Phytosan™ K

Anti-photoaging and skin regeneration

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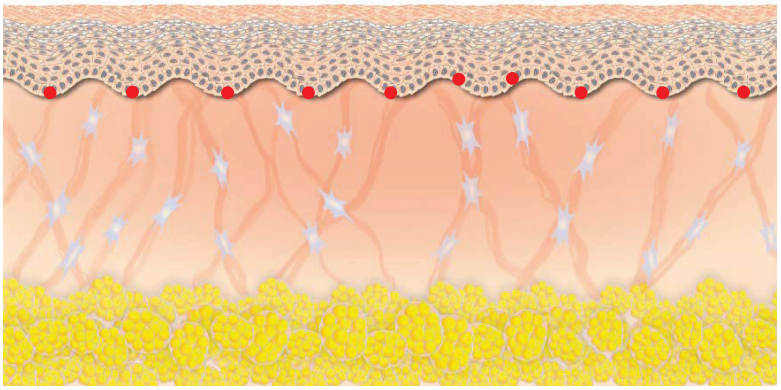
Skin aging starts in the skin cells



Accumulation of cellular damage

Time: biological aging

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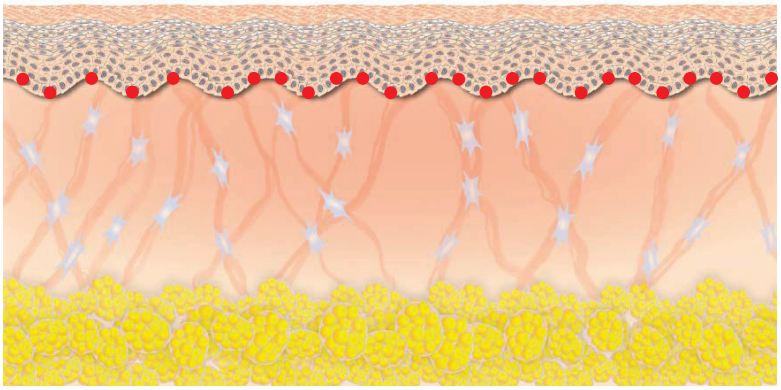
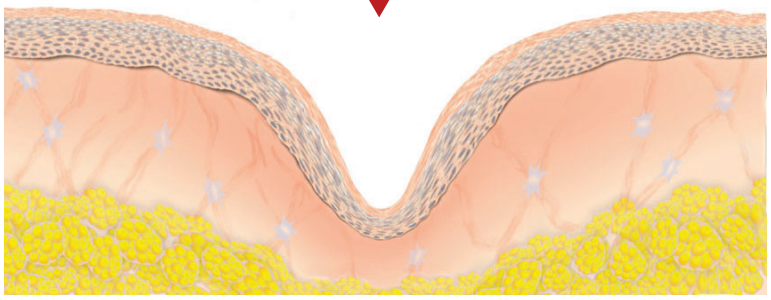
Skin aging starts in the skin cells



Stronger and quicker accumulation of cellular damage

Sunlight: photoaging, accelerated aging



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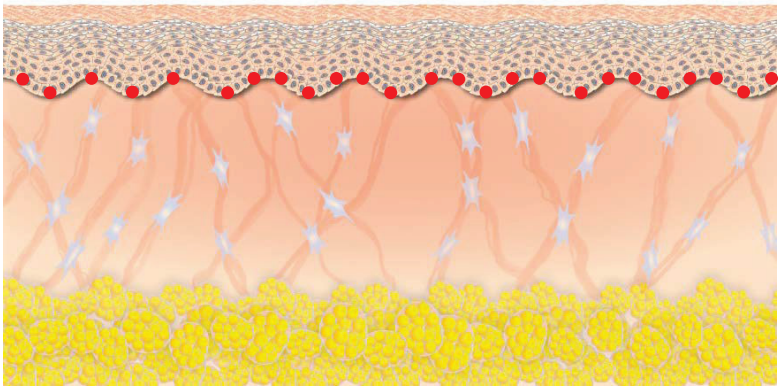
Phytosan™ K: repair and regeneration



