

# Vitamin C Spheres

## Summary of Scientific Evidence

**MedSkin  
Solutions**

**Dr. Suwelack**



# Agenda

## Summary of Scientific Evidence Vitamin C Spheres

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- ◊ Active Ingredients
- ◊ Mode of Action
- ◊ Scientific Studies
- ◊ Proven Anti Blue Light Damage Properties of Mannitol
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# Vitamin C Spheres

Vitamin C Sphere is a freeze-dried, high-performance concentrate for global skin rejuvenation. Pure L-ascorbic acid in highly concentrated form is embedded in a 3D-cellulose polymer matrix. Vitamin C Spheres are freshly activated in the moment of use.

## At a Glance

### Key Facts

- ✓ 3D-Polymer Matrix
- ✓ Actives: L-Ascorbic Acid
- ✓ pH: 2.4 (Spheres)  
3.7 (with Activation Liquid 15SF)
- ✓ Leave-on
- ✓ Professional & Home usage
- ✓ Free of parabens, fragrances, mineral oils, silicones & colorants
- ✓ 100% highly pure

INCI Spheres:  
Ascorbic Acid, Polyquaternium-10, Simmondsia Chinesis (Jojoba) Seed Oil

INCI Activating Liquid:  
Aqua, Glycerin, 1,5-Pentanediol, Sodium Lactate, Lactobacillus Ferment



# It's all about the skin



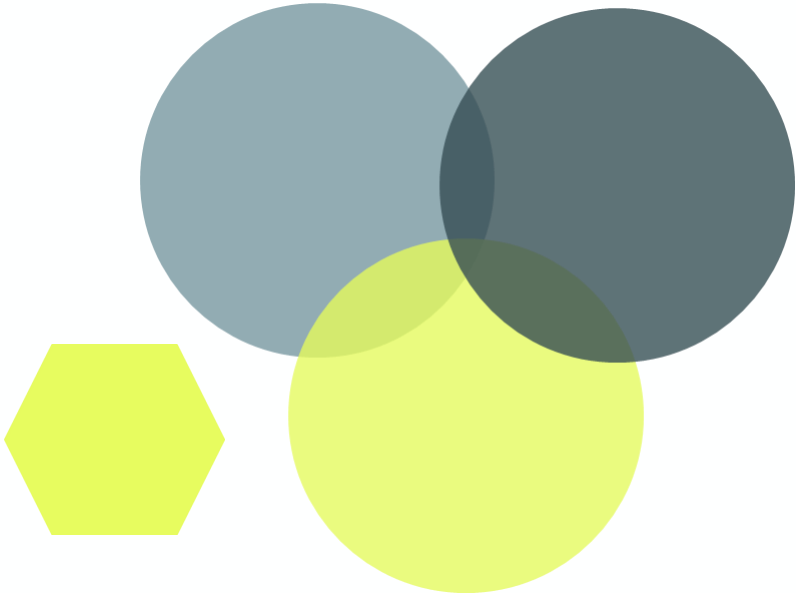
# Introduction

During the aging process, the collagen synthesis decreases, wrinkles are formed and the skin gets more age spots. Light intensifies the process and makes the skin look visibly older. Young and healthy skin contains high concentrations of Vitamin C, which supports important and well-known functions, stimulating collagen synthesis and assisting in antioxidant protection against UV-induced photo damage. Several reports have indicated that Vitamin C levels are lower in aged or photo damaged skin. Excessive exposure to oxidant stress via pollutants or UV irradiation is associated with depleted Vitamin C levels in the epidermal layer. More Vitamin C is found in the epidermal layer than in the dermis, with differences of 2–5-fold between the two layers being consistently reported.

There is a suggestion that Vitamin C in the stratum corneum layer of the epidermis exists in a concentration gradient: The lowest Vitamin C concentration was present at the outer surface of the epidermis, with a sharp increase in concentration in the deeper layers of the stratum corneum, possibly reflecting depletion in the outer cells due to chronic exposure to the environment.





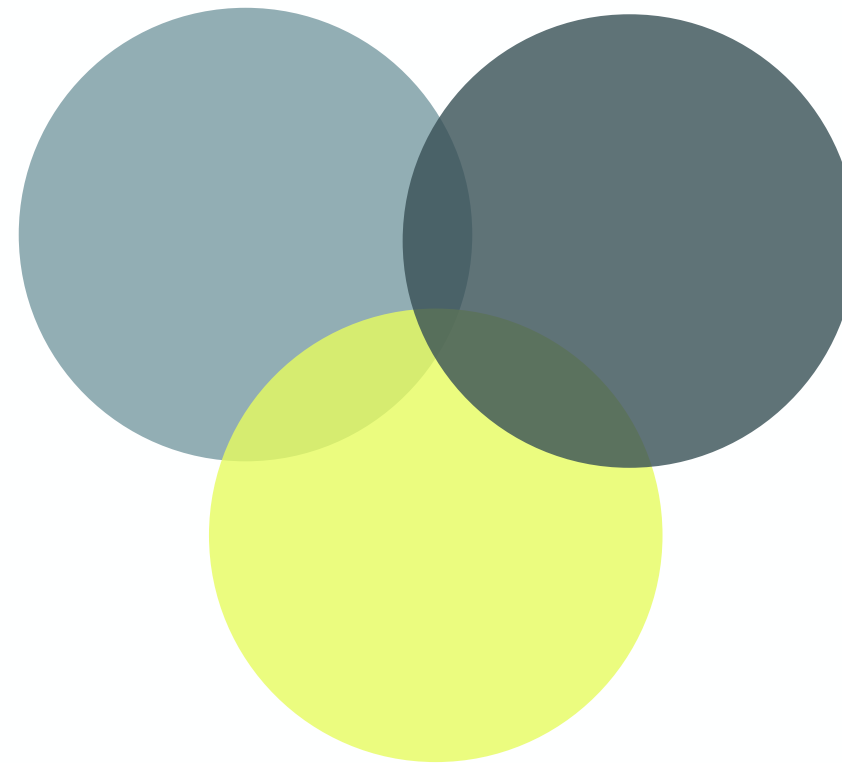


# Ingredients explained in short

Ingredient	Function in cosmetic products	What that means
Ascorbic Acid	Antioxidant	Supports the skin in essential functions and contributes to a healthy, beautiful skin
Polyquaternium- 10	Film Former	Anti-static agent, film former and fixative
Simmondsia Chinensis (Jojoba) Seed Oil	Occlusive	Similar to the protective layer of human skin, supporting hydration
Glycerin	Humectant	Preserves skin moisture
1,5-Pentanediol	Solvent	Moisturizing ingredient with good solubilizing properties
Sodium Lactate	Humectant	Moisturizes and exfoliates. Minimizes pH changes of a solution
Lactobacillus Ferment	Skin Conditioning	Conditions skin

# Vitamin C

## Hero active ingredient



# Vitamin C



## Hero Active Ingredient

Vitamin C, a water-soluble and charged molecule, can be delivered into the epidermis layer by topical application. The effectiveness depends on the formulation. Penetration only occurs at a pH below 4 when Vitamin C is present as L-ascorbic acid. L-ascorbic acid (LAA) is the chemically active form of Vitamin C. Although far less stable than its derivatives, pure ascorbic acid is far more active because it does not first have to undergo hydrolysis to turn it into the active form (see next slide).

Vitamin C is known for its antioxidative properties. It neutralizes and remove radicals to prevent oxidative damage to skin. In addition, it reduces melanin synthesis due to its ability to interfere with the action of tyrosinase. The reduction in melanin synthesis is used to treat skin hyperpigmentation in conditions such as melasma or age spots. Besides, L-Ascorbic acid acts as a co-factor for enzymes that stabilize the collagen molecule structure and promotes collagen synthesis. Vitamin C also accelerate differentiation of keratinocytes, ensuring the function of the skin barrier and preventing skin water loss. All this leads to an improvement of elasticity, skin firmness, wrinkle depth, skin roughness, skin tone and radiance.

[4] Shindo et al., Journal of Investigative Dermatology 102, 1994. [5] Humberg et al., Experimental Dermatology; 12, 2003. [6] Nuygens et al., Journal of Investigative Dermatology 116, 2001. [7] Smith, International Journal of Cosmetic Science 21, 1999. [8] Savini et al., Journal of Investigative Dermatology 118, 2002. [9] Pinnell et al., Dermatologic Surgery; 27: 137-42, 2001.



