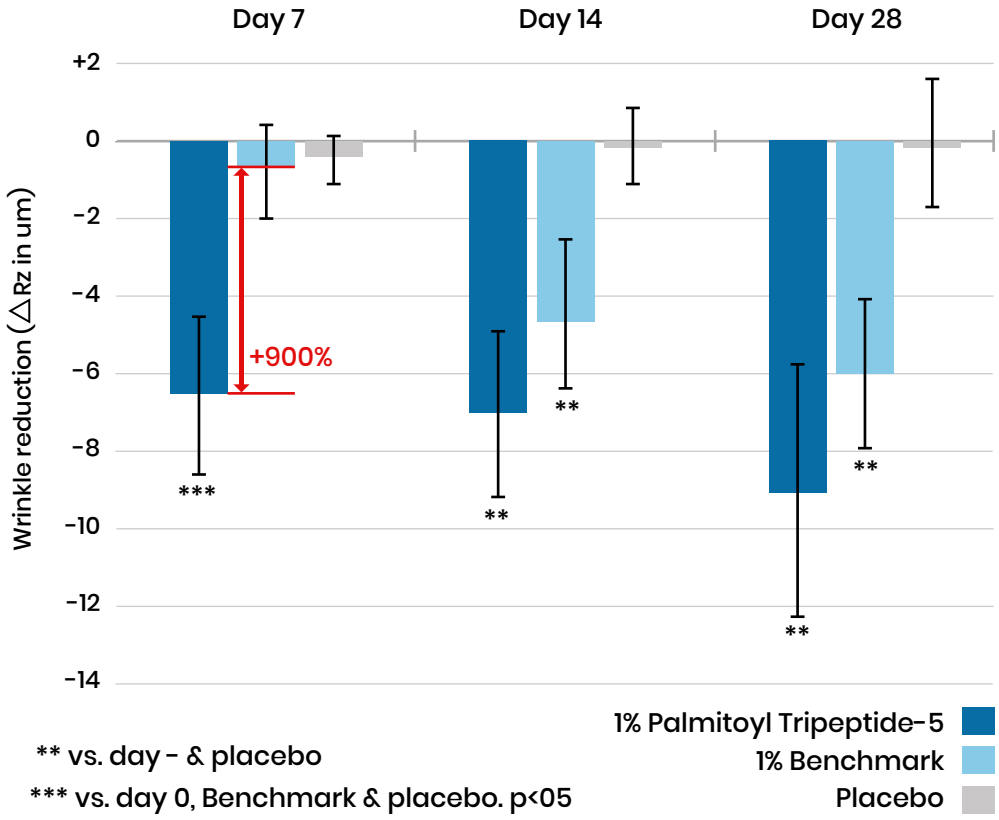
Links: Data on file

PALMITOYL TRIPEPTIDE-5

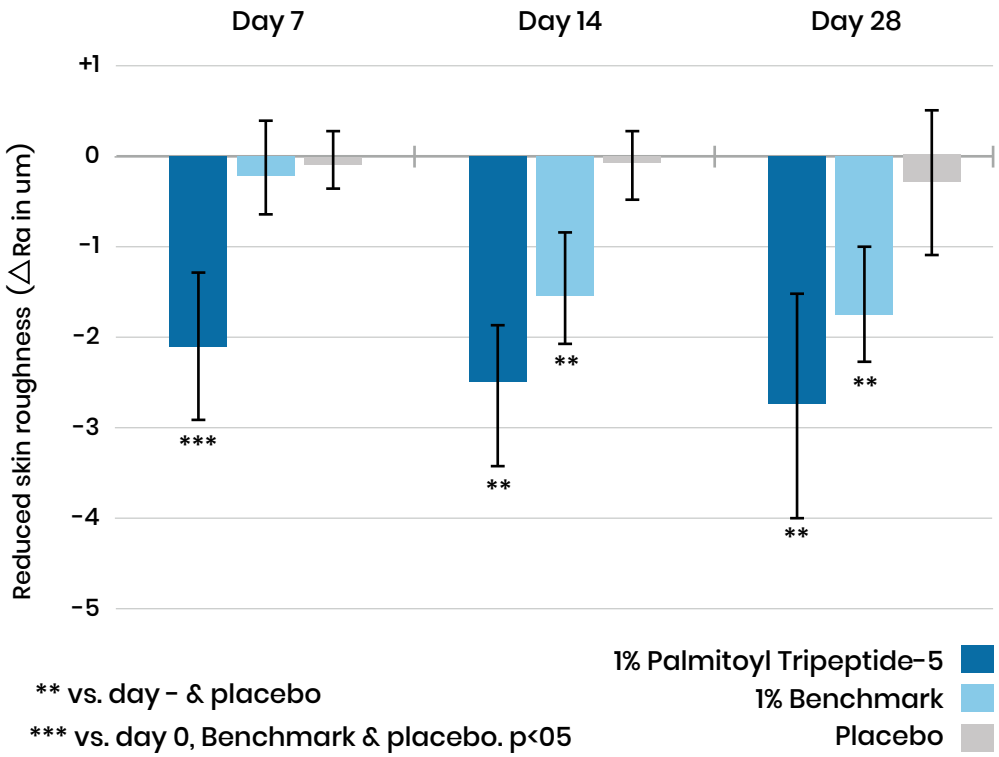
Ingredient Claims:

Significantly reduces the appearance of wrinkles in 7 days	Skin feels firmer and smoother in 7 days
Reduces the appearance of dark circles after 14 days	Promotes collagen synthesis
Improves skin elasticity	Improves skin texture

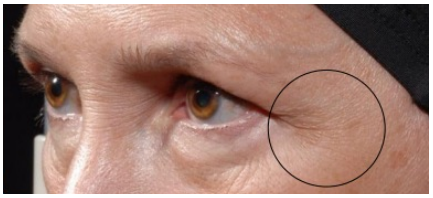
Palmitoyl Tripeptide-5 is a peptide compound that is used in skincare products for its anti-ageing and skin-rejuvenating properties. Peptides are short chains of amino acids, which are the building blocks of proteins. Palmitoyl Tripeptide-5 consists of three amino acids (Lys-Val-Lys) linked together with a palmitoyl group attached to the N-terminus (the starting end of the peptide). The palmitoyl group in Palmitoyl Tripeptide-5 is a fatty acid derivative called palmitic acid. This fatty acid is often used to enhance the peptide's stability and solubility in skincare products.