Collagen boosting, skin regeneration

Deceleration of photoaging by stabilization of p53

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Skin photoaging

UV-radiation

↓

Cellular damage (DNA), constant

Insufficient repair ↙ ↘ Sufficient repair

Altered cellular functionality

↓

80% of all visible signs of aging (e.g. wrinkles, age spots)

Maintenance of cellular functionality

↓

Protection against photoaging

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Aging: decline of ability to repair

Young skin cells manage their own repair. A careful balance between:

1. Recognition of damage
2. Excision of damaged part of the DNA
3. Actual repair

Aged skin cells are less effective

p53: ‘The guardian of the genome’

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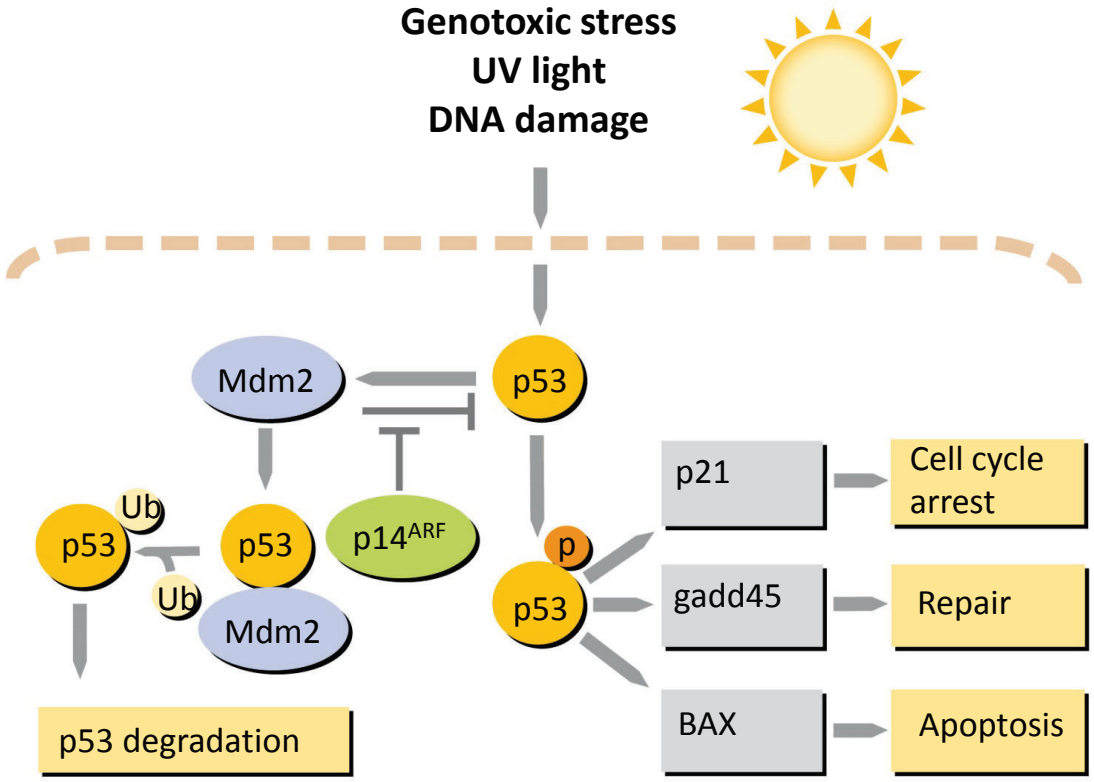
p53: the crisis manager in damaged cells



