Clinical Evidence

PRODUCT, DESCRIPTION AND EVIDENCE
REFERENCE: FS9-31
PUBLISH DATE: 09/01/2025

SUPERB

A potent rejuvenating night serum containing NMN and NAD+ to support skin longevity, reverse the signs of ageing, destress ageing skin and improve the appearance by restoring youthfulness and fullness. This night serum also contains Vitamin B complexes and encapsulated emollients, for smoother more hydrated skin.

KEY BENEFITS

- Improve skin elasticity
- Encapsulated emollients hydrate and promote healing
- Improves skin texture and skin tone
- Enhances skin barrier function
- Skin can appear up to 8 years younger
- Reduces skin redness by 24%
- Increases skin regeneration by 59%
- Reduces trans-epidermal water loss by 27%
- 12% reduction in the appearance of fine lines
- 15% reduction in wrinkle depth

DIRECTIONS FOR USE

Apply to dry cleansed skin in the evening before using night creams. Massage until vesicles release their contents and serum is fully absorbed.

WARNINGS

For external use only. Avoid contact with eyes. If this occurs wash affected area thoroughly with water. If irritation occurs, discontinue use. Store this product below 40°C.

INGREDIENTS

Aqua, Glycerin, Niacinamide, Mannitol, Maltodextrin, Panthenol, Propanediol, Faex Extract, Microcrystalline Cellulose, Tocopheryl Acetate, Carbomer, Helianthus Annuus Sprout Extract, Piperonyl Glucoside, Hydroxypropyl Methylcellulose, Biotin, Pyridoxine HCl, Thiamine HCl, Inositol, Riboflavin, Cyanocobalamin, Parfum, Pantolactone, Mica, PEG-40 Hydrogenated Castor Oil, PPG-26-Buteth-26, Acrylates/Ammonium Methacrylate Copolymer, Potassium Sorbate, Benzyl Alcohol, Dehydroacetic Acid, Sodium Hydroxide, Simethicone, Triethyl Citrate, Hexamethylindanopyran, Tetramethyl Acetyloctahydronaphthalenes, Geranyl Acetate, Linalyl Acetate, Acetyl Cedrene, CI 77492, CI 77491, CI 42090, Titanium Dioxide | Titanium Dioxide/CI 77891, CI 17200.

ACTIVE INGREDIENTS

- Niacinamide 2%
- Panthenol 1.5%
- Faex Extract 0.5%
- Tocopheryl Acetate 0.6mg*
- Piperonyl Glucoside 0.3mg*
- Helianthus Annuus Sprout Extract 0.15mg*
- Biotin 0.06mg*
- Pyridoxine HCL 0.06mg*
- Thiamine HCL0.06mg*
- Inositol 0.06mg*
- Riboflavin 0.01mg*
- Cyanocobalamin 0.006mg*

NIACINAMIDE (VITAMIN B3)

Ingredient Claims:

Reduces trans-epidermal water loss by 27%	Inhibits melanin production in the skin
Improve skin elasticity	Reduces the appearance of pores
Powerful antioxidant that reduces level of reactive oxygen species in the skin	Stimulates the synthesis of collagen
Brightens skin tone	Reduces the signs of aged skin

Also known as vitamin B5, niacinamide has multiple skin-improving properties that tackle signs of ageing, UV damage and pigmentation.
It has a stabilising effect on epidermal barrier function by a reduction in transepidermal water loss and an improvement in the moisture content in the skin. It has been shown to improve the elasticity of the skin and reduce the appearance of wrinkles. Rebalances skin tone Reduces discoloration.

Niacinamide also exhibits antioxidant activity, significantly reducing the level reactive oxygen species in skin. Niacinamide has also been shown to repair UV-induced DNA damage, in turn reducing the signs of photo-ageing.

Niacinamide has skin lightening effects with topical application, decreasing the appearance of hyperpigmentation by inhibiting melanin production.

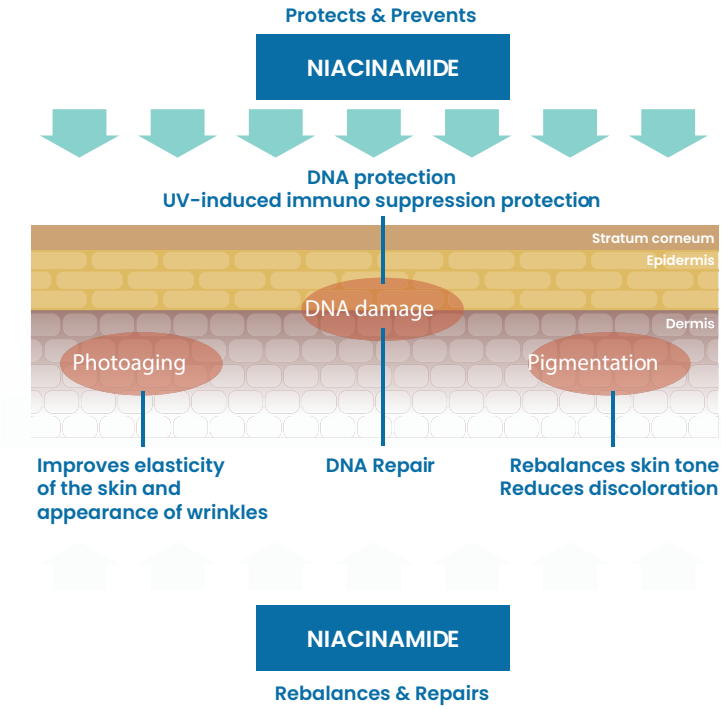
Niacinamide can also help to build keratin which helps keep skin firm and healthy, it can also help your skin grow a lipid or ceramide layer which then helps to stop trans epidermal water loss and increases hydration.

Research has also indicated that 5% Niacinamide can help with hyperpigmentation after 4 weeks of continued use, this is thought to be related to increased collagen production.

Link: https://pubmed.ncbi.nlm.nih.gov/17147561/
Link: https://pubmed.ncbi.nlm.nih.gov/17147561/
Link: https://pubmed.ncbi.nlm.nih.gov/17147561/
Link: https://www.komen.org/breast-cancer/survivorship/complementary-therapies/niacinamide/

Links:
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6824628/
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7950568/
https://pubmed.ncbi.nlm.nih.gov/20061726/

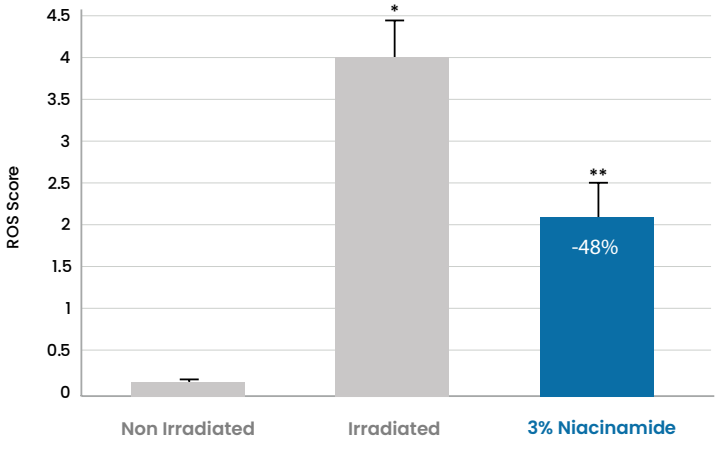
Exposure to sun light acts together with the normal ageing process to prematurely age our skin. UV radiations are also triggering excessive or uneven skin pigmentation as well as skin cancer development. Niacinamide showed to be effective in tackling UV damage: from protecting and repairing UV stressed skin to maintain its beautiful glow and elasticity.



Overview of Niacinamide benefits for UV-stressed skin: DNA protection, anti-aging, skin tone.

Blue light was shown to significantly increase oxidative stress in skin by inducing reactive oxygen species (ROS). ROS can in turn cause damage to proteins and lipids. In the case of proteins this can occur in the form of carbonylated proteins. This renders proteins non-functional.

Result: Niacinamide significantly reduces ROS in human skin in response to blue light irradiation.

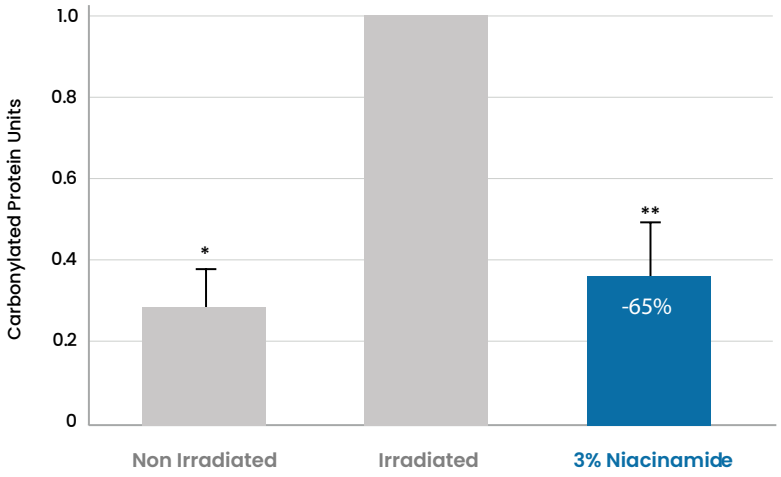


* p <0.001 vs. non-irradiated control
** p <0.01 vs. irradiated control

Influence of topical application (ex vivo human skin) of 3% Niacinamide on blue light induced ROS formation. 100j/cm2 irradiation at 380-470nm, max at 420nm. Skin samples were harvested 24hr after irradiation. DSM Study.