Palmitoyl Tripeptide-5 has been shown to stimulate the synthesis of collagen, a protein that provides structural support to the skin. Increased collagen production can help improve skin elasticity, firmness, and reduce the appearance of wrinkles and fine lines.

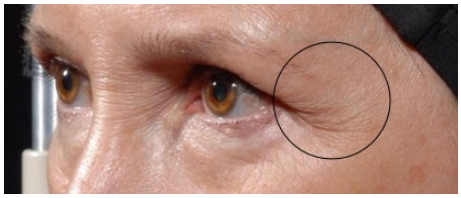


Regular use of Palmitoyl Tripeptide-5 can contribute to improved skin texture and tone. It may help to refine the skin's surface, making it smoother and more even, which can give the skin a healthier and more radiant appearance. Palmitoyl Tripeptide-5 has been shown to stimulate the synthesis of collagen, a protein that provides structural support to the skin. Increased collagen production can help improve skin elasticity, firmness, and reduce the appearance of wrinkles and fine lines.



Placebo: Day 7

7 days only!

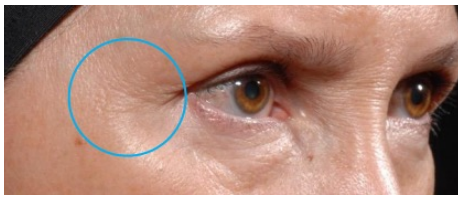


Placebo: Day 28

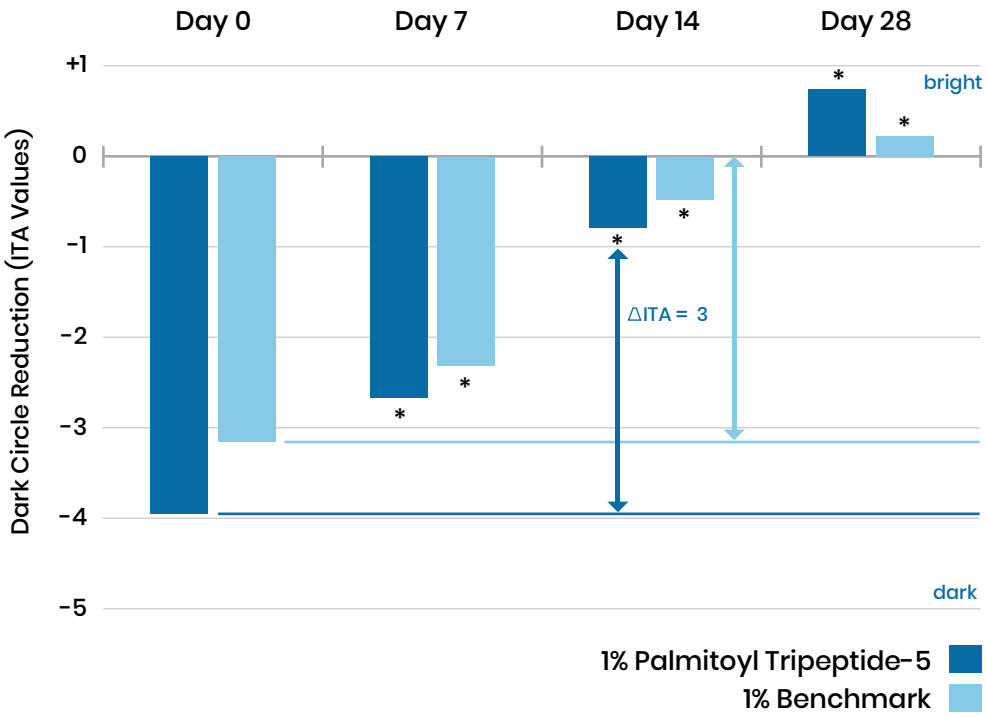
1 Month



Palmitoyl Tripeptide-5: Day 7



Palmitoyl Tripeptide-5: Day 28



Palmitoyl Tripeptide-5 has been found to promote wound healing and support skin repair processes. It can aid in the recovery of damaged skin, such as acne scars or sun-damaged areas, by promoting cellular regeneration and the production of new, healthy skin cells.

Links:
https://www.mdpi.com/1424-8247/14/8/702
https://onlinelibrary.wiley.com/doi/abs/10.1111/ajd.13036
https://www.mdpi.com/2079-9284/5/1/21

SH-OLIGOPEPTIDE-1

Ingredient Claims:

Improves skin elasticity by 25%	Strengthens skin barrier
Reduces the appearance of wrinkles	Stimulates fibroblasts
Accelerates skin repair	Reduces appearance of scars

Sh-Oligopeptide-1, also known as Synthetic Human Epidermal Growth Factor (EGF), is a synthetic version of the naturally occurring EGF. Sh-Oligopeptide-1 is identical to EGF. A trace amount of EGF can strongly promote skin cell division and growth, and it can also stimulate the synthesis and secretion of extracellular macromolecules (such as hyaluronic acid and glycoproteins).

Sh-Oligopeptide-1 provides a number of skincare benefits, such as:

- Promoting dermis fibroblasts, increasing skin elasticity.
- Promotes cell regeneration, leaving skin smooth and delicate, and reduce wrinkles.
- Strengthens the skin barrier against external harmful substances.
- Speeds up the repair process, including sun repair after acne repair (prevents scar formation).
- Microcirculation, promotes metabolic waste, reduce lipofuscin deposition and improves fading of scars.

Serum containing 0.2% Sh-Oligopeptide-1. The serum was used in the corner of the eyes twice a day for 8 weeks.

Before Treatment | After Treatment

Volunteer A



Volunteer B

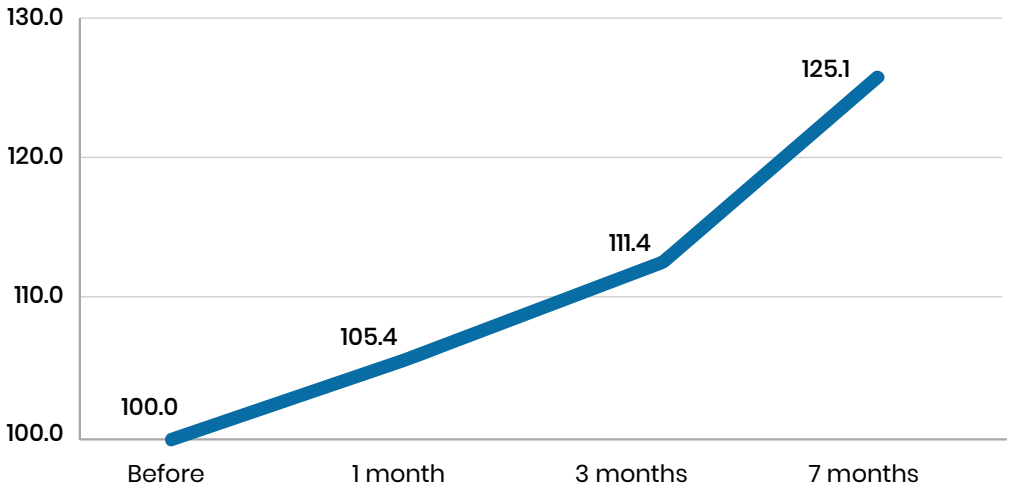


Serum containing 0.2% Sh-Oligopeptide-1. The serum was used around the eyes twice a day for 12 weeks.