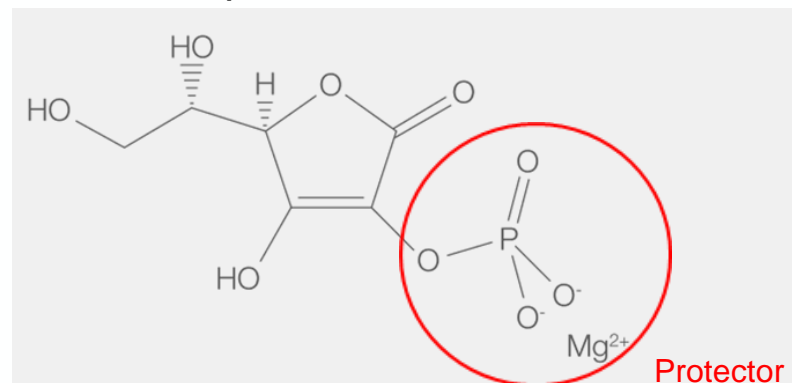
# Detailed Product Information

## Vitamin C Spheres compared to Derivates

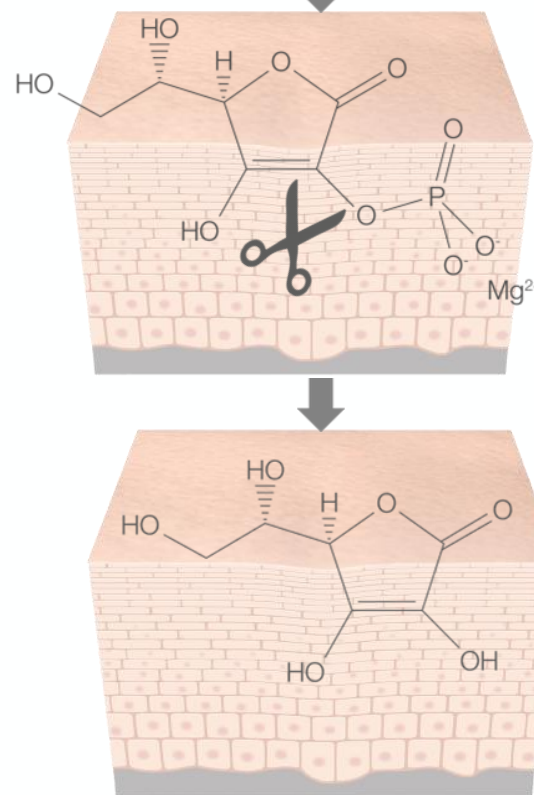
### L-Ascorbic Acid Derivates

Linked to protector

Before  
Application



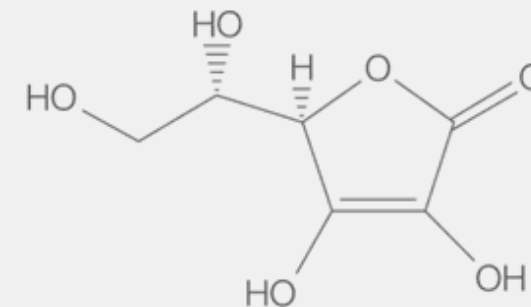
Application



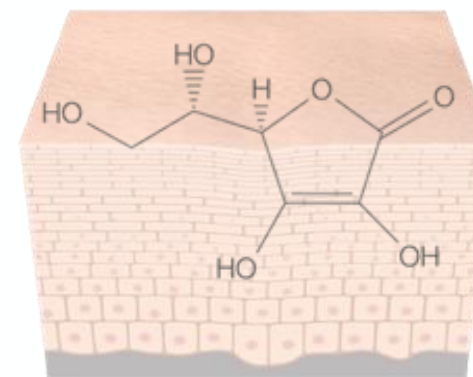
→ Delayed activity due to hydrolysis of L-Ascorbic Acid derivates in skin!

### HiCon® High Concentrated Vitamin C

Protected by Advanced CryoSafe™ Method



Instant activation before application



→ Directly active and functional!



# Detailed Product Information

## Vitamin C Spheres

### Strong Advantages our Vitamin C Spheres

The Advanced CryoSafe™ Method enables the stabilization of pure L-Ascorbic Acid without the need of stabilizing it with derivatives.



Water free form ensures activity upon activation.



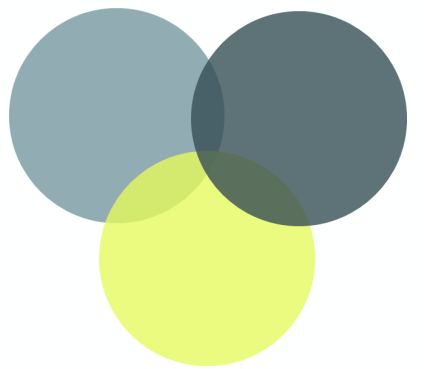
Preserved Vitamin C in its most reactive form (pure L-Ascorbic Acid).



Directly available to the skin – faster (no enzymatically cleavage step required).

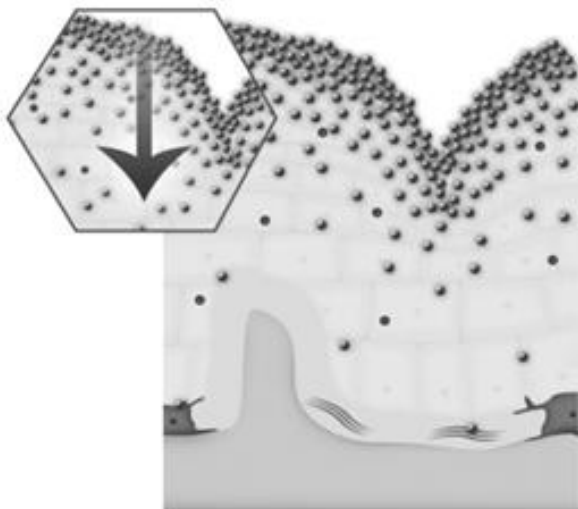
# Mode of Action





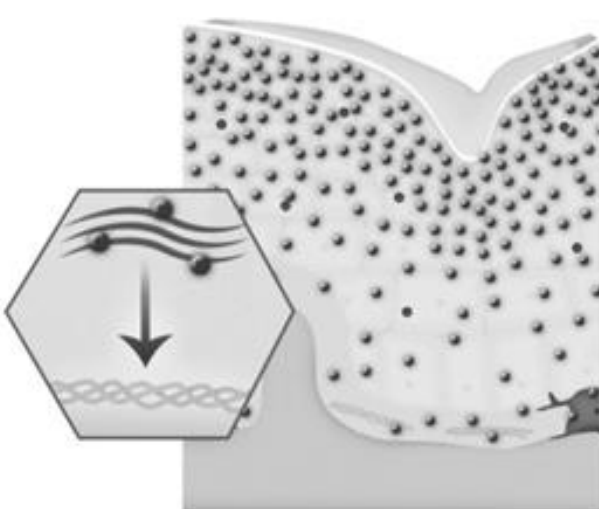
# Mode of Action

## Application & Release



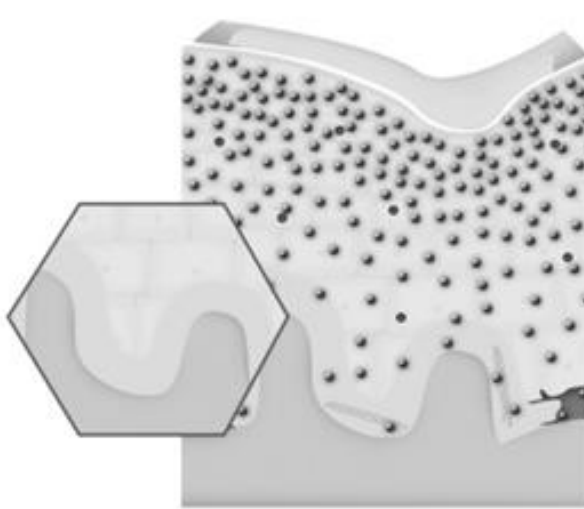
- Commencement of 4-fold Action of Vitamin C with High Concentrated Power.
- Vitamin C Sphere activated with **Activation Liquid 15SF** as serum on skin.
- High surface concentration of Vitamin C acts as a reservoir

## Stimulation of Collagen Synthesis



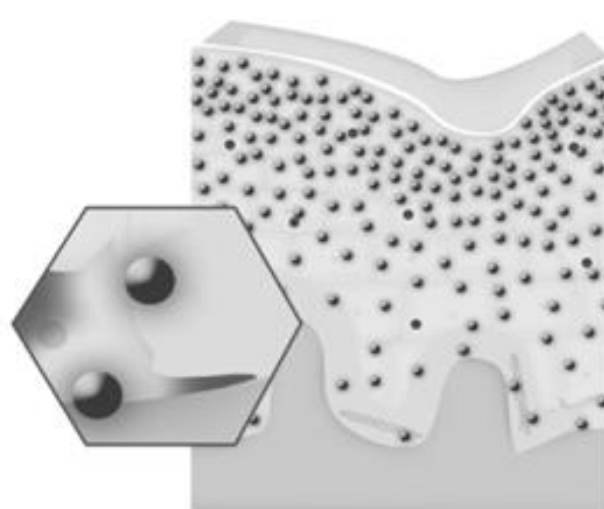
- Sustainable penetration of Vitamin C into deeper skin layers.
- 1st Benefits:**
  - Smoothed lines and wrinkles.
  - Reduction of line and wrinkle depth.
  - Increase in skin elasticity.