Result: Niacinamide significantly reduces carbonylated protein levels in human skin in response to blue light irradiation.

Niacinamide significantly reduces ROS in human skin in response to blue light irradiation. Blue light from solar irradiation, computer or smartphones evokes similar effects as UV-light and penetrate even deeper into the skin.



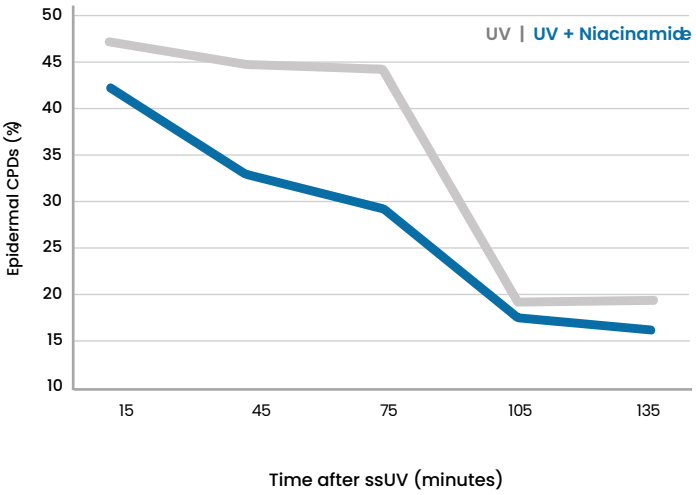
* p <0.01 vs. irradiated control
** p <0.05 vs. irradiated control

Influence of topical application (ex vivo human skin) of 3% Niacinamide on blue light induced carbonylated proteins formation. 100j/cm2 irradiation at 380-470nm, max at 420nm. Carbonylated proteins were extracted from the epidermal part of the skin tissues 48hr post irradiation. DSM Study.

Repair of UV induced DNA damage

Niacinamide has been shown to enhance the repair of DNA damage in human keratinocytes and in human skin. It also has the potential to prevent UB-induced immune suppression. In the study, ex vivo skin was treated with 50um Niacinamide before being exposed to low solar simulated UB (ssUV). The 5 epidermal Cyclobutane Pyrimidine Dimer (CPDs) has been quantified via immunostaining. DNA damage directly results in the formation of CPDs.

Result: Niacinamide significantly enhances the repair of CPD photolesions in human skin.

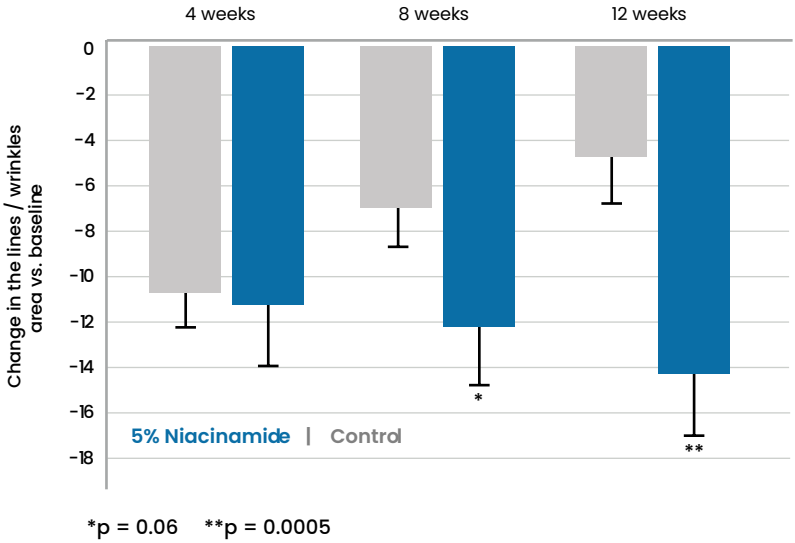


Influence of 50um Niacinamide on CPD level. Ex vivo human skin exposed to 4j/cm^2 ssUV.

Effect on fine lines and wrinkles

Because it selectively stimulates the synthesis of collagen Niacinamide will help to maintain the firmness and smoothness of the skin, reducing the appearance of wrinkles. Several in vivo clinical trials have demonstrated significant improvements at Caucasian, Japanese and Taiwanese female volunteers. In the table, a double-blind, placebo-controlled, split-face, left-right, randomised 12-week study in 50 Caucasian volunteers.

Result: 5% Niacinamide shows significant improvement in fine lines and wrinkles following both 8 and 12 weeks of treatment.

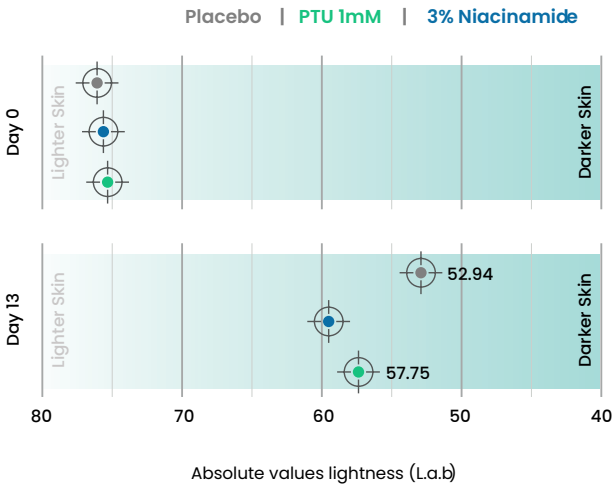


Influence of niacinamide on facial skin fine lines / wrinkles (measured as linear depression area in mm^2) vs. control. Data obtained from quantitative computer image analysis.

Reduced pigmentation in 3D skin model

The reconstituted human skin model is a co-culture of normal human keratinocytes and melanocytes. The positive control PTU (Phenylthiourea) and the test substance Niacinamide were applied topically on a daily base for 13 days.

Result: Niacinamide shows skin lightening properties versus placebo in 3D skin model.

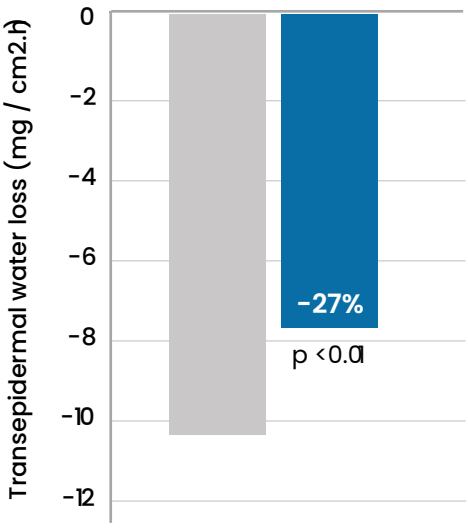


Influence of Niacinamide and PTU on the pigmentation development over 13 days. Measured in luminosity units [L*(D65)] compared to a white reference (L = 100). DSM Study.

Skin barrier integrity

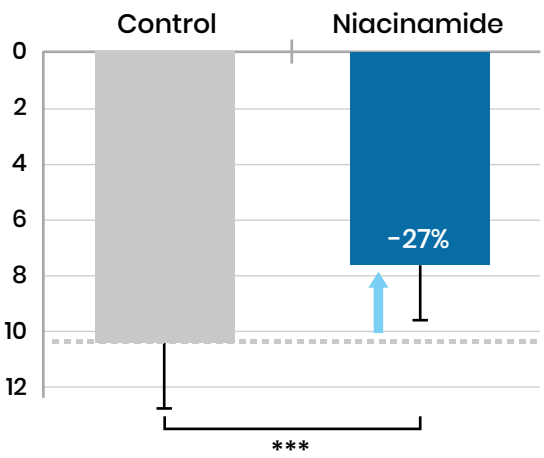
Trans epidermal water loss (TEWL), is used to study the water barrier function of our skin. The integrity of the stratum corneum is an indicator of the strength of the barrier. It was evaluated by measuring the TEWL after tape stripping of stratum corneum.

Result: TEWL was reduced by 27% when skin was treated twice daily with 2% Niacinamide for 4 weeks.



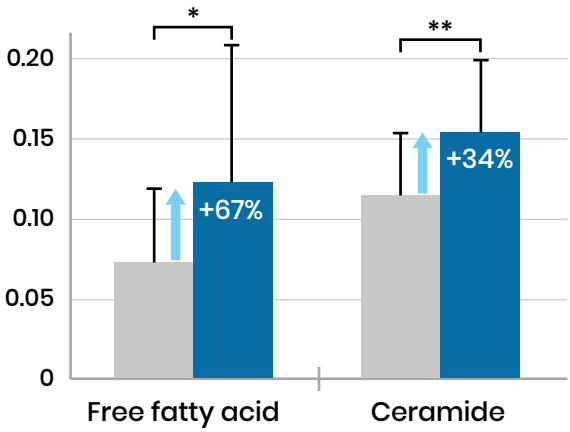
Influence of topical application of 2% niacinamide on TEWL

Transepidermal water loss (mg/cm².h)



TEWL was reduced by 27% when skin was treated twice daily with 2% Niacinamide for 4 weeks

Increased ceramide and free fatty acids level (ug/mg protein) in stratum corneum after Niacinamide treatment