Before Treatment | After Treatment



Skin Elasticity Improvement



Links:
https://pubmed.ncbi.nlm.nih.gov/23819985/
https://pubmed.ncbi.nlm.nih.gov/30300691/
https://pubmed.ncbi.nlm.nih.gov/27109378/

TRIPEPTIDE-29

Ingredient Claims:

Stimulates fibroblasts to increase collagen production	Supports the skin's integral structure for improved skin barrier function
Improves uneven texture and reduces the appearance of fine lines	Increases collagen synthesis by 400% in 48 hours

Tripeptide-29 a highly purified peptide consisting of amino acids glycine and proline, plus amino acid derivative hydroxyproline. Applied to skin, it's been shown to strengthen the skin's supportive elements. This improves uneven texture and the look of fine lines and also helps reverse a dehydrated appearance.

Tripeptide 29's small size allows it to easily penetrate skin's uppermost layers so it can reach its target areas sooner. The theory behind Tripeptide-29 is the following: Collagen is a long sequence of amino acids and breaking it down produces short amino acid sequences, aka peptides. These peptides "signal" to the skin that collagen was lost and that new collagen should be produced. So putting collagen-fragment-identical peptides on the skin, tricks it into thinking that new collagen is needed thus creating new collagen and strengthening skin making it look younger and smoother.

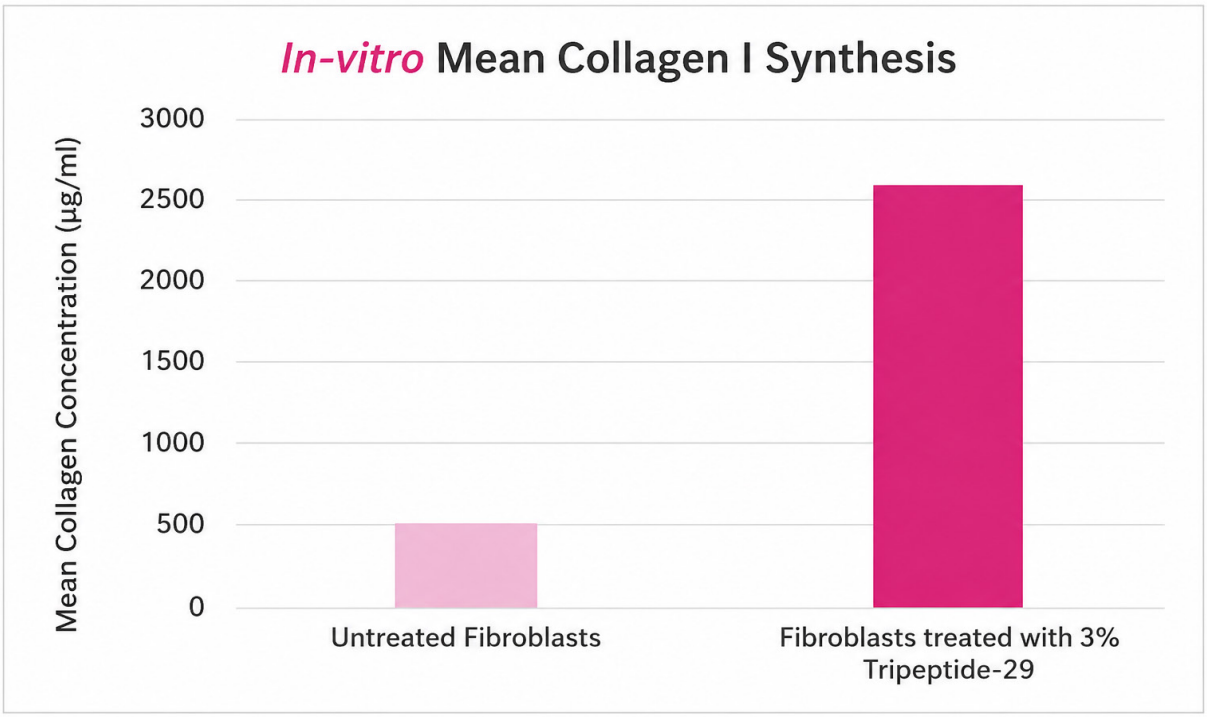


Figure 1. Improvements in collagen I synthesis following the application of 3% Tripeptide-29 compared to the untreated control.

Links:
https://www.dbpia.co.kr/Journal/articleDetail?nodeId=NODE10035410
https://onlinelibrary.wiley.com/doi/full/10.1111/jocd.12229

COPPER TRIPEPTIDE-1

Ingredient Claims:

Helps reduce the appearance of wrinkles	Improves skin firmness up to ~20–30% in clinical studies
Stimulates collagen production (observed in ~70% of subjects)	Supports skin repair and regeneration
Reduces oxidative damage by up to 87% in experimental models	Helps protect skin from environmental stress
Soothes and strengthens the skin	

Copper Tripeptide-1 (GHK-Cu) is a naturally occurring human peptide complex composed of glycyl-L-histidyl-L-lysine bound to copper. It plays a key role in tissue repair, regeneration, and skin remodeling. GHK-Cu acts as a biological signaling molecule capable of modulating gene expression, stimulating extracellular matrix (ECM) synthesis, and activating skin repair pathways. Its natural levels decline with age, making it highly relevant for anti-ageing skincare applications.

Collagen Stimulation & Skin Structure Support
Copper Tripeptide-1 stimulates fibroblast activity and promotes the synthesis of collagen, elastin, glycosaminoglycans and proteoglycans while regulating matrix metalloproteinases, ensuring balanced extracellular matrix remodeling. Studies show increased collagen production in approximately 70% of treated subjects, with up to a 9-fold increase observed in regenerative models, leading to improved skin firmness, enhanced elasticity, increased dermal density and a visible reduction in wrinkle appearance.