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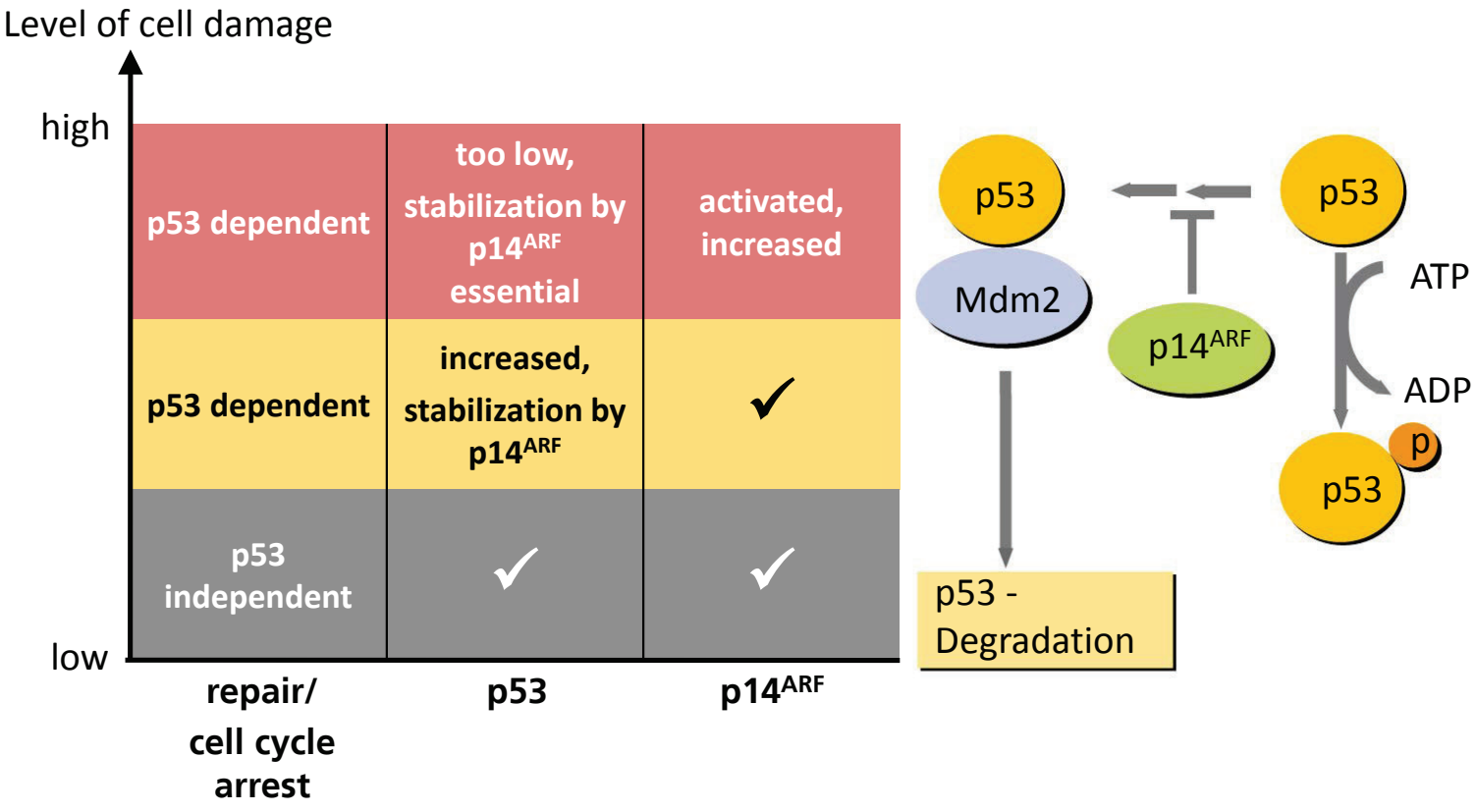
p53 gets support from $p14^{ARF}$ when needed