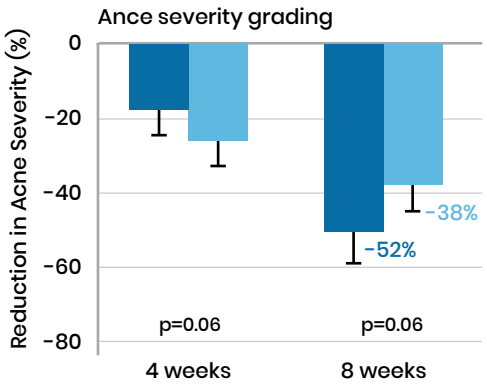


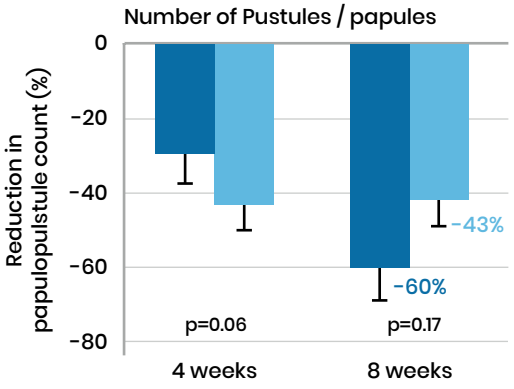
*p <0.01; **p<0.05; ***p<0.01

Control 2% Niacinamide

Niacinamide PC helps to keep hydrated and normalize the skin by balancing ceramide and fatty acids in stratum corneum

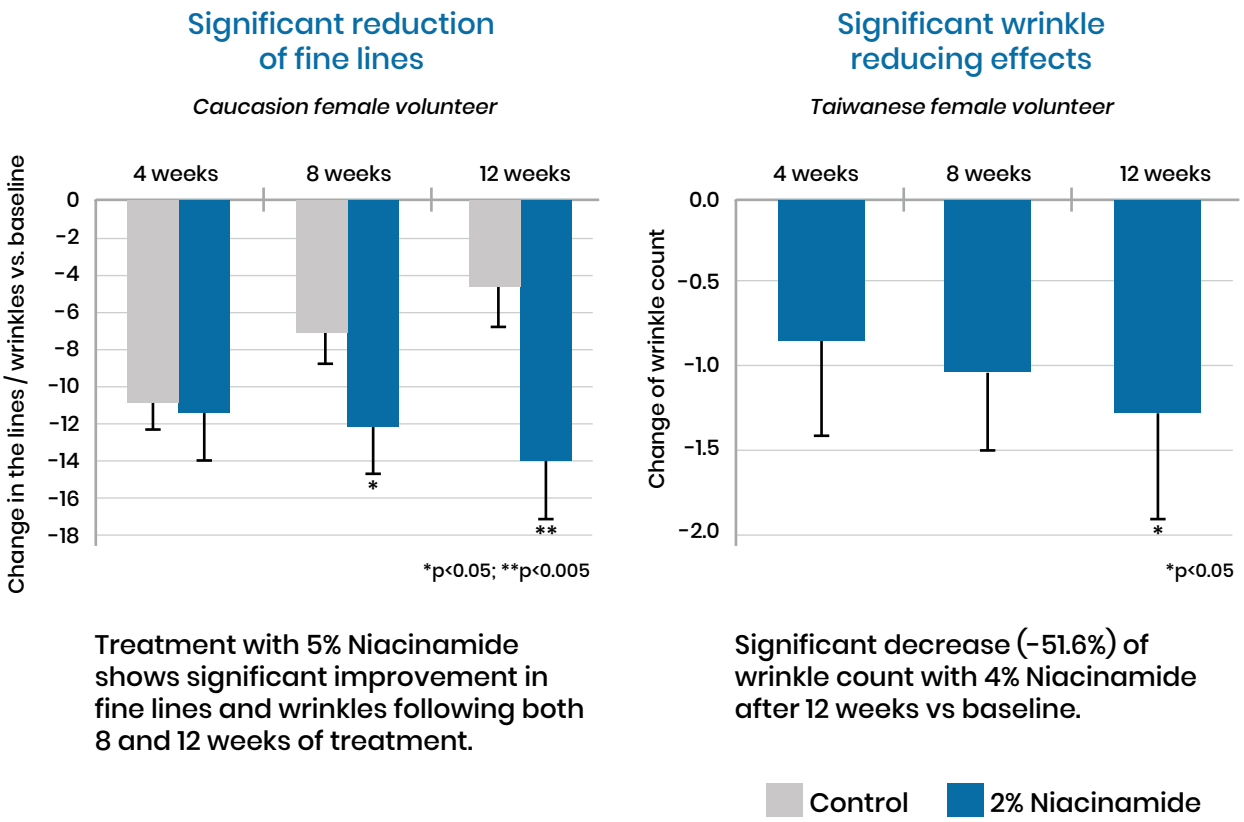
Results of serveral clinical trials with 4% Niacinamide vs 1% Clindamycin





76 men and women (aged 13-35) with moderate inflammatory acne vulgaris for 8 weeks. Measurement by dermatologist (ance severity according to modified Cook grading by Allen and Smith)

4% Niacinamide Gel Clindamycin Gel



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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.

FAEX EXTRACT (YEAST EXTRACT)

Ingredient Claims:

Improves skin moisturisation	Promotes skin barrier function
Protects the skin from oxidative damage	Calms and soothes irritated skin
Brightens skin complexion	Promotes collagen production
Improves skin texture	Skin feels firmer

Faex extract, also known as yeast extract, is derived from the cells of various species of yeast. It is a common ingredient found in skincare and cosmetic products due to its beneficial properties for the skin. Yeast extract is rich in various compounds that provide several potential benefits for the skin, including:

- Nourishment and hydration: Yeast extract contains amino acids, vitamins, minerals (such as zinc, selenium, copper, and iron), and carbohydrates (such as glucose and trehalose) that can help nourish and hydrate the skin. These components can provide essential nutrients and support the skin's natural moisture balance, helping to keep it soft and supple. Yeast extract is a natural source of B-complex vitamins, including niacin (B3), riboflavin (B2), thiamine (B1), pyridoxine (B6), and pantothenic acid (B5). These vitamins play essential roles in maintaining skin health, supporting cellular function, and promoting a healthy skin barrier.

- Antioxidant activity: Yeast extract contains antioxidants, such as flavonoids and polyphenols, which help protect the skin against free radicals. Free radicals are unstable molecules that can cause oxidative stress, leading to premature aging and skin damage. The antioxidants in yeast extract can neutralise free radicals, reducing the risk of oxidative damage.

- Soothing and calming properties: Yeast extract contains beta-glucans which are polysaccharides that have soothing properties and can help reduce skin inflammation and irritation. It can be beneficial for individuals with sensitive or reactive skin, as it can help reduce redness, inflammation, and discomfort.

- Skin brightening: As previously mentioned, yeast extract contains vitamin B3 and is known for its brightening properties. It can help even out skin tone, improve skin texture, and reduce the appearance of hyperpigmentation.

- Collagen production: Certain components of yeast extract, such as beta-glucans, have been found to stimulate collagen production in the skin. Collagen is a structural protein that helps maintain skin elasticity and firmness. By promoting collagen synthesis, yeast extract may help improve skin texture and reduce the signs of ageing.

Links:
https://onlinelibrary.wiley.com/doi/abs/10.1002/ptr.4963
https://iv.iiarjournals.org/content/32/4/799.short

TOCOPHEROL (VITAMIN E)

Ingredient Claims:

Protects the skin from oxidative damage caused by environmental stressors	Promotes scar healing
Soothes dry, irritated skin	Helps to protect the skin from sun damage
Promotes skin cell turnover	Potent antioxidant that reduces the signs of ageing

Tocopherol or Vitamin E is an important fat-soluble antioxidant and has been in use for more than 50 years in dermatology. It is an important ingredient in many cosmetic products. It protects the skin from various deleterious effects due to solar radiation by acting as a free-radical scavenger.

Vitamin E is one of the most well-known and researched antioxidants for the body and for skin. Vitamin E occurs naturally in human skin but can become depleted due to constant environmental exposure in the absence of sun protection.

Vitamin E has been shown to help reduce the appearance of scars by promoting tissue regeneration and increasing collagen production. Vitamin E also has anti-inflammatory properties that can help soothe irritated skin and reduce redness and swelling. In addition, vitamin E exhibits brightening properties that help improve the appearance of dark spots and uneven skin tone by promoting cell turnover and reducing melanin production.

Experimental studies suggest that vitamin E has photoprotective properties and is a powerful antioxidant.