Anti-Ageing & Wrinkle Reduction
Clinical studies over 8–12 weeks demonstrate that Copper Tripeptide-1 significantly improves skin structure by reducing wrinkle depth and enhancing skin thickness and elasticity, with approximately 20–30% improvement in skin firmness. These effects contribute to smoother skin texture, reduced fine lines, and a visibly firmer and more youthful-looking complexion.

Skin Repair & Regeneration
Copper Tripeptide-1 accelerates skin repair by stimulating fibroblast proliferation, promoting angiogenesis and enhancing keratinocyte migration, which supports tissue remodeling and regeneration. This results in faster recovery from environmental or procedural damage, improved skin quality and enhanced overall skin resilience.

Antioxidant & Oxidative Stress Protection
Copper Tripeptide-1 exhibits strong antioxidant activity by scavenging reactive oxygen species and modulating oxidative pathways, including reducing iron-mediated oxidative damage by up to 87% and increasing antioxidant enzyme activity such as superoxide dismutase. These effects help protect the skin from environmental stressors, prevent premature ageing and improve overall skin resilience.

Anti-Inflammatory Activity
Copper Tripeptide-1 reduces pro-inflammatory cytokines such as TNF-α and IL-6 and modulates key inflammatory pathways including NF-κB, helping restore skin homeostasis. This contributes to reduced redness and irritation, improved skin comfort and better tolerance in sensitive or stressed skin.

Gene Expression Modulation & Cellular Rejuvenation
Copper Tripeptide-1 has been shown to regulate a broad range of genes involved in tissue repair, inflammation and ageing, with approximately 31% of genes significantly modulated. This shift toward a regenerative gene expression profile enhances cellular function, supports long-term skin vitality and promotes healthier, more youthful skin over time.

Copper Tripeptide-1 (GHK-Cu) is a highly multifunctional peptide with strong peer-reviewed evidence supporting its role in skin regeneration, anti-ageing and protection. Its combined effects on collagen synthesis, antioxidant defense, inflammation control and gene regulation contribute to improved skin structure, resilience and overall appearance.

Links:
https://pmc.ncbi.nlm.nih.gov/articles/PMC6073405
https://pmc.ncbi.nlm.nih.gov/articles/PMC4508379
https://pmc.ncbi.nlm.nih.gov/articles/PMC8789089
https://www.mdpi.com/2218-273X/15/1/88
https://www.researchgate.net/publication/280531729

HEXAPEPTIDE-11

Ingredient Claims:

Supports cellular longevity and skin resilience activating proteasome, autophagy, and chaperone pathways	Enhances antioxidant defence mechanisms
Protects cells against oxidative stress-induced premature senescence	Improves skin elasticity
Supports skin repair and regeneration processes	Improves overall skin quality and vitality
Helps maintain healthy skin function over time	

Hexapeptide-11 is a synthetic peptide (sequence: Phe–Val–Ala–Pro–Phe–Pro) originally derived from yeast fermentation and later synthesized for cosmetic use. It belongs to the class of signal peptides, acting as a biological modulator of cellular stress responses and protein homeostasis (proteostasis). Unlike neuromodulating peptides, it primarily targets cellular longevity pathways, antioxidant defenses, and structural skin integrity, making it a unique anti-ageing ingredient focused on long-term skin quality.

Scientific Background: Proteostasis & Skin Ageing

- Skin ageing is strongly linked to the progressive decline of proteostasis, the cellular system responsible for maintaining protein integrity through mechanisms such as:
- Proteasome activity (degradation of damaged proteins)
- Autophagy (cellular recycling)
- Molecular chaperones (protein folding)

With age:

- Damaged proteins accumulate
- Cellular stress increases
- Skin loses function, elasticity, and resilience

Hexapeptide-11 targets these pathways by activating proteostasis-related mechanisms and antioxidant responses, helping restore cellular balance and delay senescence.

Mechanisms of Action & Associated Skin Benefits:

Activation of Proteostasis & Cellular Longevity Pathways
Hexapeptide-11 stimulates key components of the proteostasis network, including proteasome activity, autophagy pathways, and molecular chaperones. Studies show dose- and time-dependent upregulation of genes involved in protein repair and degradation, along with increased proteasome enzymatic activity. This leads to improved cellular function, enhanced removal of damaged proteins, and delayed cellular ageing, resulting in healthier, more resilient skin over time.

Antioxidant Defense & Protection Against Cellular Senescence
Hexapeptide-11 activates antioxidant pathways through increased nuclear accumulation of Nrf2, a key regulator of cellular defense against oxidative stress. This leads to enhanced expression of antioxidant enzymes and protection against oxidative-stress-induced premature senescence. Experimental data demonstrate that the peptide significantly protects fibroblasts from oxidative damage, helping preserve cellular function and prevent premature ageing.

Improvement of Skin Elasticity (In Vivo Evidence)
In vivo skin deformation assays in human subjects show that Hexapeptide-11 improves skin elasticity, confirming its functional impact at the tissue level. By enhancing cellular repair mechanisms and supporting extracellular matrix dynamics, it contributes to improved biomechanical properties of the skin, resulting in firmer, more elastic skin.

Extracellular Matrix Remodeling & Skin Structure
Hexapeptide-11 has been shown to influence extracellular matrix (ECM) dynamics by modulating matrix metalloproteinases (MMPs), which are involved in tissue remodeling. This activity supports controlled matrix turnover and renewal, contributing to improved skin structure and overall skin quality.

Cellular Stress Resistance & Anti-Ageing Activity
By simultaneously activating proteostasis, antioxidant defenses, and stress-response pathways, Hexapeptide-11 enhances the skin’s ability to resist environmental and intrinsic stressors. This integrated mechanism contributes to improved skin longevity, better resilience, and a reduction in visible signs of ageing over time.

Links:
https://pmc.ncbi.nlm.nih.gov/articles/PMC4434199/
https://pubmed.ncbi.nlm.nih.gov/25974626/
https://www.sciencedirect.com/science/article/pii/S0196978125001019
https://pmc.ncbi.nlm.nih.gov/articles/PMC11762834

ACETYL TETRAPEPTIDE-2

Ingredient Claims:

Increases collagen synthesis by up to +47.3%	Increases elastin synthesis by up to +21.7%
Improves skin firmness and elasticity	Strengthens skin structure and cohesion
Supports dermal density and resilience	Enhances elastic fiber assembly via fibulin-5 and LOXL1 pathways
Contributes to a firmer, more lifted appearance	

Acetyl Tetrapeptide-2 is a biomimetic signal peptide derived from thymopoietin, a hormone involved in cellular regeneration and immune function. In skin, it acts as a signaling molecule that stimulates structural protein synthesis and improves dermal organization. It is particularly known for targeting skin elasticity, firmness, and structural cohesion, which decline with age.