## Stimulation of Cell Metabolism



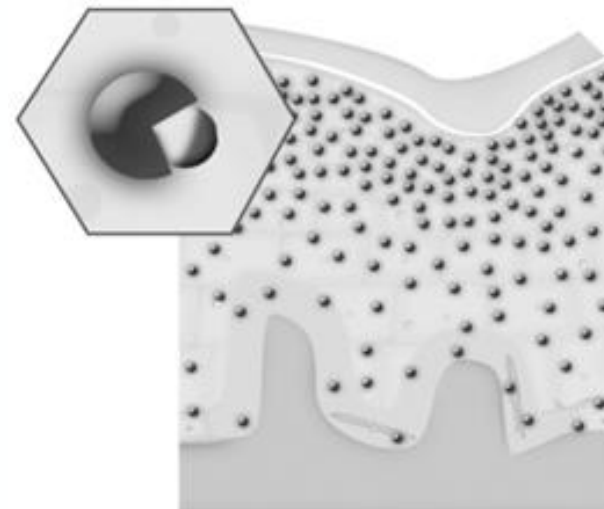
- Deep penetration promotes acceleration of skin renewal cycle.
- 2nd Benefits:**
- Increase in skin firmness.
  - Increase in cell renewal rate.

## Tyrosinase Inhibition

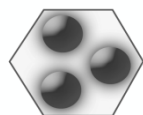


- Blockage of melanin synthesis.
- 3rd Benefits:**
- Reduction of pigmentation spots.
  - More even skin tone.
  - Improved radiance.

## Neutralization of Free Radicals



- Anti-oxidative protection.
- 4th Benefits:**
- Immediate free radical neutralization.
  - Prevention of new free radical formation.