Link: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4976416/

PIPERONYL GLUCOSIDE

Ingredient Claims:

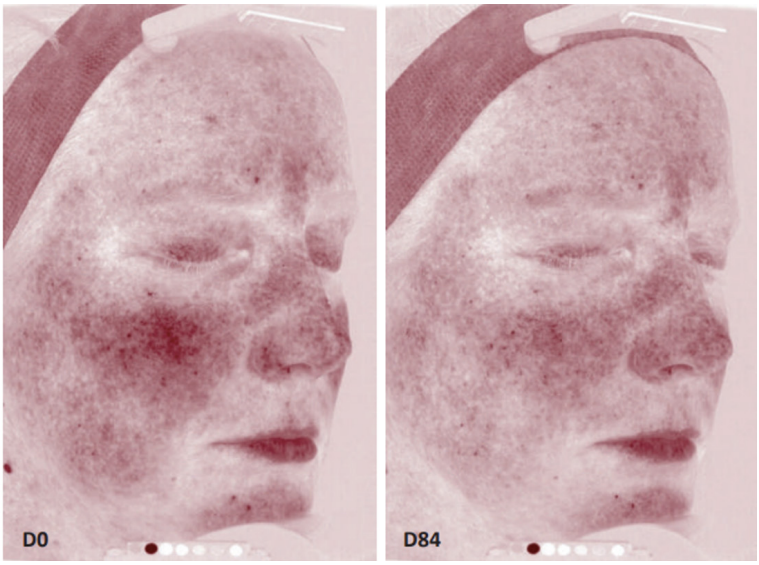
Reduces skin redness by 24%	Reduces blood vessel diameter by up to 13.5%
Skin appears brighter and smoother	Evens skin tone and reduces skin inflammation
Reduces the appearance of blemishes	

Piperonyl glucoside is a natural compound derived from the sassafras plant. While there is limited research on the specific skin benefits of piperonyl glucoside, it exhibits several benefits for the skin, including:

- Anti-inflammatory properties: Piperonyl glucoside may have anti-inflammatory properties, which can help to soothe and calm irritated or inflamed skin. This can be particularly beneficial for those with sensitive or acne-prone skin.
- Antioxidant properties: Piperonyl glucoside is a powerful antioxidant that can help to protect the skin against damage from free radicals and environmental stressors. This can help to prevent premature aging, wrinkles, and other signs of skin damage.
- Skin brightening: Piperonyl glucoside is believed to have skin-brightening properties, which can help to reduce the appearance of dark spots and hyperpigmentation, leaving the skin looking brighter and more even-toned.
- Moisturising: Piperonyl glucoside is also believed to have moisturising properties, which can help to hydrate and plump the skin, reducing the appearance of fine lines and wrinkles.
- Acne-fighting: Piperonyl glucoside may have anti-bacterial properties, which can help to fight acne-causing bacteria on the skin.

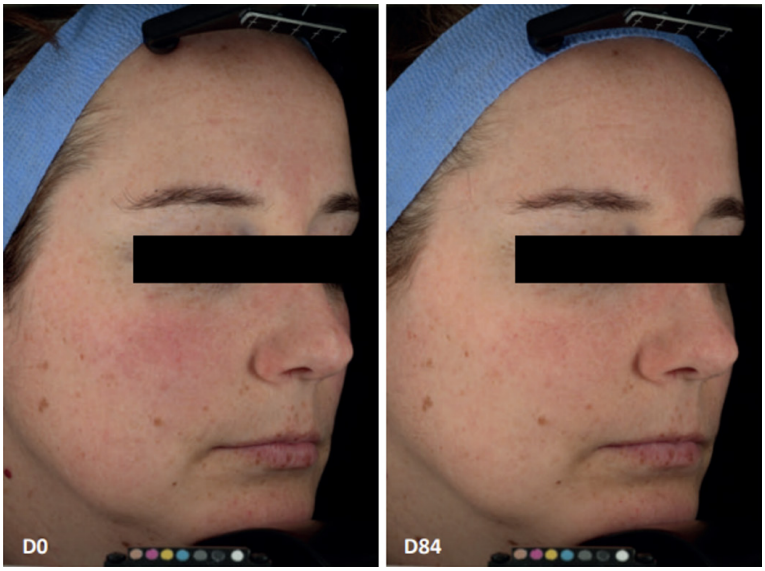
Illustration of Piperonyl Glucoside effect on redness

- -24% of occupied surface on average.
- Up to -68% of occupied surface.



Images with cross-polarized light

- -15% of clinical scoring on average.
- Up to -40% of clinical scoring.

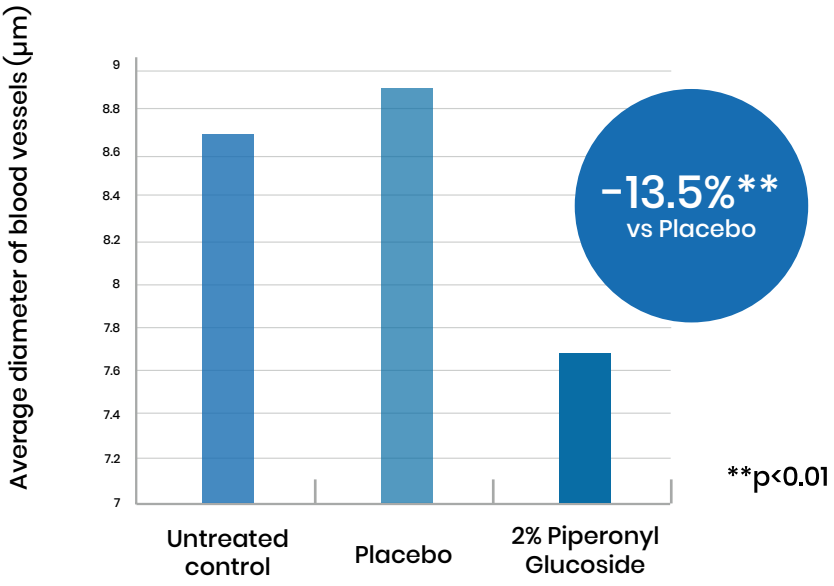


By controlling angiogensis and reorganising blood vessls networks, Piperonyl Glucoside visibly reduces redness in intensity and surface area for a more radiant complexion.

Reduction of the diemeter of the vessels.

Ex vivo study on explants treated by topical application at D0, D2 and D4 with 2% Piperonyl Glucoside vs Placebo or vs untreated control. At D6, measurement of the average diameter of vessels by image analysis.

By structuring the vessels, Piperonyl Glucoside allows to reduce their diameter.



Links:
https://doctorschar.com/sassafras-sassafras-officinale/
https://link.springer.com/chapter/10.1007/978-1-59259-020-9_23

HELIANTHUS ANNUUS SPROUT EXTRACT

Ingredient Claims:

Antioxidant Protection	Supports Collagen Production
Anti-Ageing Effects	Boosts Sunscreen Efficacy
Enhanced Skin Vitality	

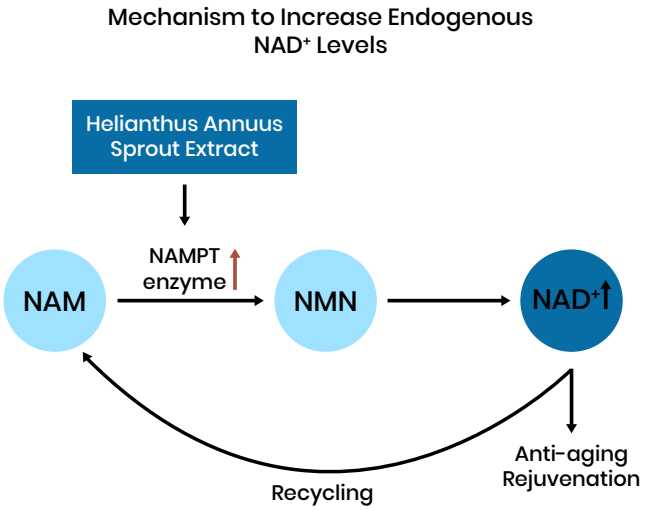
Replenishing NAD+ levels to rejuvenate the skin, Helianthus Annuus Sprout Extract is a holistic approach for skin rejuvenation that targets the very essence of age-related processes, the “hallmarks of ageing”. Helianthus Annuus Sprout Extract optimises cellular processes to revitalise the skin, naturally boosting the longevity molecule NAD+ by upregulating the rate-limiting enzyme NAMPT. NAD+ is known to decline with age and replenishing the NAD+ pools can reverse age-relate changes and promote longevity.

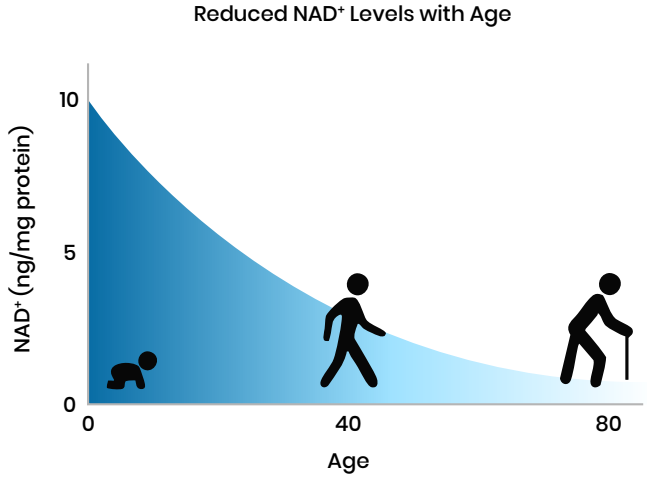
Efficacy studies have demonstrated that Helianthus Annuus Sprout Extract:
• boosts NAD+
• improves DNA repair mechanisms
• counteracts ageing-induced epigenetic alterations
• suppresses the formation of senescent cells
• improves cellular metabolism
• energizes mitochondria
• reshapes the face for a youthful appearance
• making the skin look 8 years younger.

By tackling at least five out of the nine classic ageing hallmarks, Helianthus Annuus Sprout Extract offers a potent solution that will slow down and reverse signs of ageing. It promotes the longevity of the skin, resulting in the rejuvenation of the skin.

NAD+ in Longevity

Over the last twenty years, the significance of the metabolite nicotinamide adenine dinucleotide (NAD+) in promoting longevity has gained widespread recognition, especially within the food supplement sector. Studies on various model organisms, including yeast, worms, and mice, have highlighted the correlation between reduced NAD+ levels and accelerated ageing, resulting in decreased lifespans. NAD+ serves as a vital coenzyme in energy metabolism and as a cofactor for hundreds of NAD+-dependent enzymes involved in a wide range of cellular processes. Within the cellular powerhouse, mitochondria, NAD+ plays a pivotal role in the generation of ATP, which is the energy currency of cells. Furthermore, NAD+ is an important substrate for enzymes involved in DNA repair, epigenetic changes, as well as for the longevity-associated enzymes known as sirtuins that regulate cellular metabolism.