Scientific Background: Elastin, Fibulin-5 & Skin Firmness
Skin firmness and elasticity rely on properly organized elastic fibers, composed mainly of elastin and associated proteins such as fibulin-5 (FBLN5) and lysyl oxidase-like 1 (LOXL1).

- Fibulin-5 plays a critical role in elastin fiber assembly and anchoring elastin to dermal structures
- LOXL1 enables cross-linking of elastin, ensuring functional and resilient elastic fibers

With ageing:
- Elastin production decreases
- Fiber organisation becomes disordered
- Skin loses firmness and begins to sag

Acetyl Tetrapeptide-2 specifically targets this pathway by stimulating elastin assembly proteins, restoring elastic fiber structure.

Mechanisms of Action & Associated Skin Benefits:

Elastic Fiber Restoration & Firmness Improvement
Acetyl Tetrapeptide-2 stimulates the expression of key proteins involved in elastogenesis, including fibulin-5 (FBLN5) and LOXL1, which are essential for proper elastic fiber assembly and function. By enhancing elastin synthesis and improving fiber organization, it helps restore the skin's mechanical properties and reduce structural disorganization. In vitro data demonstrate increased elastin synthesis (up to +21.7%) and improved elastic fiber formation, leading to enhanced skin firmness, improved elasticity, and a visible reduction in skin laxity.

Collagen Stimulation & Dermal Density Support
As a signal peptide, Acetyl Tetrapeptide-2 also stimulates fibroblast activity and upregulates genes involved in collagen synthesis, particularly type I collagen. Quantitative studies report up to +47.3% increase in collagen production in dermal fibroblasts, contributing to improved dermal density and structural integrity. This dual action on collagen and elastin reinforces the skin matrix, resulting in firmer, more resilient skin and reduced signs of ageing.

Improvement of Skin Mechanical Properties
Studies on keratinocyte and skin models show that Acetyl Tetrapeptide-2 induces measurable changes in the mechanical properties of skin cells, including improved elasticity and structural behavior. By modulating gene expression related to extracellular matrix components, it enhances the biomechanical performance of the skin, leading to improved firmness, better resistance to deformation, and a more toned appearance.

Dermal-Epidermal Cohesion & Structural Integrity
Acetyl Tetrapeptide-2 improves the interaction between the extracellular matrix and skin cells by promoting adhesion-related proteins and structural organization. This strengthens the dermal-epidermal junction and enhances overall skin cohesion, helping maintain skin architecture and reducing visible sagging.

Regenerative & Protective Cellular Activity
Derived from thymopoietin-like activity, Acetyl Tetrapeptide-2 stimulates keratinocyte signaling pathways and promotes the release of growth factors such as GM-CSF, supporting epidermal renewal and immune function. This contributes to improved skin vitality, enhanced regeneration, and better resilience against ageing-related decline.

Links:
https://pmc.ncbi.nlm.nih.gov/articles/PMC6208634/
https://jddonline.com/articles/developing-a-topical-adjunct-to-injectable-procedures-S1545961620P0398X/
https://pubmed.ncbi.nlm.nih.gov/24613575/
https://pmc.ncbi.nlm.nih.gov/articles/PMC2694222/
https://pmc.ncbi.nlm.nih.gov/articles/PMC11762834/

ACETYL HEXAPEPTIDE-38

Ingredient Claims:

Helps improve skin volume and plumpness by Increasing lipid accumulation in adipocytes	Supports restoration of facial fullness
Enhances skin contour and morphology	Helps reduce the appearance of volume-related wrinkles
Improves skin density and structural support	Contributes to a smoother, more youthful appearance

Acetyl Hexapeptide-38 is a synthetic signal peptide designed to modulate cellular pathways involved in lipid metabolism and adipocyte differentiation. Unlike traditional anti-ageing peptides that target collagen or muscle contraction, this peptide acts on subcutaneous adipose tissue biology, contributing to improved skin volume, contour, and structural support.

Scientific Background: Adipogenesis & Skin Volume
Skin ageing is not only characterized by collagen loss but also by a progressive reduction in subcutaneous fat, leading to:

- Loss of facial volume
- Hollow areas (cheeks, under-eyes)
- Increased wrinkle depth

A key regulator of fat cell formation is PGC-1α, a transcriptional coactivator that controls:

- Adipogenesis (formation of fat cells)
- Lipid storage capacity
- Cellular energy metabolism

In simple terms:
PGC-1α = master switch that controls fat cell formation and volume in tissues

Acetyl Hexapeptide-38 targets this pathway to restore volume and improve skin architecture.

Mechanisms of Action & Associated Skin Benefits:

Stimulation of Adipogenesis & Skin Volume Enhancement
Acetyl Hexapeptide-38 has been shown to stimulate adipocyte differentiation through upregulation of PGC-1α, a key regulator of adipogenesis. This leads to increased lipid accumulation within adipocytes and enhanced maturation of fat cells. Scientific literature on cosmetic peptides confirms that this peptide class can promote adipogenesis and lipid storage, contributing to increased tissue volume and improved contour. This results in improved skin plumpness, restoration of facial volume, reduction of hollow or sunken areas.

Improvement of Skin Density & Structural Support
By increasing subcutaneous lipid content, Acetyl Hexapeptide-38 enhances the structural support beneath the dermis. This contributes to improved skin density and helps counteract the flattening of skin architecture associated with ageing. The increase in adipose tissue volume provides mechanical support to the skin, resulting in a smoother and more lifted appearance.

Wrinkle Softening via Mechanical Filling Effect
The volumising effect induced by adipogenesis leads to a mechanical filling of wrinkles from within, rather than surface-level smoothing. By restoring underlying tissue volume, Acetyl Hexapeptide-38 helps reduce wrinkle depth and improve skin surface topography, particularly in areas prone to volume loss.

Skin Contour & Morphology Improvement
Through its action on lipid metabolism and adipocyte function, Acetyl Hexapeptide-38 contributes to improved skin morphology and contour. This includes enhanced definition of facial features and improved uniformity of the skin surface, supporting a more youthful and balanced appearance.