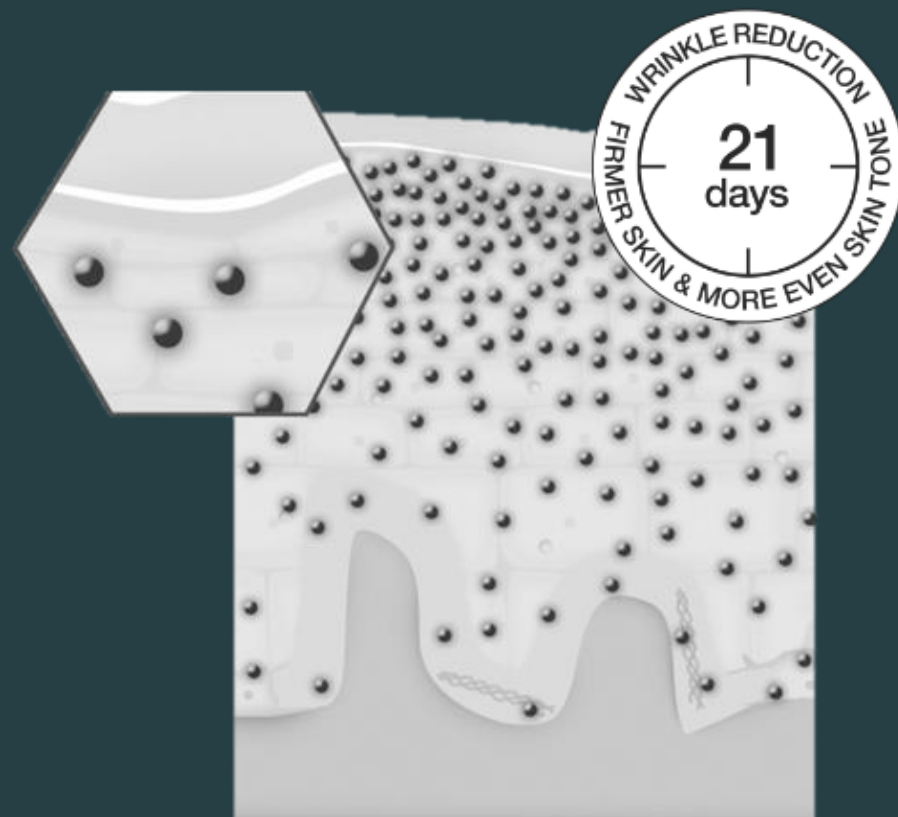


Vitamin C

# Benefits

HiCon® High Concentrated Vitamin C

Rejuvenated Skin



**Protected from free radicals  
(anti-oxidative power)**

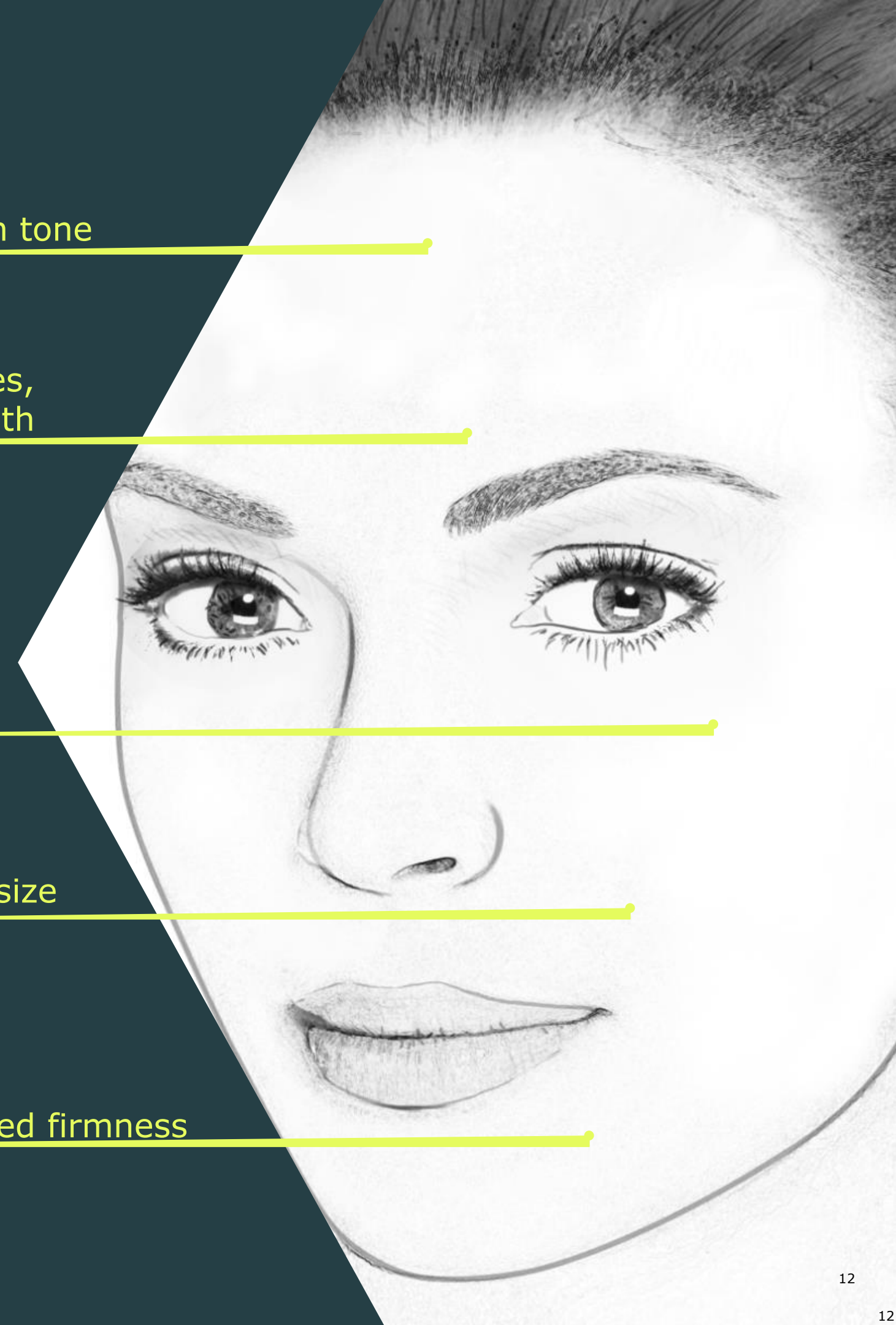
Harmonized skin tone

Smoothed lines and wrinkles,  
reduced wrinkle depth

Boosted radiance

Decreased pore size

Increased elasticity / improved firmness





# Scientific Studies



# Scientific Studies



Scientific Evaluation of Vitamin C Penetration



Scientific Evaluation of Anti-oxidative Potential of Vitamin C



Controlled Dermatological Study

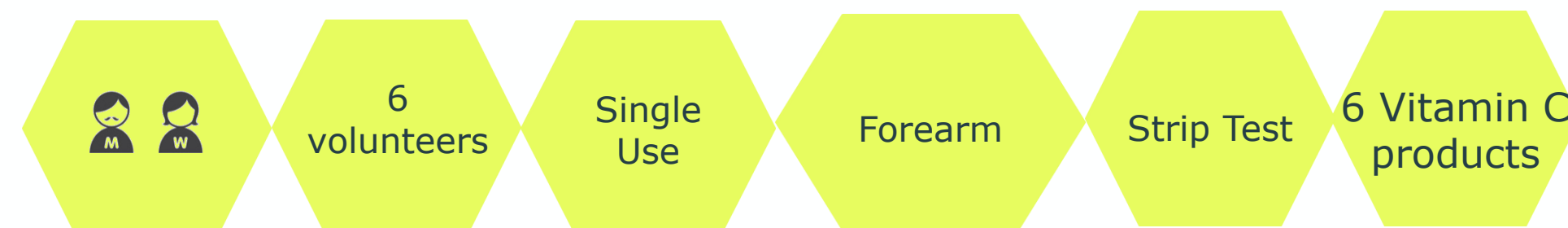


Ophthalmological Examination



Patch Test

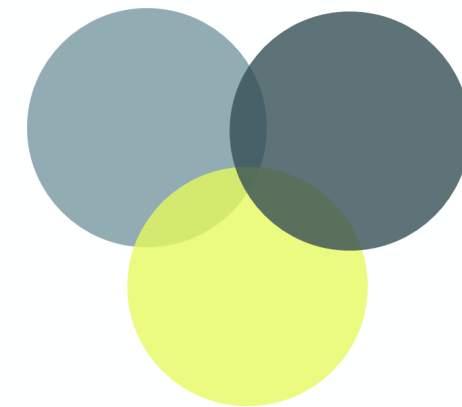
# Proven Penetration of Vitamin C



**Study title:** Ex-vivo definition of the penetrated amount of Vitamin C using the tape-stripping method combined with high-performance liquid chromatography (HPLC).

**Study Center:** In House Study, MedSkin Solutions Dr. Suwelack, 2011

**Parameter:** Determination of Penetration Level of Vitamin C



# High surface concentration of Vitamin C acts as a reservoir

## **Method:**

Strip Test with HPLC Analysis

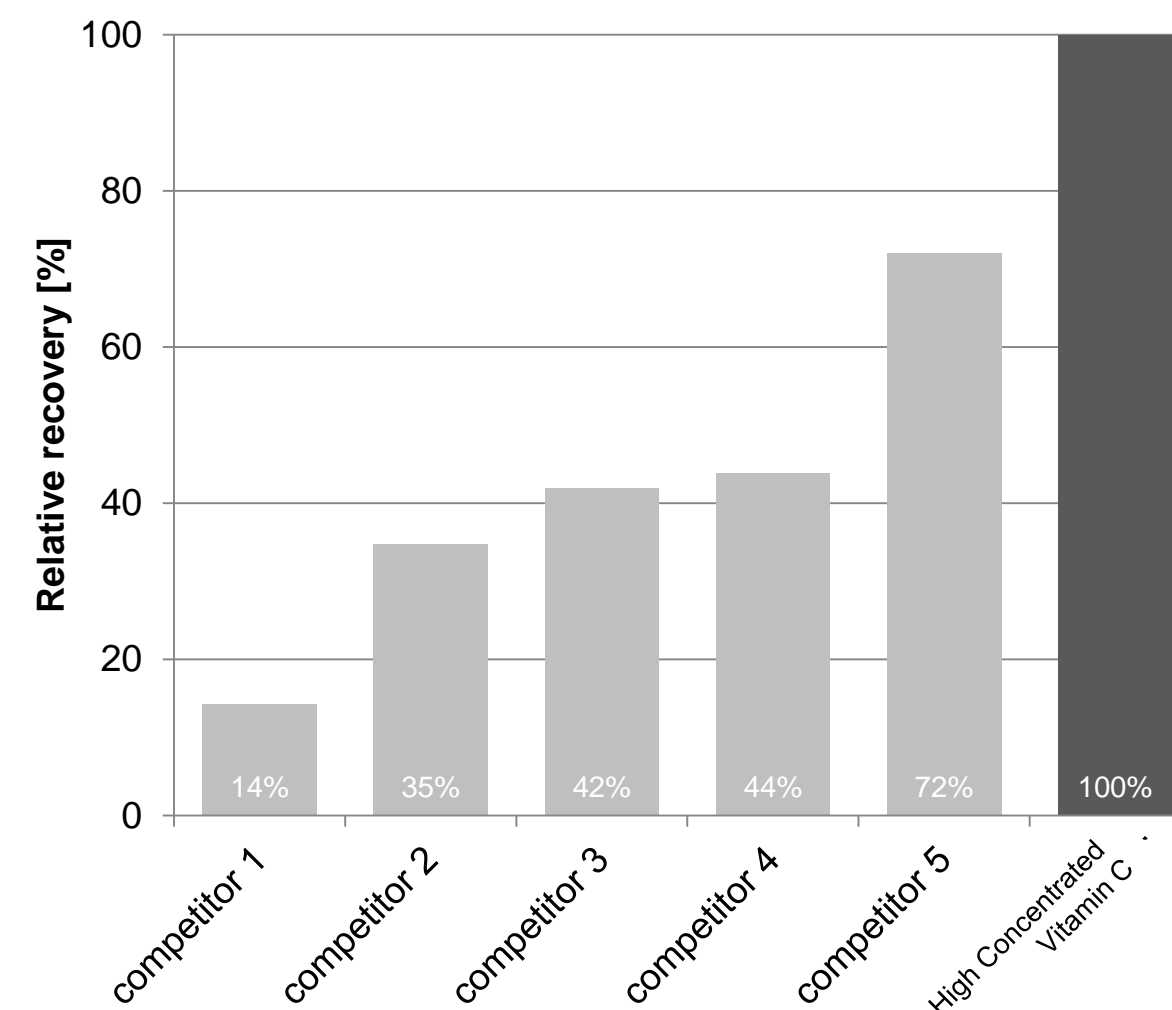
## **Results:**

- 30 minutes after application: highest amount of Vitamin C was found in the areas where Vitamin C Sphere was applied.
- The concentration of active ingredients was almost 30% higher with Vitamin C Sphere than with the second best serum

## **What that means:**

This indicate better penetration of active Vitamin C with the Vitamin C sphere formulation compared to competitor products.

High Penetration Concentration



Relative recovery - % vitamin C found on strips in relation to High Concentrated Vitamin C.