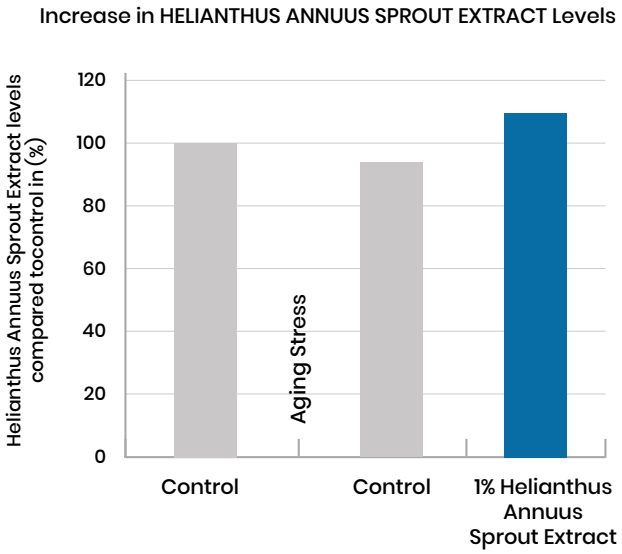


The Role of NAD+ in Skin Ageing

The importance of NAD+ metabolism in the skin is notably evident in pellagra, the systemic disease that results from NAD+ deficiency, leading to symptoms such as pigmented skin rash and dermatitis. Moreover, insufficient NAD+ levels have been shown to contribute to skin UV sensitivity, impaired DNA damage response, increased genomic instability, and the promotion of cellular senescence, which in turn leads to accelerated skin ageing.

In Vitro Ageing Model

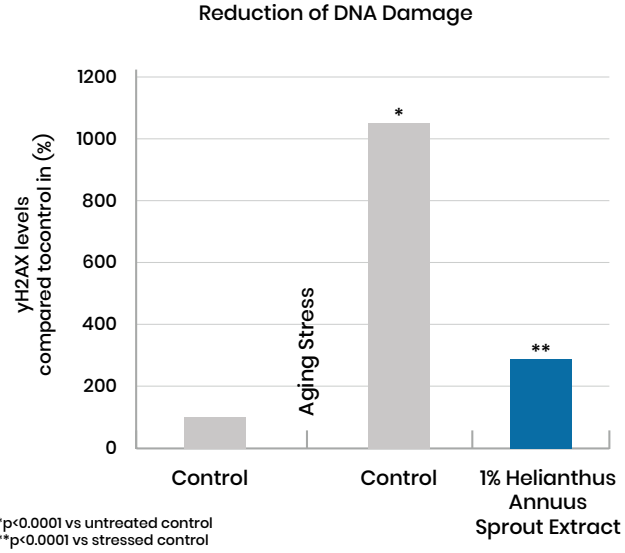
The skin is exposed to many stress factors. Both external and internal stressors, including chronological ageing, can cause DNA damage. However, the skin's efficiency to repair the DNA reduces with age. Therefore, DNA damage is a driver of skin ageing and it can contribute to hallmarks of ageing such as genome instability, epigenetic alterations, and the development of senescence. To simulate skin ageing, DNA damage was used to create an in vitro skin ageing model. In this model, ageing stress is induced by the incorporation of a thymidine analog, 5-bromodeoxyuridine (BrdU), into DNA, causing DNA damage. Keratinocytes were treated with BrdU in the absence and presence of 1 % sunflower sprout extract for either 24 or 48 hours depending on the subsequent analysis.



Boosting NAD+ Levels During the repair process of damaged DNA, NAD+ serves as an important cofactor, which is consumed and, therefore, depleted. After treating the cells for 24 hours, the levels of NAD+ in cell lysates were analyzed using an NAD+ assay.
The ageing stress caused a depletion of NAD+ within the cells. Co-treatment of the stressed cells with sunflower sprout extract increased the NAD+ levels even above the levels of the control. These results show that sunflower sprout extract increases NAD+ levels in skin cells even under ageing conditions.

Reduction of DNA Damage

To explore the response of the cells towards DNA damage causing genome instability, the levels of the DNA damage response marker yH2AX were evaluated by immunofluorescenceanalysis after 48 hours of treatment. Ageing stress induced a strong increase in DNA damage. Co-treatment with sunflower sprout extract significantly reduced the damage compared to the stressed condition, pinpointing that sunflower sprout extract improves the DNA repair mechanism.



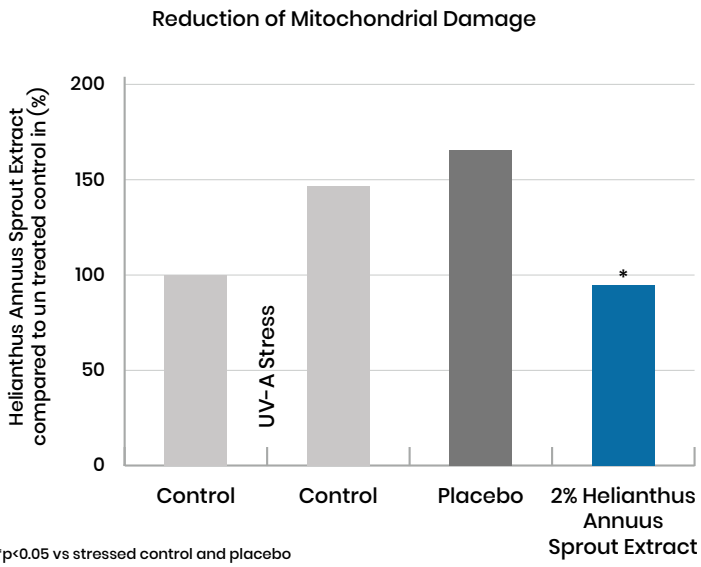
*p<0.0001 vs untreated control
**p<0.0001 vs stressed control

Ex Vivo Rejuvenation Model

Replenished NAD+ levels are known to slow down and reverse the ageing process. Therefore, the rejuvenation potential of sunflower sprouts was explored. To assess this, skin explants were initially exposed to UV-A radiation to include ageing stress and subsequently treated either with a cream containing 2% Helianthus Annuus Sprout Extract or a corresponding placebo for 24 hours. After harvesting the samples, several parameters were measured.

Enhanced Mitochondrial Function

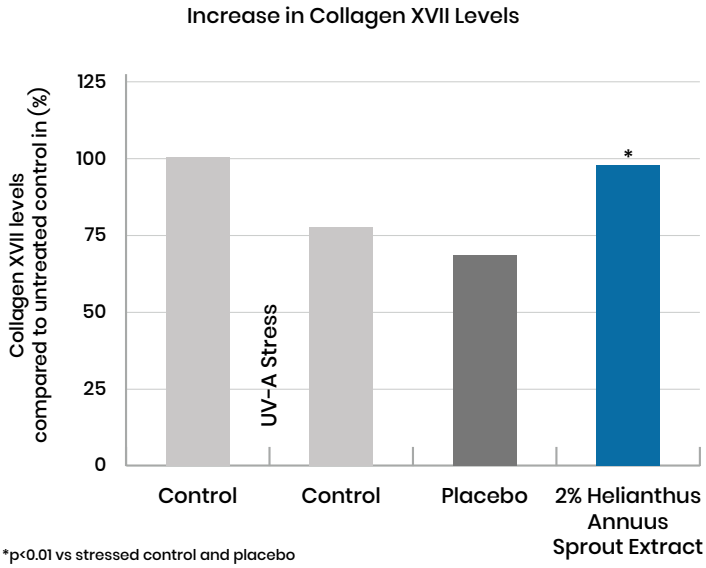
The hallmarks of ageing "mitochondrial dysfunction" and "loss of proteostasis" were investigated in the rejuvenation model. For this, mitochondrial protein carbonylation as
a marker of mitochondrial protein damage was analyzed by immunoblotting. UV-A radiation induced an increase in mitochondrial protein carbonylation in the skin explants. The application of Helianthus Annuus Sprout Extract significantly reduced the mitochondrial damage compared to the stressed condition as well as placebo and took it back to unstressed levels.



*p<0.05 vs stressed control and placebo

Strengthened Epidermal Adhesion

Sunflower sprout extract has been demonstrated to counteract age-related processes. Therefore, the aim was to investigate whether Helianthus Annuus Sprout Extract™also exhibits an effect on collagen, which is known to offer various benefits for the skin. In the skin explant rejuvenation model, collagen XVII levels were examined using immunofluorescence analysis of skin explants cross-sections. Collagen XVII is a keratinocyte-specific collagen that plays a crucial role in anchoring the epidermis to the underlying dermis. Its levels are known to decline with age and in photodamaged skin.