Links:
https://www.sciencedirect.com/science/article/pii/S0196978125001019
https://www.researchgate.net/publication/281282294

ACETYL OCTAPEPTIDE-3

Ingredient Claims:

Inhibition of neurotransmitter release mechanisms	Reduction of muscle contraction-related skin stress
Helps reduce the appearance of expression wrinkles	Smooths skin and improves texture
Helps relax facial tension	Provides a non-invasive “Botox-like” effect
Contributes to a more youthful-looking appearance	

Acetyl Octapeptide-3 (SNAP-8) is a synthetic peptide inspired by a fragment of the SNAP-25 protein, a key component involved in muscle contraction signalling. It is designed to target the biological mechanisms responsible for expression wrinkle formation by modulating neurotransmitter release at the neuromuscular junction. As an advanced analogue of earlier neuromodulating peptides, it offers improved stability and efficacy in topical cosmetic applications.

Scientific Background: SNAP-25 & the SNARE Complex
Muscle contractions responsible for facial expressions are triggered by the release of the neurotransmitter acetylcholine. This release depends on a protein complex called the SNARE complex, which enables nerve cells to fuse vesicles containing neurotransmitters with the cell membrane.

The SNARE complex is composed of three key proteins:
- SNAP-25 (Synaptosomal-Associated Protein 25)
- Syntaxin
- VAMP (vesicle-associated membrane protein)

Among these, SNAP-25 plays a critical role in facilitating the release of acetylcholine into the synaptic space, which then triggers muscle contraction.

In simple terms:
SNAP-25 = key protein that allows muscles to contract by enabling neurotransmitter release

Mechanisms of Action & Associated Skin Benefits:

Neuromodulation & Reduction of Expression Wrinkles
Acetyl Octapeptide-3 mimics part of the SNAP-25 protein and competes with it during the formation of the SNARE complex. By interfering with this process, it reduces the release of acetylcholine, leading to decreased muscle micro-contractions. This reduction in repetitive facial movements helps soften dynamic wrinkles such as crow’s feet and forehead lines, resulting in smoother, more relaxed-looking skin.

Skin Smoothing & Texture Improvement
By limiting continuous muscle contractions, Acetyl Octapeptide-3 reduces mechanical stress applied to the skin over time. This contributes to a visible improvement in skin smoothness and texture, with reduced appearance of unevenness and fine lines, leading to a more refined and even-looking complexion.

Non-Invasive “Botox-like” Cosmetic Effect
Because it targets the same biological pathway as botulinum toxin (inhibition of neurotransmitter release), Acetyl Octapeptide-3 is often described as providing a “Botox-like” cosmetic effect. However, unlike injectables, it works topically without blocking muscle function entirely, allowing for wrinkle reduction while preserving natural facial expressions.

Enhanced Stability & Performance
Acetyl Octapeptide-3 was developed as an improved version of earlier neuromodulating peptides by extending the peptide chain, which enhances its stability and interaction with the SNARE complex. This supports more efficient modulation of expression wrinkle formation and sustained cosmetic performance.

Links:
https://link.springer.com/article/10.1186/s40543-020-00232-8
https://pmc.ncbi.nlm.nih.gov/articles/PMC7662462
https://www.mdpi.com/2079-9284/5/1/21

ACETYL HEXAPEPTIDE-30

Ingredient Claims:

Inhibition of neurotransmitter release involved in muscle contraction	Reduction of muscle contraction-related skin stress
Helps reduce the appearance of expression wrinkles	Helps relax facial tension
Provides a non-invasive “Botox-like” effect	Improvement in skin smoothness and overall skin texture
Contributes to a more youthful-looking appearance	

Acetyl Hexapeptide-30 is a synthetic neuromodulating peptide belonging to the SNAP-25 peptide family. It is designed to reduce the appearance of expression wrinkles by modulating neurotransmitter release involved in muscle contraction. Structurally related to acetyl hexapeptide-8 (Argireline), it targets the same biological pathway but is developed as a distinct analogue with optimized activity for cosmetic applications.

Scientific Background: SNAP-25 & the SNARE Complex
Facial expressions (smiling, frowning, squinting) are driven by muscle contractions triggered by the release of the neurotransmitter acetylcholine. This release depends on a protein system called the SNARE complex, which allows nerve cells to release neurotransmitters.

The SNARE complex is composed of three key proteins:
- SNAP-25 (Synaptosomal-Associated Protein 25)
- Syntaxin
- VAMP (vesicle-associated membrane protein)

SNAP-25 plays a critical role in enabling the fusion of neurotransmitter-containing vesicles with the neuronal membrane, allowing acetylcholine to be released and activate muscle contraction.

In simple terms:
SNAP-25 enables communication between nerves and muscles → leading to muscle contraction → expression wrinkles over time

Mechanisms of Action & Associated Skin Benefits:

Neuromodulation & Reduction of Expression Wrinkles
Acetyl Hexapeptide-30 mimics a fragment of the SNAP-25 protein and interferes with the assembly of the SNARE complex. By competing with SNAP-25, it reduces acetylcholine release at the neuromuscular junction, leading to decreased muscle micro-contractions. This reduction in repetitive facial movements helps soften dynamic wrinkles such as crow’s feet and forehead lines, resulting in smoother and more relaxed-looking skin.

Skin Smoothing & Texture Improvement
By limiting continuous muscle contractions, Acetyl Hexapeptide-30 reduces mechanical stress applied to the skin. Over time, this contributes to improved skin smoothness and refinement of skin texture, with a visible reduction in unevenness and expression-related lines.

Non-Invasive “Botox-like” Cosmetic Effect
Acetyl Hexapeptide-30 acts on the same biological pathway as botulinum toxin by modulating neurotransmitter release, but without inducing muscle paralysis. This allows for a visible reduction in wrinkle appearance while preserving natural facial expressions, making it a safe and non-invasive cosmetic alternative for targeting dynamic wrinkles.

Progressive Anti-Ageing Effect Through Repetition Control
By continuously reducing micro-contractions, Acetyl Hexapeptide-30 helps limit the cumulative mechanical stress that contributes to wrinkle formation over time. This supports a progressive improvement in skin appearance and helps prevent the deepening of expression lines.