# Proven Anti-oxidative Potential of Vitamin C

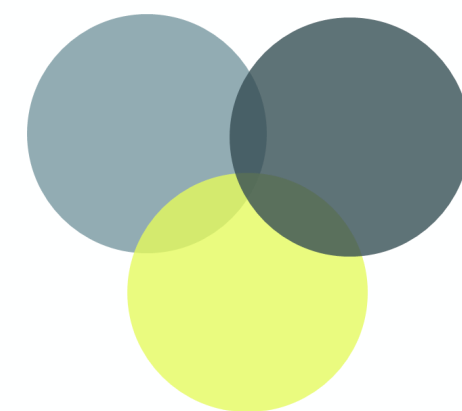


**Study title:** Determination of the Antioxidative Power (AP) of cosmetic products.

**Study Center:** Gematria, Germany, 2013

**Parameter:** Determination of Skin Antioxidative Power (SAP) and Skin Antioxidative Potential (SAR)





# Proven Anti-oxidative Potential of Vitamin C

## **Method:**

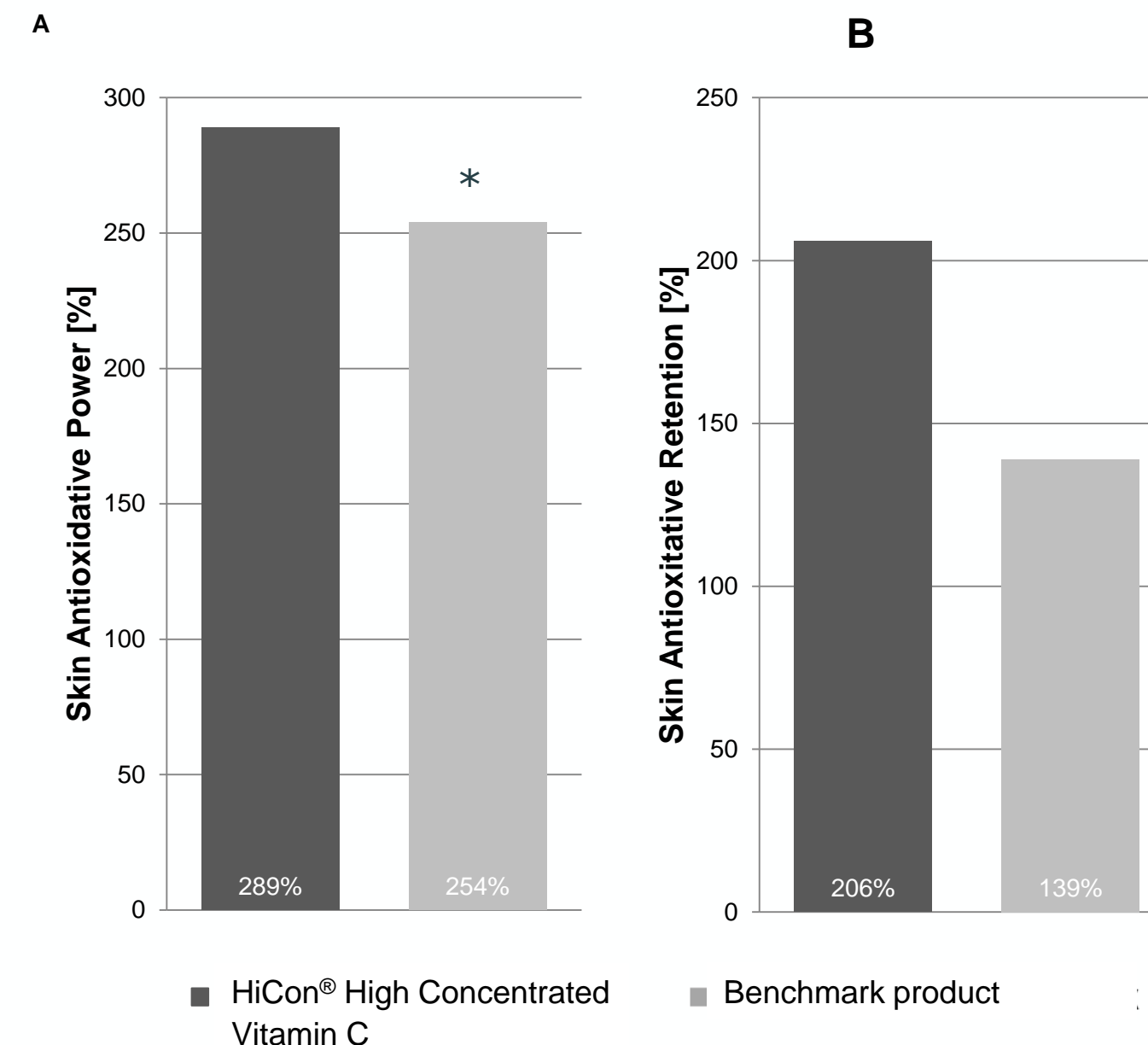
- Skin Antioxidative Power (SAP), Skin Antioxidative Retention (SAR)

## **Results:**

- Vitamin C sphere showed an increase of SAP by 289%, which is statistically significant better than of the benchmark product..
- SAR value was found to be 206%. The benchmark product showed a significant lower value (139%).

## **What that means:**

- The Vitamin C Sphere product shows a high protection against UV-induced free radicals.



# Cotrolled Dermatological Study



**Study title:** Clinical-dermatological application study in 22 volunteers with application for a period of eight weeks

**Study centre:** Dermatest GmbH, Germany, 2013

**Parameter:** Determination of



skin roughness/  
wrinkle depth  
PRIMOS



skin elasticity  
Cutometer



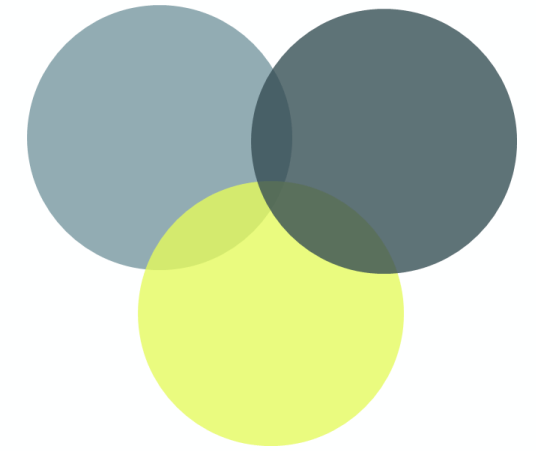
Expert Evaluation  
Visual Analog Scale



User Satisfaction  
Questionnaire

**Overall Tolerancy:** 20 out of 22 participants in the study tolerated the product very well. One study participant completed the study after four weeks despite very good tolerability. Another subject experienced unwanted skin reaction but no medical treatment was necessary.

# Long lasting skin smoothing effect



## **Method:**

- PRIMOS (skin roughness)

## **Results:**

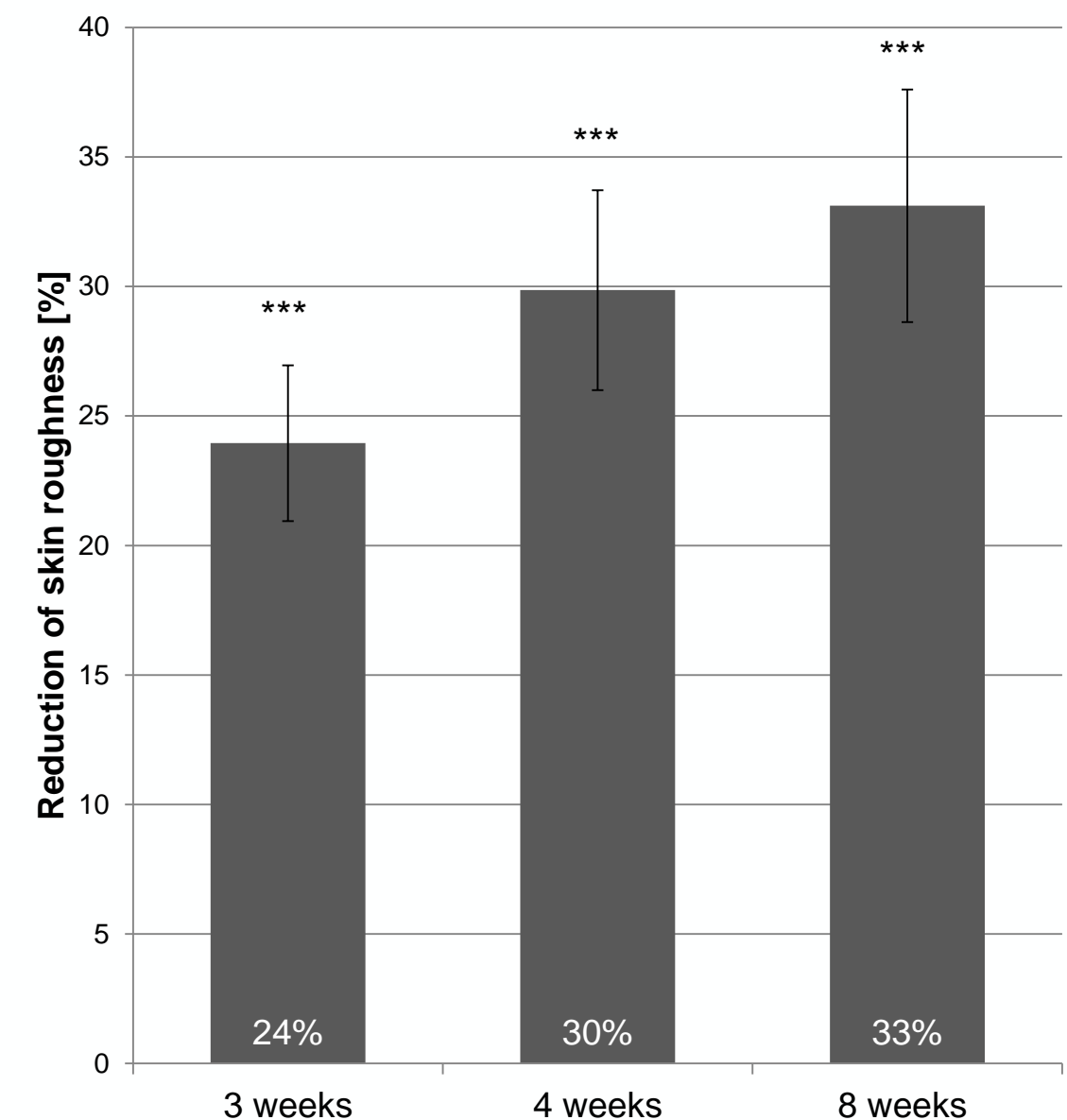
- Vitamin C Sphere has a positive and significant effect on skin roughness.
- After 3 week: Improvement of 24 %
- After 4 week: Improvement of 30 %
- After 8 week: Improvement of 33 %

## **What that means:**

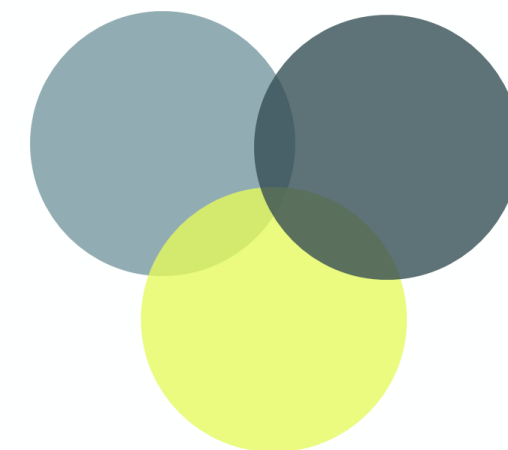


- Significant reduction of skin roughness for a long lasting skin smoothing effect. The skin appears younger!