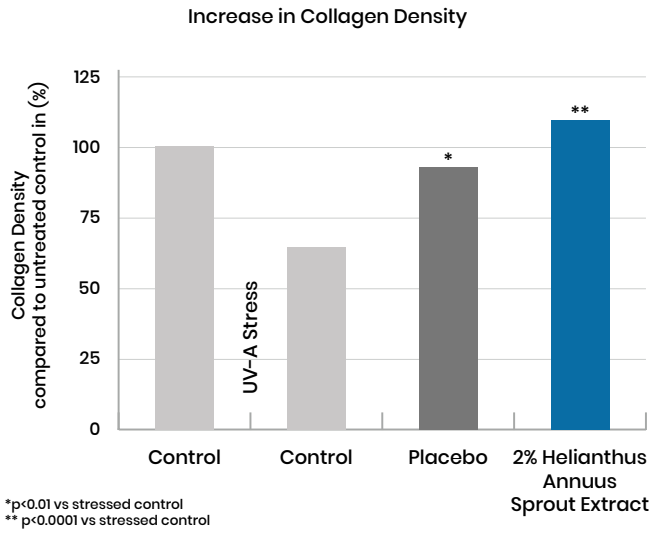


*p<0.01 vs stressed control and placebo

Exposure to UV-A radiation led to a decrease in collagen XVII levels, and this reduction was even more pronounced with the placebo cream application. However, treatment with Helianthus Annuus Sprout Extract significantly increased the protein expression of collagen XVII compared to the stressed control and the placebo. Helianthus Annuus Sprout Extract shows potential in terms of re-enhancing this vital epidermal-dermal interface and thus supports the possibility of maintaining healthy and functional skin.

Densifying Effect

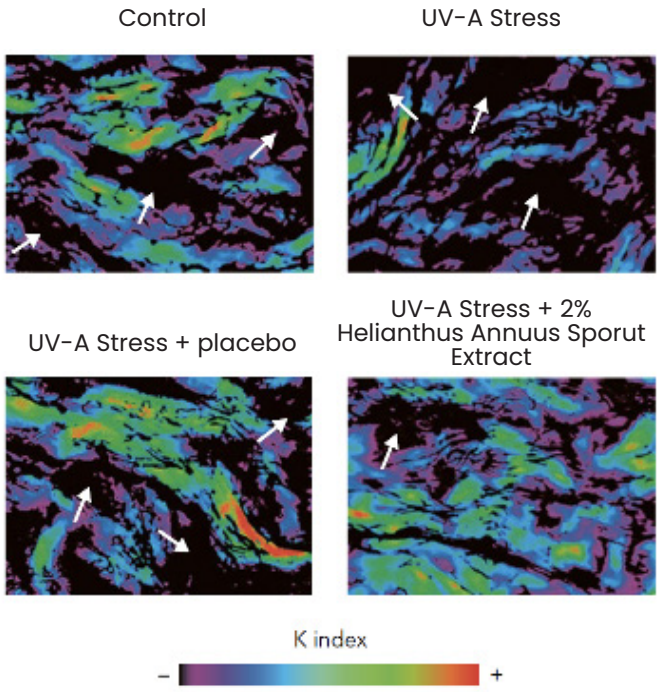
UV-A exposure is a significant contributor to photoageing as it has the ability to penetrate deeply into the dermis, resulting in the degradation of collagen fibers. For this reason, the effect of Helianthus Annuus Sprout Extract on collagen density was further investigated in the rejuvenation model. The analysis of the collagen density was performed on the reticular dermis. The reticular dermis is the lower layer of the dermis, which consists of densely arranged collagen fibers within a matrix to support the structure of the skin. Radiation with UV-A markedly reduced the density of collagen in the skin explants. The application of Helianthus Annuus Sprout Extract significantly increased collagen density compared to the UV-A exposed control, and it was even higher than in the unexposed control.



*p<0.01 vs stressed control
** p<0.0001 vs stressed control

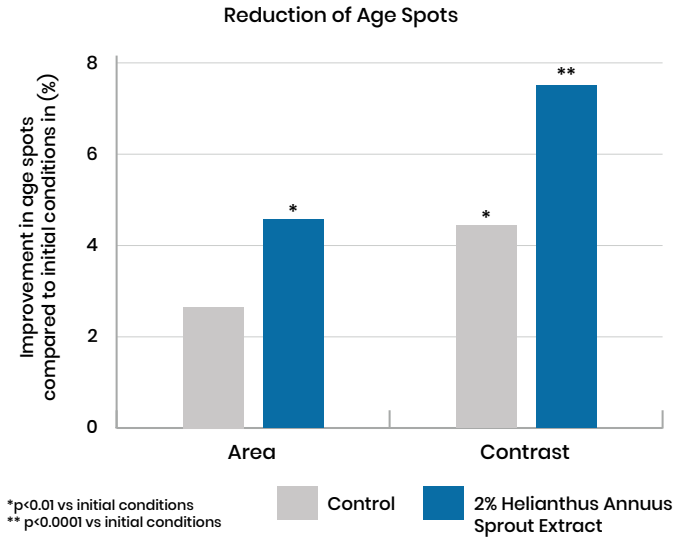
Visual Improvement in Collagen Density

A higher K index corresponds to an increased density of collagen fibres. Supporting the quantitative results, UV-A stress reduces collagen density in the images, as seen by larger regions of dark low-density areas. The images visually demonstrate that the use of 2% Helianthus Annuus Sprout Extract results in a more uniform and denser distribution of collagen fibers, which is shown by more evenly distributed blue-green areas and a reduction of black low-density areas. This indicates a strengthened skin connective tissue.
In conclusion, the findings of the study demonstrate that Helianthus Annuus Sprout Extract can counteract the negative impact of UV-A radiation, suggesting its potential to reverse ageing processes.



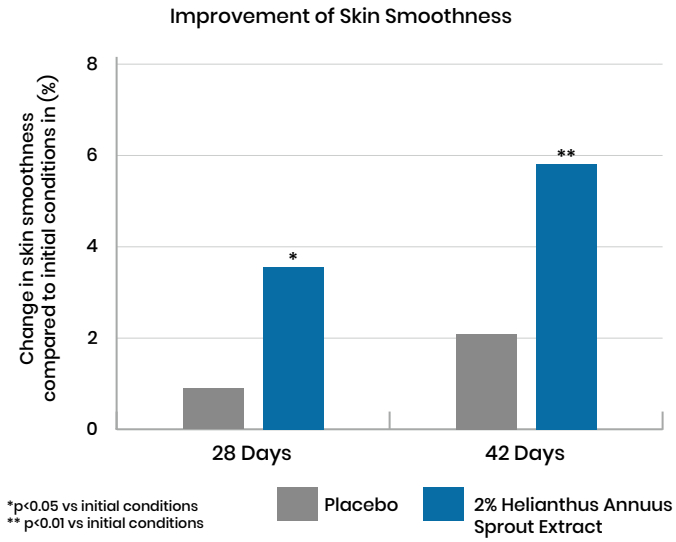
Improvement of Age Spots

With increasing age, hyperpigmentation appears on the skin in the form of dark spots. In mature skin most of them are caused by reduced proteostasis, more precisely by an accumulation of lipofuscin, which is generated by oxidized proteins. For this reason, Helianthus Annuus Sprout Extract was tested in a randomized, placebo-controlled clinical study on age spots. Twenty-four women aged between 46 and 63 years (mean age: 53 years) applied either a cream containing 2% Helianthus Annuus Sprout Extract or a corresponding placebo cream on each side of their faces twice daily. After 28 days of application, the area and contrast of dark spots were evaluated. Treatment with 2% Helianthus Annuus Sprout Extract significantly reduced the area and the contrast of dark spots compared to the initial condition.
In summary, these results demonstrate that Helianthus Annuus Sprout Extract improves protein recycling which is indicated by the reduction of the accumulation of lipofuscin.



In Vivo Rejuvenation Study

The in vitro and ex vivo efficacy studies have shown that sunflower sprouts can counteract several hallmarks of aging and thus might rejuvenate aged skin. Therefore, the aim of this study was to investigate the impact of Helianthus Annuus Sprout Extract on skin rejuvenation in a randomized, placebo-controlled clinical study on twenty-two women aged between 52 and 65 years (mean age: 60 years). The volunteers applied a cream containing 2% Helianthus Annuus Sprout Extract and a corresponding placebo cream on each side of their faces twice daily for 42 days.

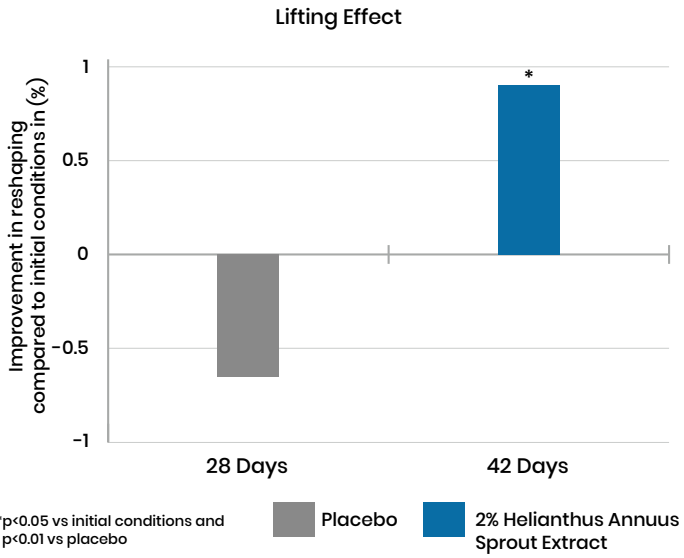


Smoother Skin

Skin smoothness was determined at day 0, day 28, and day 42. The application of 2% Helianthus Annuus Sprout Extract improved the skin smoothness significantly compared to the initial condition after 28 and 42 days.

Lifting Effect

In addition to skin smoothness, assessments were carried out to investigate the facial lifting potential of Helianthus Annuus Sprout Extract. For this analysis, 3D images of the face were captured after 42 days of treatment. By measuring the length of three vertical lines between the eyes and the jaw region, the lifting effect was analyzed. The smaller the distances between the reference points, the more pronounced the lifting effect.
Treatment with 2% Helianthus Annuus Sprout Extract led to a lifting of the jowl line region. The length of the measured vertical lines was significantly reduced by more than 1.5% compared to the placebo.more youthful appearance.