Links:
https://link.springer.com/article/10.1186/s40543-020-00232-8
https://pmc.ncbi.nlm.nih.gov/articles/PMC7662462/
https://www.mdpi.com/2079-9284/5/1/21

DUNALIELLA SALINA EXTRACT (ALGAE EXTRACT)

Ingredient Claims:

Rich in antioxidants, helping to protect the skin from free radical damage	Nourishes the skin with essential nutrients such as vitamins and minerals
Improves skin moisturisation	Skin appears brighter and smoother
Promotes collagen and elastin synthesis	Improves skin tone and overall complexion

Dunaliella salina extract is derived from a type of microalgae called Dunaliella salina. Dunaliella salina is a unicellular green algae that thrives in highly saline environments, such as saltwater lakes or salt flats. It is known for its ability to survive in extreme conditions and adapt to high levels of salinity and sunlight.

In skincare, Dunaliella salina extract has several characteristics that make it an excellent ingredient, such as:

- Antioxidant properties: Dunaliella salina contains various antioxidants, such as carotenoids (including beta-carotene) and vitamins C and E, which help protect the skin against free radical damage caused by environmental factors like UV radiation and pollution.

- Moisturising and hydrating: The extract from Dunaliella salina contains oligosaccharides which have hydrating properties, helping to improve skin moisture levels and retain hydration.

- Nourishing and revitalising: It is rich in essential nutrients, including amino acids, vitamins, and minerals, which can provide nourishment to the skin and support its overall health and vitality.

- Skin brightening: The high concentration of beta-carotene in Dunaliella Salina Extract may contribute to a brighter complexion and help even out skin tone.

- Anti-ageing potential: Dunaliella Salina Extract contains amino acids that contribute to the synthesis of collagen and elastin, proteins responsible for the skin's elasticity and resilience.

Links:
https://pubmed.ncbi.nlm.nih.gov/35200634/
https://pubmed.ncbi.nlm.nih.gov/34822466/
https://pubs.acs.org/doi/abs/10.1021/jf060546q

PANTHENOL (VITAMIN B5)

Ingredient Claims:

Provides intense moisturisation	Improves skin elasticity
Promotes wound healing	Improves skin texture and skin tone
Soothes red, irritated skin	Enhances skin barrier function

Also known as pro-vitamin B5, Panthenol effectively penetrates the skin and provides a number of benefits:

- Moisturising: Panthenol is a humectant, which means that it helps to attract and retain moisture in the skin. This can help to improve the skin's hydration levels by decreasing trans epidermal water loss and reduces dryness and flakiness.

- Soothing: Panthenol has anti-inflammatory properties that can help to calm and soothe irritated or sensitive skin. This makes it useful for people with conditions like eczema, rosacea, or acne.

- Healing: Panthenol can help to support the skin's natural healing process by promoting cell regeneration and tissue repair. This can help to reduce the appearance of scars and improve overall skin health.

- Anti-ageing: Panthenol can help to improve the appearance of fine lines and wrinkles by increasing the skin's elasticity and suppleness. It can also help to improve skin texture and tone.

- Enhances skin barrier: Panthenol can help to strengthen the skin's natural barrier function, reducing moisture loss and protecting the skin from external stressors.

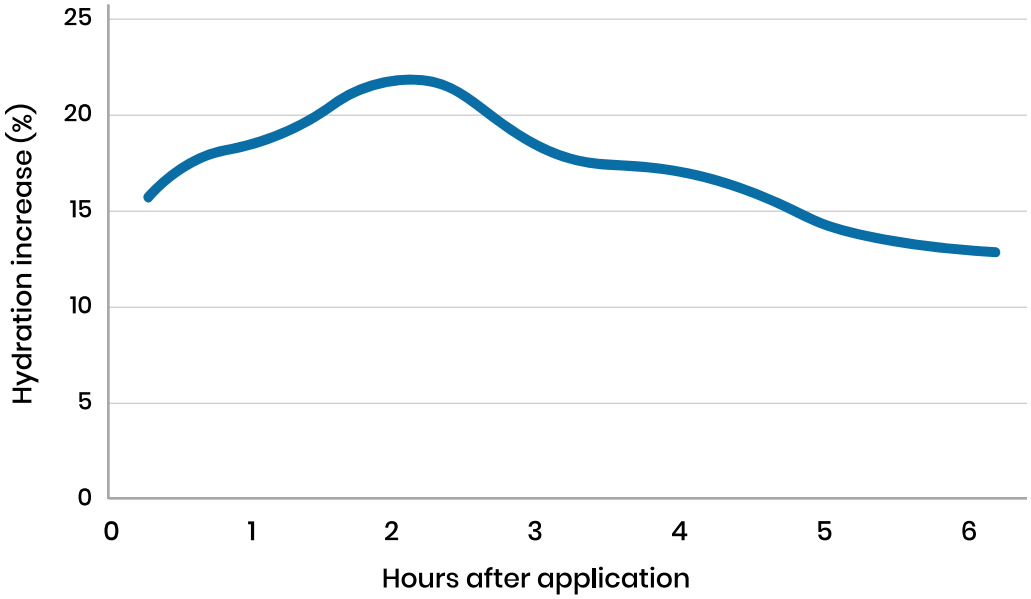
Links:
https://pubmed.ncbi.nlm.nih.gov/21982351/
https://pubmed.ncbi.nlm.nih.gov/27545858/
https://www.scinapse.io/papers/3564442
https://www.tandfonline.com/doi/full/10.1080/09546634.2016.1214235
Data on file.

SODIUM HYALURONATE

Ingredient Claims:

Boosts skin hydration	Supports the skin barrier
Promotes wound healing	Protects the skin from environmental damage
Skin feels smoother and tighter	Supports collagen and elastin formation

Results: Up to 25% increase of skin hydration 2 hours after application



In vitro

High-molecular-weight (up to 2000 kDa) Sodium Hyaluronate improves skin hydration and elasicity when compared to placebo.*

Study

0.025% Sodium Hyaluronate (1.4 MDa) in an emulsion vs placebo
8 Volunteers
Parameter: skin hydration (Corneometer CM 820 PC)

Sodium Hyaluronate is the salt form of Hyaluronic Acid, a water-binding ingredient that has the ability to fill the spaces between the connective fibres known as collagen and elastin. Hyaluronic Acid hydrates and separates the skin, allowing it to retain water and create a plumping effect. Sodium Hyaluronate has been used for moisturisation and wound healing since its discovery in the 1930s. It is comprised of small molecules that penetrate the skin easily and can hold up to 1000 their own weight in water. Because the skin naturally loses its water composition as it ages (going from 10% - 20% water to less than 10%).