## **Intense skin smoothing**



# Reducing wrinkle depth



## **Method:**

- ◊ PRIMOS (skin roughness)

## **Results:**

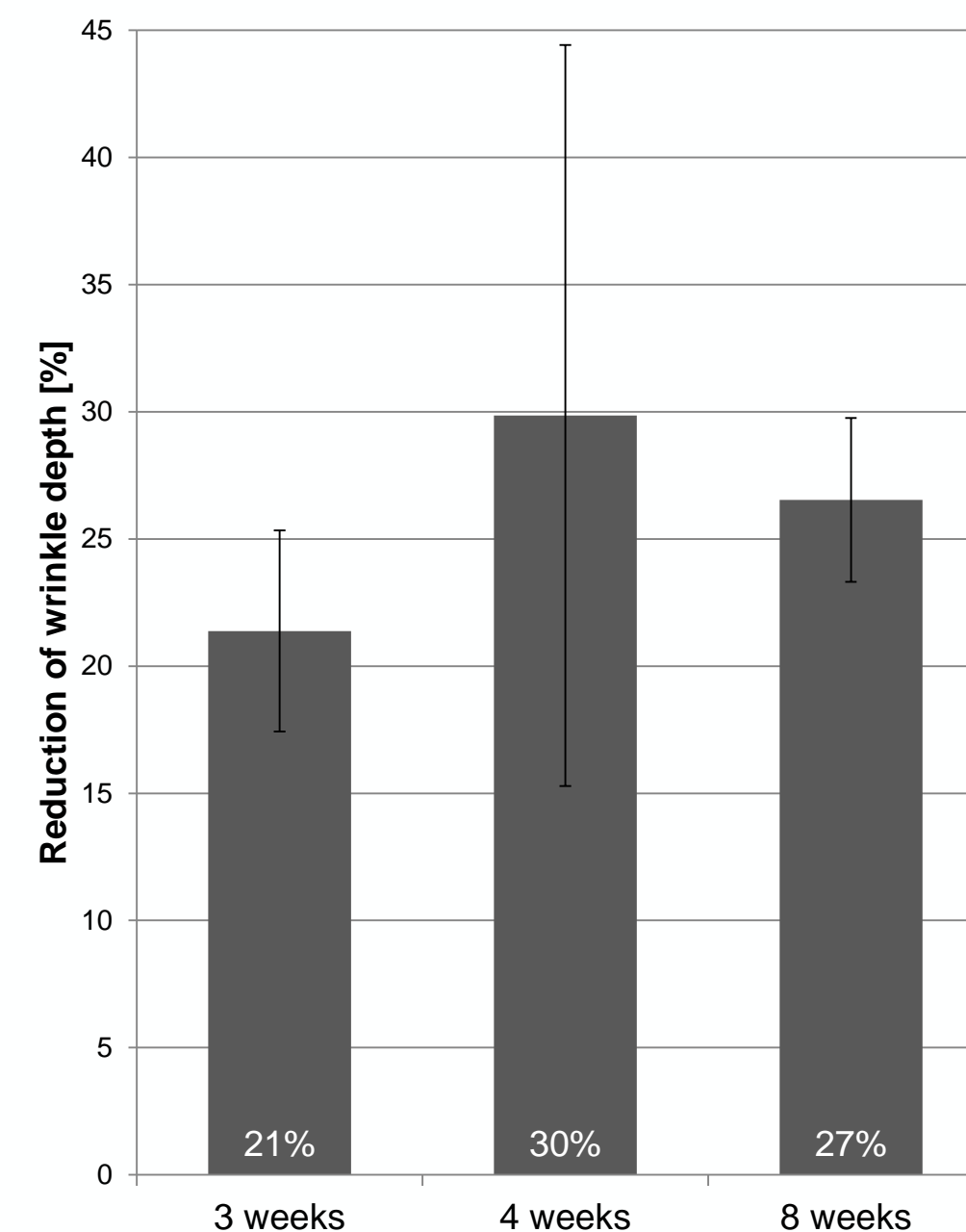
- ◊ Vitamin C Sphere has a positive and significant effect on skin roughness.
- ◊ After 3 week: Improvement of 24 %
- ◊ After 4 week: Improvement of 30 %
- ◊ After 8 week: Improvement of 33 %

## **What that means:**

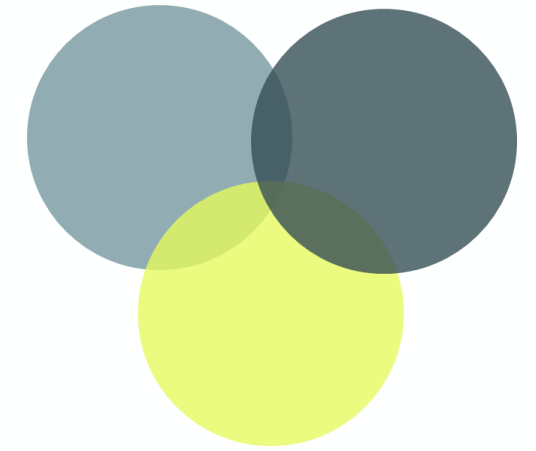


- ◊ Significant reduction of skin roughness for a long lasting skin smoothing effect. The skin appears younger!

## **Intense skin smoothing**



# Long lasting skin firming effect



## **Method:**

- Cutometer (skin elasticity)

## **Results:**

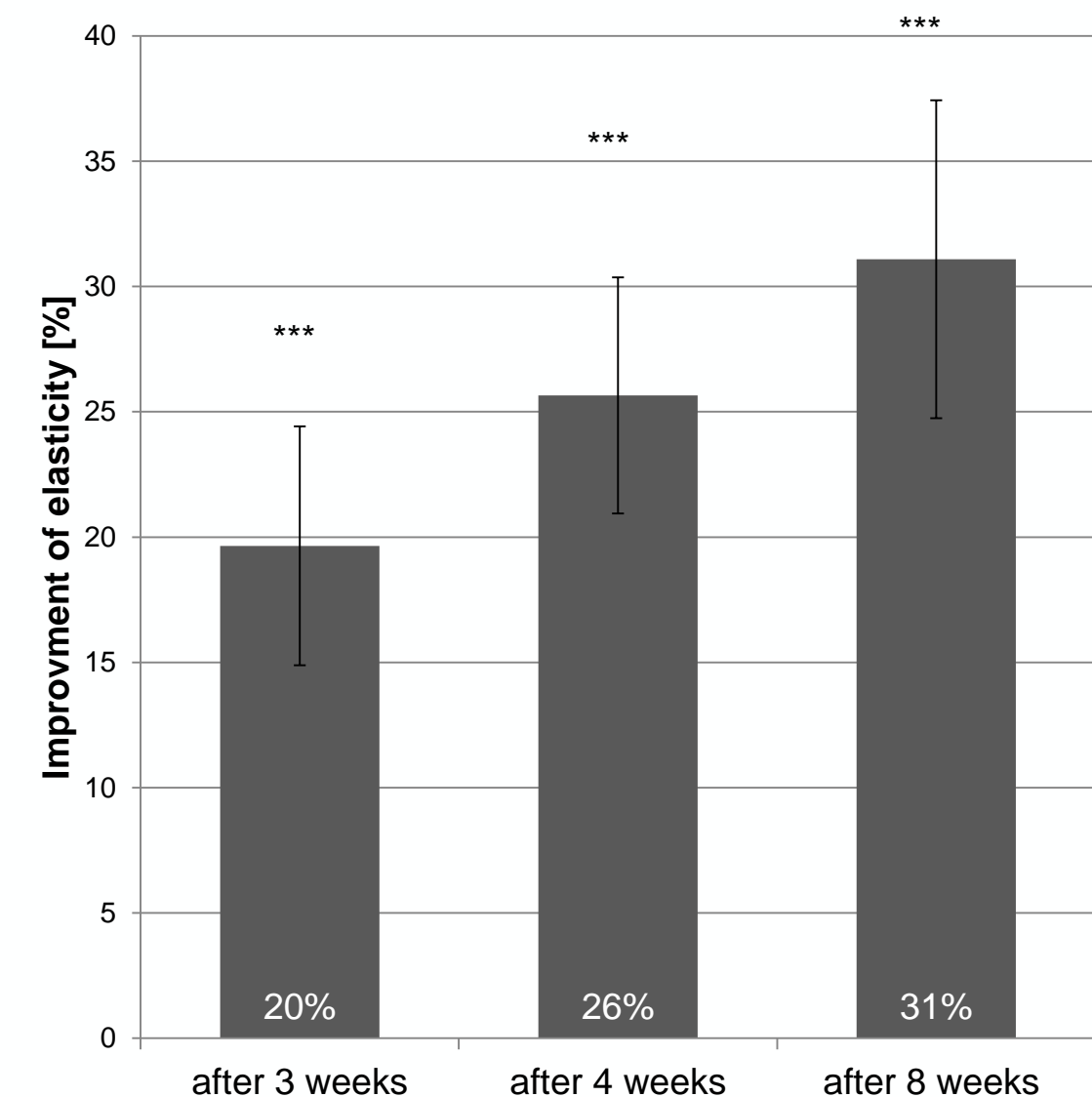
- Vitamin C Sphere has a positive and significant effect on skin elasticity.
- After 3 week: Improvement of 20 %
- After 4 week: Improvement of 26 %
- After 8 week: Improvement of 31 %