Visible Improvement of Ageing Signs

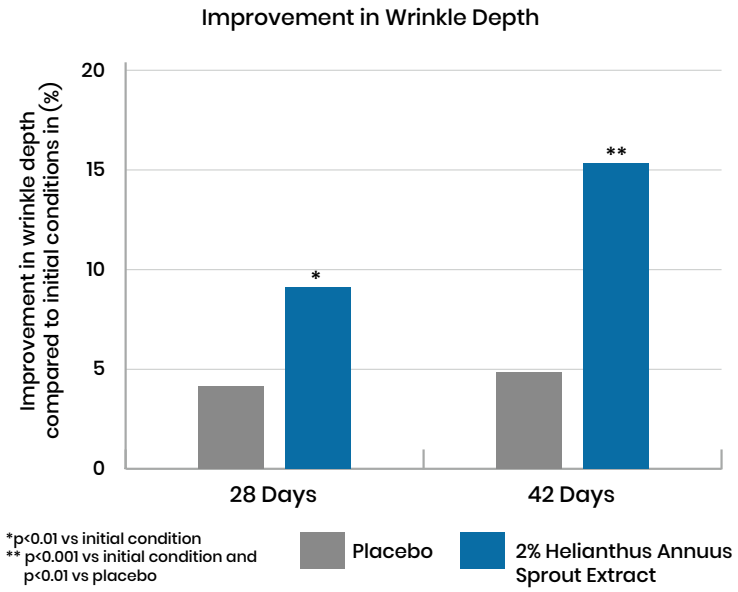
Furthermore, images taken show a visible improvement in ageing signs. Representative pictures of a volunteer are shown below where the following effects were observed:

- Reduction of crow's feet wrinkles
- Reduction of the nasolabial fold
- Reduction of the marionette fold
- Facial reshaping effect
- Reduction of skin redness.

The before and after pictures of the volunteer highlight that Helianthus Annuus Sprout Extract visibly and effectively rejuvenates the skin. The decrease in wrinkles and folds results in a visible reshaping of the face. Overall, these effects, including reduced skin redness, lead to a more youthful appearance.

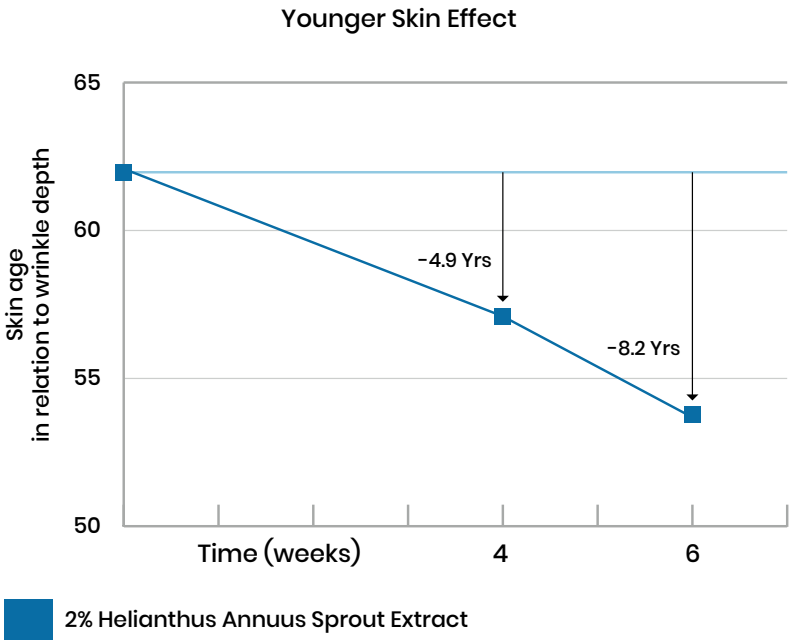
Improvement in Crow's Feet Wrinkles

The visual improvement in facial aging signs was complemented by a quantitative analysis of the impact of Helianthus Annuus Sprout Extract on wrinkles. The depth of crow's feet wrinkles was measured at day 0, day 28, and day 42. The application of Helianthus Annuus Sprout Extract resulted in a significant reduction in the depth of wrinkles compared to the initial condition, with reductions of 9.2 % and 15.3 % realised after 28 and 42 days, respectively. Furthermore, after 42 days, the improvement in wrinkle depth was also significant compared to the placebo.



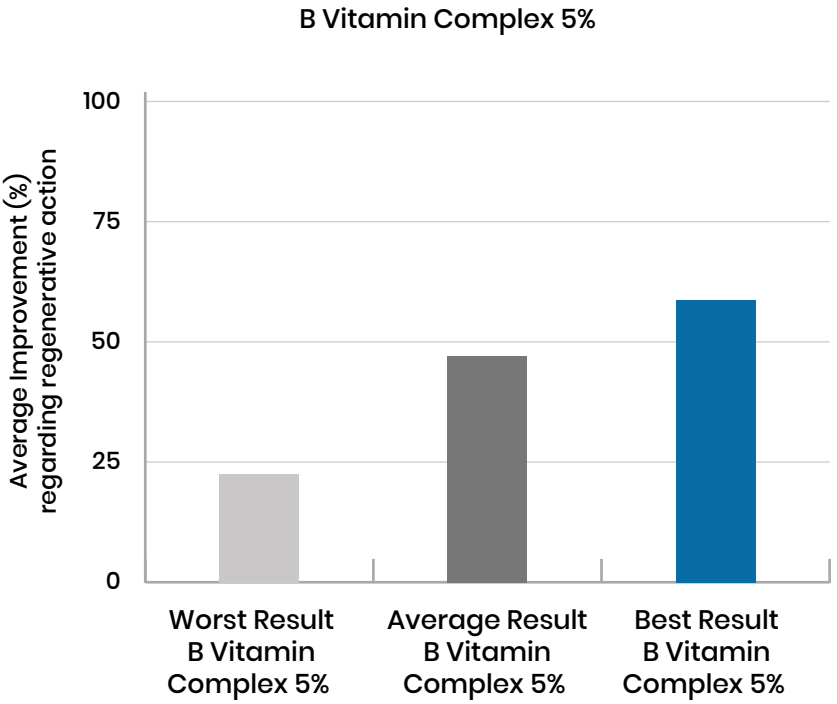
Making the Skin Look 8 Years Younger

Moreover, the "younger skin" effect was assessed by comparing the mean values of the wrinkle depth with a reference dataset comprising over 300 women aged between 30 and 65 years. This dataset includes the recorded age and wrinkle depth of the volunteers.
The comparison of the wrinkle depth measured in this study with the reference dataset revealed that Helianthus Annuus Sprout Extract made the skin on average appear 4.9 and 8.2 years younger after 28 and 42 days, respectively. Overall, the findings of the clinical study demonstrate that Helianthus Annuus Sprout Extract rejuvenates the skin and contributes to youthful-looking skin.



Data on file

VITAMIN B COMPLEX



Results:

Worst Result - Vitamin B Complex 5%: 22.5%
Average Results - Vitamin B Complex 5%: 47%
Best Result - Vitamin B Complex 5%: 59%

Results meaning:

Average Improvement rank between <20%: No significant changes
Average Improvement rank between 21% - 40%: Slight improvement regarding placebo
Average Improvement rank between 41% - 60%: Appreciable improvement regarding placebo
Average Improvement rank between 61% - 80%: Great improvement regarding placebo
Average Improvement rank between >81%: Excellent cosmetic result

Data on file

BIOTIN

Ingredient Claims:

Supports Skin Barrier Function	Improves Skin Elasticity
Reduces Redness and Irritation	Encourages Radiant Complexion
Addresses Photodamage	

Biotin Benefits for Skin: Evidence and Insights

Biotin, also known as Vitamin B7 or Vitamin H (from the German Haar und Haut, meaning “hair and skin”), is a water-soluble B vitamin that supports essential cellular functions. Its involvement in the metabolism of fatty acids and amino acids is believed to play a role in maintaining skin health, though the evidence varies in scope and strength.

Key benefits:

- Support for Skin Integrity: Biotin is vital for the production of fatty acids and lipids that maintain skin hydration and barrier function. Deficiency in biotin can lead to dermatitis, which manifests as dry, scaly skin. Supplementation has been shown to alleviate such symptoms in individuals with confirmed deficiencies.

- Skin Elasticity and Texture: Studies utilising diagnostic tools such as the Antera 3D system have indicated improvements in skin texture and elasticity with biotin supplementation, especially when combined with other nutrients. However, these effects are more pronounced in cases where individuals had prior skin damage or deficiencies.

- Reduction of Skin Inflammation: In cases of biotin deficiency, inflammation-related skin issues such as rashes and redness have been observed. Supplementation can help resolve these symptoms, although such conditions are rare in populations with adequate nutrition.

- Potential Photodamage Repair: Some studies suggest that biotin, when combined with other compounds, may assist in reducing the visible effects of photodamage. These findings are preliminary and require further validation.

Limitations and Risks:

- Biotin supplementation is not universally effective for skin improvement in healthy individuals with no deficiency. Much of its reputed efficacy is anecdotal or tied to indirect mechanisms like enhanced lipid metabolism.

- High doses of biotin can interfere with laboratory tests, leading to false readings, particularly in tests involving thyroid function and cardiac markers.