Hyaluronic Acid and Sodium Hyaluronate can replace some of the water lost in the dermis, and potentially fight wrinkles and other signs of ageing. Because of its relatively high molecular weight it is not absorbed following application to the skin. Instead, it forms a thin, light, permeable, invisible, viscoelastic surface film. This fixes the moisture on the surface of the skin. The Hyaluronic Acid (HA) film supports the skin's natural protective mechanism. Since it is an excellent water reservoir leading to a perceptible and visible improvement in skin condition.

Links
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3583886
Data on file

GLYCERIN

Ingredient Claims:

Excellent moisturising properties	Enhances skin elasticity
Calms and soothes irritated skin	Promotes skin barrier function
Reduces trans epidermal water loss	Soothes hot or sunburned skin

Glycerin is a humectant which is present in all-natural lipids. Derived from natural substances by hydrolysis of fats and by fermentation of sugars. This palm-free vegetable Glycerin is widely used in cosmetic products and provides the following benefits:

- Moisturising: Glycerin has excellent moisturising properties. It attracts and retains moisture from the environment, helping to hydrate the skin and prevent dryness. It forms a protective layer on the skin, reducing water loss and maintaining its natural moisture balance.

- Skin barrier repair: Glycerin can support the skin's barrier function by strengthening the outermost layer of the skin, known as the stratum corneum. This can help improve the skin's ability to retain moisture and protect it from external irritants.

- Soothing and calming: Glycerin has soothing properties that can help alleviate skin irritation, itching, and inflammation. It can be beneficial for conditions such as eczema, psoriasis, or dry, sensitive skin.

- Anti-ageing effects: Glycerin has the ability to improve the appearance of fine lines and wrinkles. By maintaining skin hydration, it can enhance the skin's elasticity and firmness, giving it a smoother and more youthful appearance.

- Compatibility with various skin types: Glycerin is generally well-tolerated by different skin types, including sensitive and acne-prone skin. It is non-comedogenic, meaning it won't clog pores or contribute to breakouts.

- Enhances product effectiveness: Glycerin is often used as a key ingredient in skincare formulations because it helps other ingredients penetrate the skin more effectively. It can enhance the delivery of active ingredients, allowing them to work more efficiently.

- Cooling effect: Glycerin has a cooling effect on the skin, making it useful in products such as facial mists or soothing gels. It can provide relief for hot or sunburned skin.

Links:
International Journal of Cosmetic Science, August 2016, ePublication
British Journal of Dermatology, July 2008, pages 23-34
Journal of Cosmetic Dermatology, June 2007, pages 75-82
Proceeding of the National Academy of Sciences, June 2003, pages 7,360-7,365
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8395744/

LEUCONOSTOC RADISH ROOT FERMENT FILTRATE (FERMENTED RADISH ROOT EXTRACT)

Ingredient Claims:

Boosts moisture content in the skin	Helps to prevent the growth of harmful bacteria which cause blemishes
Soothes irritated skin	Gently exfoliates the skin for a more radiant complexion

Leuconostoc radish root ferment filtrate is a natural antimicrobial ingredient that is derived from fermented radish roots. It has become a popular ingredient in skincare products due to its ability to act as a preservative and provide several benefits for the skin. Here are some of the skin benefits of Leuconostoc radish root ferment filtrate:

- Natural preservative: Leuconostoc radish root ferment filtrate has antimicrobial properties that make it an effective natural preservative in skincare products. This can help to extend the shelf life of the product without the use of harsh synthetic preservatives.
- Moisturising: Leuconostoc radish root ferment filtrate is a humectant, which means it has the ability to attract and retain moisture in the skin. This can help to improve the overall hydration and plumpness of the skin.
- Gentle exfoliation: Leuconostoc radish root ferment filtrate contains natural enzymes that can help to gently exfoliate the skin, removing dead skin cells and promoting a smoother, more radiant complexion.
- Antimicrobial: Leuconostoc radish root ferment filtrate has antimicrobial properties that can help to prevent the growth of harmful bacteria on the skin, which can contribute to acne and other skin irritations.
- Soothing: Leuconostoc radish root ferment filtrate has been shown to have soothing properties, which can help to calm and reduce inflammation in the skin.

Moisturisation using 1% in cream compared to base cream without active.

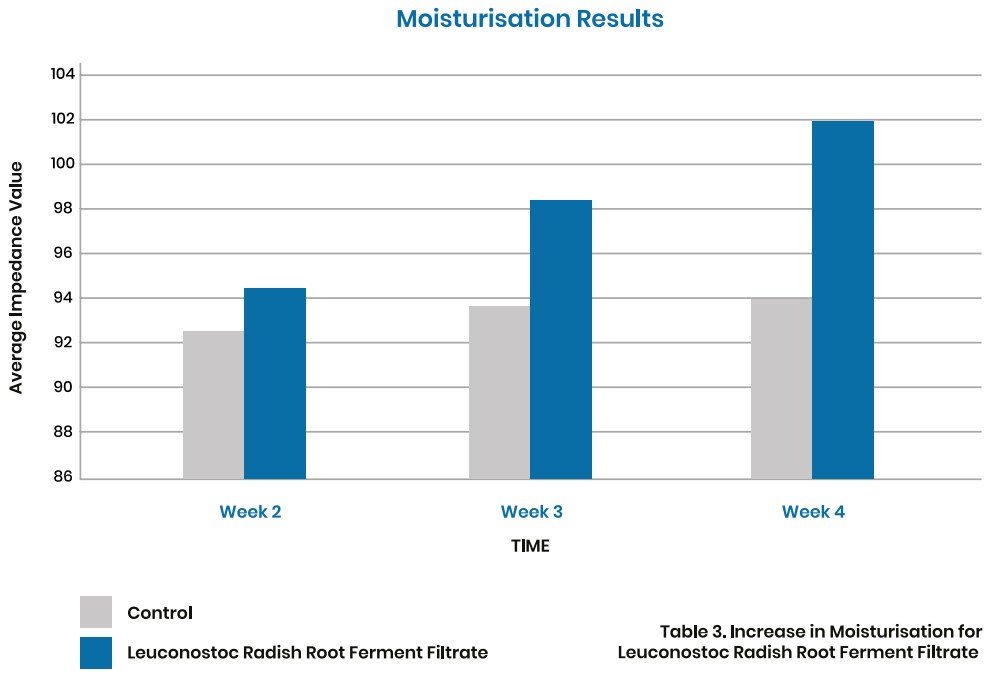


Table 3. Increase in Moisturisation for Leuconostoc Radish Root Ferment Filtrate

Links:
Data on file
https://pubmed.ncbi.nlm.nih.gov/25779084/
https://pubs.acs.org/doi/full/10.1021/jf5063588