## **What that means:**



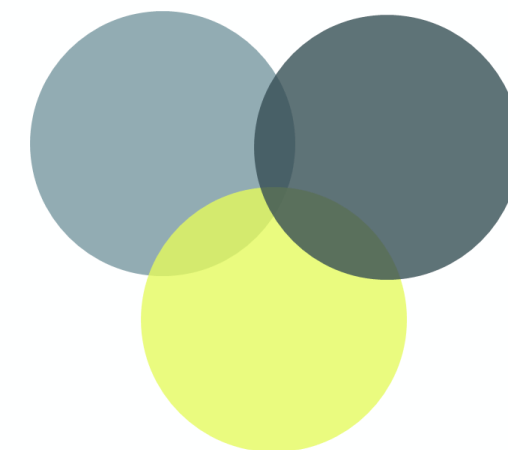
- Significant reduction of skin elasticity for a long lasting skin firming effect. The skin appears younger!

## **Intense skin firming**





# Improvement of skin appearance



## Improved skin appearance

### Method:

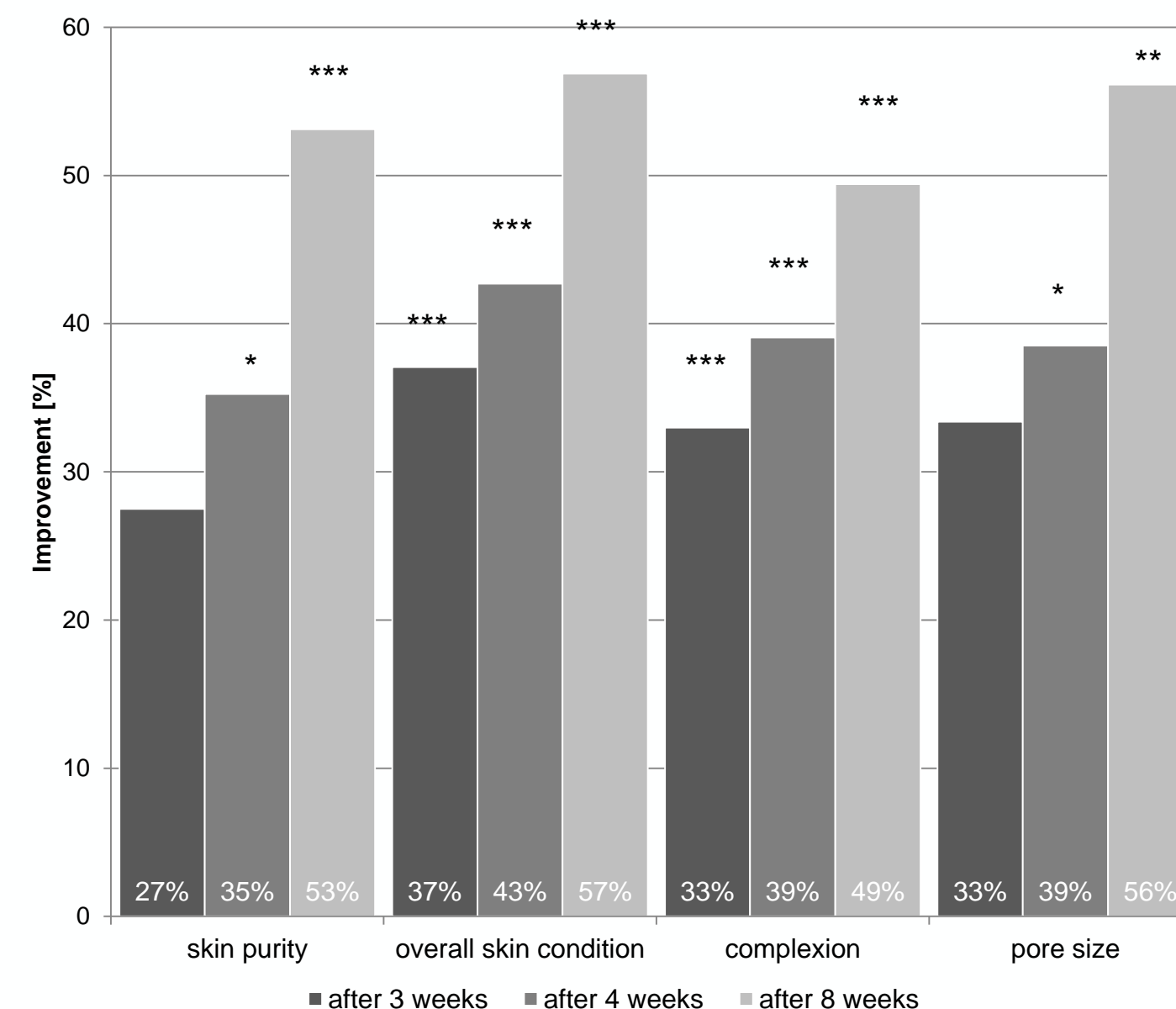
- Expert Rating Scale (Visual analog scale (VAS))

### Results:

- Vitamin C Sphere has a positive effect on skin appearance parameter.
- Skin purity improved up to 53%
- General skin condition improved up to 57%
- Skin complexion improved up to 49%
- Pore size improved up to 56%

### What that means:

- The skin looks refreshed, revitalized and smoothed. The skin has a harmonized skin tone and even complexion.