Biotin plays a crucial role in maintaining skin health, particularly in preventing and addressing deficiencies. For those with normal levels, the evidence supporting its use for skin enhancement remains limited. Consultation with healthcare professionals is recommended before starting biotin supplementation to address specific skin concerns.

Links:
"Update on Biotin Therapy in Dermatology," Journal of Drugs in Dermatology
"Evaluation of Biotin and Skin Benefits," Longdom Journals
"Infatuation with Biotin Supplementation," Journal of Drugs in Dermatology

PYRIDOXINE HCL

Ingredient Claims:

Protects Against UV Damage	Strengthens Skin Barrier
Improves Skin Hydration	Soothes Irritation
Minimises Pigmentation	

Pyridoxine HCl, a water-soluble form of Vitamin B6, plays a critical role in numerous physiological processes, including skin health. Its effectiveness lies in its ability to regulate enzymatic reactions and influence cellular health. Recent research highlights its dermatological benefits, particularly in combating oxidative stress, improving hydration, and reducing hyperpigmentation.

Key benefits:

- Antioxidant Properties: Pyridoxine HCl enhances the skin's antioxidant defense by activating Nrf2, a transcription factor that increases the expression of antioxidant enzymes such as HO-1 and NQO1. This reduces oxidative stress and mitigates UV-induced damage, preventing premature skin ageing

- Improvement of Skin Barrier: Studies indicate that pyridoxine supports keratinocyte differentiation, leading to enhanced production of key proteins like keratin and involucrin. These improvements strengthen the skin's barrier function and promote overall skin resilience.

- Reduction in Pigmentation: Pyridoxine has demonstrated potential in reducing hyperpigmentation and preventing the appearance of age spots. It influences melanin production through its antioxidant actions and regulation of keratinocyte activity.

- Anti-inflammatory Effects: Pyridoxine exhibits anti-inflammatory properties by reducing the production of pro-inflammatory markers. This helps soothe irritated skin and manage conditions like eczema and acne.

- Enhanced Skin Hydration: Pyridoxine plays a role in improving the skin's hydration levels by supporting lipid metabolism and enhancing ceramide synthesis, which retains moisture within the epidermis.

Links:
Journal of Advanced Pharmaceutical Science and Technology: Pyridoxine's impact on Nrf2 activation and antioxidant defense
Dermatologic Research and Therapy: Anti-pigmentation and hydration effects of pyridoxine

THIAMINE HCL

Ingredient Claims:

Rejuvenates Skin	Strengthens Skin Barrier
Enhances Skin Recovery	Protects Against Environmental Stressors

Thiamine HCl, also known as vitamin B1, plays a vital role in cellular energy metabolism, which supports overall cell function and vitality. While its benefits for internal health are well-documented, its direct effects on the skin are less clear. Emerging studies suggest potential benefits for skin health, particularly in wound healing, cellular repair, and as a protective agent.

Key benefits:

- Wound Healing Support: Thiamine is involved in energy production, which is critical for cell proliferation and repair. Studies indicate that its role in collagen synthesis can enhance granulation tissue formation and healing in skin wounds.
- Barrier Function Maintenance: Thiamine contributes to the structural integrity of the skin barrier by supporting metabolic processes necessary for skin cell health.
- Potential Antioxidant Activity: Thiamine helps neutralise oxidative stress, which can reduce skin damage and promote healthier skin over time. This is particularly relevant for ageing or environmentally stressed skin.
- Insect Repellent Properties: While primarily explored as a mosquito repellent in topical formulations, this feature may add a protective benefit for skin in certain environments.

Links:
Role of Thiamine in Wound Healing: Journal of Surgical Research
Overview of Thiamine and Skin Health: CreamScan
General Health Impacts of Thiamine: VeryWell Health

INOSITOL

Ingredient Claims:

Antioxidant-rich to protect against UV-induced skin damage	Promotes hormonal balance, aiding in the reduction of acne
Reduces inflammation and supports healing in acne and other skin conditions	Chemopreventive potential to mitigate skin ageing and tumor formation
Enhances skin hydration and barrier function	

Inositol, a naturally occurring sugar alcohol, plays a crucial role in cellular signaling and membrane structure. Its importance in skin health stems from its antioxidant, anti-inflammatory, and cell-regulatory properties. This compound, commonly found as Myo-Inositol or its derivatives, is widely studied for its dermatological applications.

Key benefits:

- Antioxidant Protection: Inositol and its derivative, inositol hexaphosphate (IP6), protect skin cells from oxidative stress caused by UV radiation. Studies demonstrate its ability to reduce reactive oxygen species (ROS), mitigate DNA damage, and decrease skin aging and carcinogenesis risks by influencing apoptosis and the cell cycle (e.g., halting damaged cells from proceeding to mitosis).

- Anti-Inflammatory Effects: Inositol exhibits anti-inflammatory properties, potentially beneficial in conditions like psoriasis, acne, and seborrheic dermatitis. It helps modulate cytokines like TNF-a and IL-17, which are involved in inflammatory pathways associated with skin disorders.

- Hormonal Regulation: By influencing hormonal pathways, inositol may alleviate symptoms of hormonal acne and hirsutism, especially in individuals with conditions like polycystic ovary syndrome (PCOS). This regulation may contribute to balanced sebum production and fewer acne breakouts.

- Skin Barrier Support: Inositol enhances cell membrane integrity and osmoregulation, contributing to better hydration and resilience of the skin barrier. This is particularly relevant in maintaining skin's natural moisture balance and preventing dryness.

- Potential Anti-Cancer Properties: Inositol and IP6 have shown promise in reducing the risk of skin tumor formation by promoting DNA repair and reducing cell proliferation caused by UV radiation. These protective effects highlight its potential as a chemopreventive agent in dermatology.

Links:
Vucenik, I., et al. Clinical Cancer Research. 2007
Journal of Integrative Dermatology. Systematic Review on Inositol. 2023
https://www.paulaschoice.com/ingredient-dictionary/ingredient-inositol.html
Frontiers in Pharmacology. Myo-Inositol Review. 2019

RIBOFLAVIN

Ingredient Claims:

Antioxidant Support	Skin Repair
Anti-Inflammatory	Photodynamic Therapy Agent
Anti-Ageing	

Riboflavin (Vitamin B2) is a water-soluble vitamin essential for various cellular processes, particularly in energy production and antioxidant defense. Its benefits for skin health stem from its ability to support cellular regeneration, reduce oxidative stress, and combat inflammation.

Key benefits:

- Antioxidant Properties: Riboflavin plays a key role in maintaining the skin's antioxidant defense mechanisms by influencing the glutathione redox cycle. This helps neutralise reactive oxygen species (ROS), reducing oxidative stress and protecting skin cells from damage caused by environmental factors such as UV radiation.

- Support for Healthy Skin Function: Riboflavin contributes to the maintenance of healthy skin by promoting the repair of damaged tissues. It enhances the activity of antioxidant enzymes like superoxide dismutase (SOD) and catalase (CAT), which are essential for skin vitality and resilience.

- Potential in Photodynamic Therapy (PDT): Derivatives of riboflavin are being explored in photodynamic therapy for conditions such as skin cancer. They serve as photosensitizers, generating reactive oxygen species upon light activation to target cancer cells with precision, leaving surrounding healthy tissues unharmed. This application underscores riboflavin's role in therapeutic dermatology.

- Reduction of Inflammatory Skin Conditions: Studies indicate riboflavin may help alleviate inflammation associated with various skin conditions, potentially through its effects on reducing inflammatory biomarkers and oxidative stress.

- Anti-Ageing Benefits: By mitigating oxidative damage and supporting cell regeneration, riboflavin helps delay signs of ageing, such as fine lines and wrinkles. It preserves collagen integrity and combats the effects of free radicals on skin elasticity and texture.

Links:
Suwannasom, N., et al. Riboflavin: The health benefits of a forgotten natural vitamin. International Journal of Molecular Sciences, 2020
Yang, M.-Y., et al. Low-dose blue light irradiation enhances the antimicrobial activities of curcumin and riboflavin derivatives. International Journal of Photobiology, 2021.
Shining Light on Skin Cancer: Riboflavin derivatives as promising photosensitizers in photodynamic therapy. Journal of Dermatological Therapy, 2023

CYANOCOBALAMIN

Ingredient Claims:

Anti-inflammatory agent for sensitive skin	Promotes brighter, even-toned skin
Supports skin hydration and barrier repair	Aids in reducing signs of ageing

Cyanocobalamin, a synthetic form of vitamin B12, plays a vital role in skin health through its antioxidant, anti-inflammatory, and reparative properties. It supports DNA synthesis, red blood cell production, and neurological function, all of which contribute indirectly to skin vitality.

Key benefits:

- Anti-Inflammatory Effects: Helps soothe inflamed or irritated skin by modulating inflammatory pathways. This makes it particularly useful for conditions like acne or eczema.
- Skin Brightening: Reduces hyperpigmentation and uneven skin tone by promoting cellular repair and inhibiting melanin overproduction.
- Barrier Function Support: Enhances the skin's moisture retention and barrier protection against environmental stressors.
- Wound Healing: Accelerates recovery from minor wounds or skin damage by supporting collagen synthesis.
- Anti-Ageing: Mitigates oxidative stress, preserving skin elasticity and reducing fine lines.

Links:
Suwannasom, N., et al. Riboflavin and B Vitamins in Dermatology. International Journal of Molecular Sciences, 2020.
Journal of Dermatology. Vitamin B12 in Photodynamic Therapy. 2023.
Clinikally. Vitamin B12 & Cyanocobalamin: Revolutionizing Skincare. 2023.

*mg/kg