# User Satisfaction

## Method:

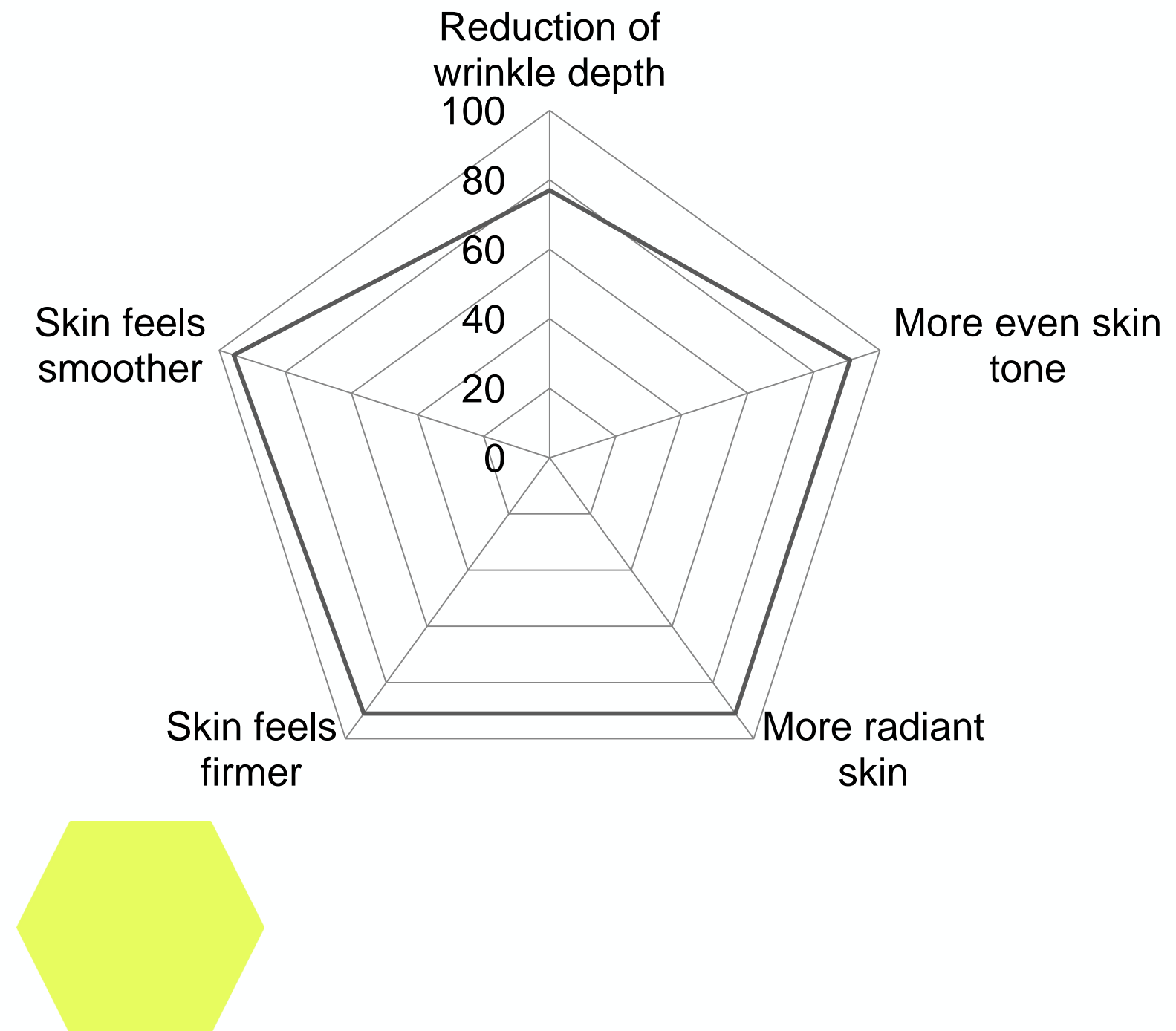
- Participant Questionnaire after 3 weeks of once daily use

## Results:

- Vitamin C Sphere has a positive effect on subjective skin feeling and appearance.
- The skin tone looks more even (91 %), the skin is more radiant (91%), the skin feels smoother (96%) and firmer (91 %), fine lines and wrinkles are reduced (77 %)

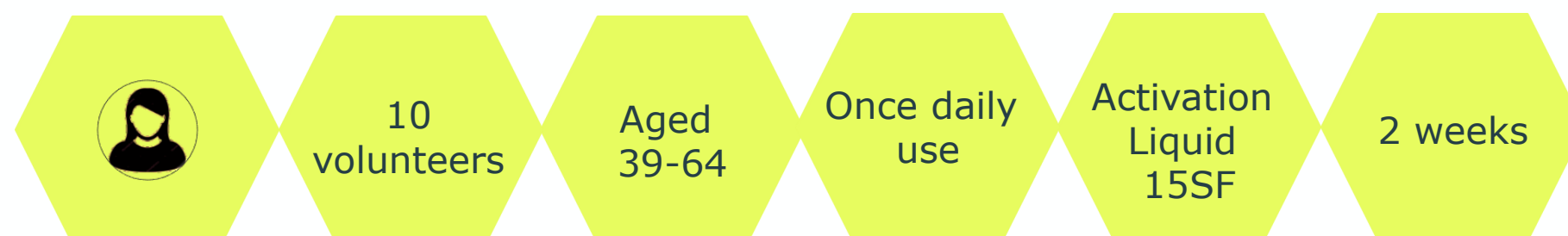
## What that means:

- Firmer skin
- Reduced wrinkle depth
- Harmonized skin tone





# Ophthalmological Examination



**Study title:** Controlled User Test of the Product - Ophthalmological test

**Study centre:** Derma Consult GmbH, Germany, 2013

**Protocol:** Product applied once daily for 2 weeks;  
Examination of the eye and eye region by an ophthalmologist

**Result:** No subject reported either subjective or objective eye and eyelid irritation (neither tearing, reddening nor scaling). Examination of the eye ground showed no irritant contact conjunctivitis with chemosis to be present at any of the subjects. Additionally, none of the volunteers reported any form of irritations or discomfort.





# Patch Test



**Study title:** Test for primary skin irritation and hypersensitivity of human subjects after single application

**Study centre:** Dermatest GmbH, Germany, 2013

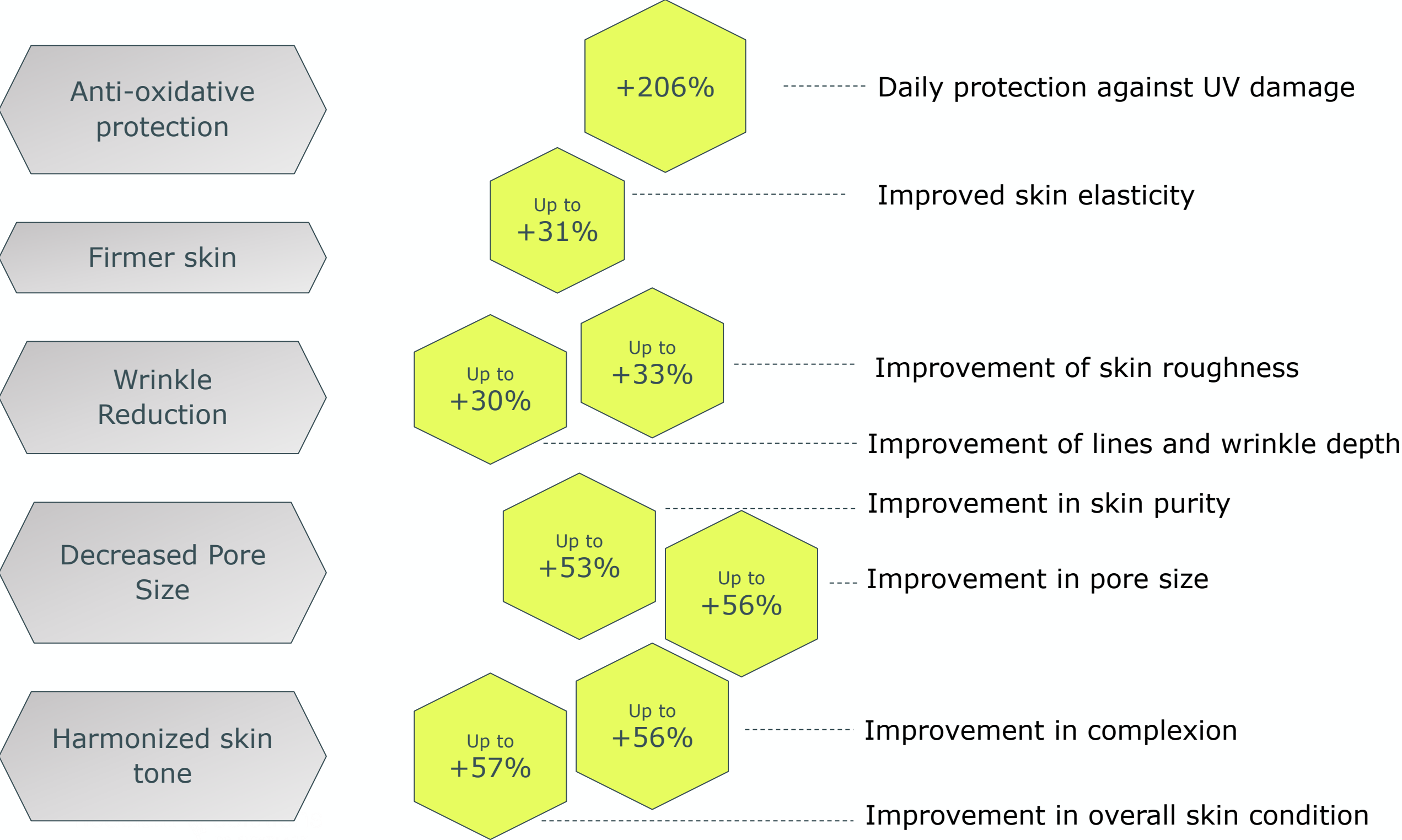
**Protocol:** Application of the product for 24, 48 and 72 hours under occlusion



**Result:** Evaluation of the test areas 30 min after completion of the occlusion

None of the individuals reacted to the test product according to the internationally recognised guidelines of ICDRG (International Contact Dermatitis Research Group). It can be concluded that the use of the product will not cause any unwanted skin reactions due to an irritating effect.

# Summary





# Thank you for your attention

Our proprietary Advanced CryoSafe™ Method preserves and refines the natural properties of biomaterials. Our science-based Specialty Care solutions demonstrate excellence through superior efficacy and optimal skin compatibility.



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