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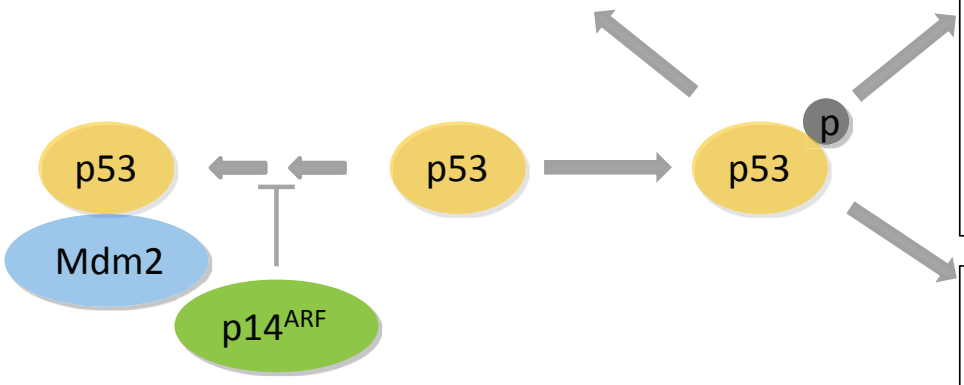
In vitro Test Results relevant to photoaging

Summary

Phytosan™ K: activates repair

Increase in cell longevity/decrease in apoptosis: up to 68.4% in comparison to control



Increase in DNA repair activity:

- up to 40.0% more than control (keratinocytes)
- up to 30.8% more than control (epidermal stem cells, thymine dimers)
- up to 52.5% more than control (epidermal skin models, thymine dimers)

Protection against UV radiation-induced ATP depletion: up to 23.0% better than control

Degradation

p14^{ARF}, chronic irradiation: up to 220.2% increase (control set at 100.0%)

Stabilization

p53, single irradiation: increase up to 46.3% higher than control

p53, chronic irradiation: up to 250.7% increase (control set at 100.0%)

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Protection against UV-induced damage

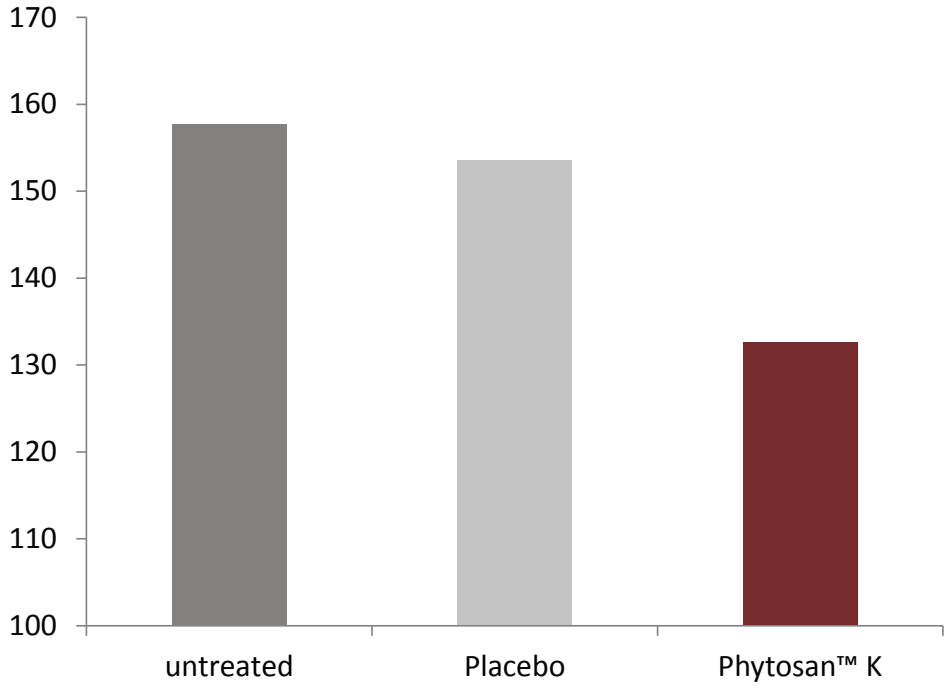
in vivo Test Results

Reduction of Skin Redness after UV Irradiation (Pilot Study)

Skin Redness (%)

A formulation containing 5% Phytosan™ K and the placebo formulation were applied by 5 volunteers twice daily on the inner forearm.

The MED (Minimal Erythemal Dose) of each volunteer was determined at the beginning of the study. After 1 week, skin irritation was induced by irradiation with 1.75 MED. 24h after irradiation skin redness was recorded by the use of a Chromameter.



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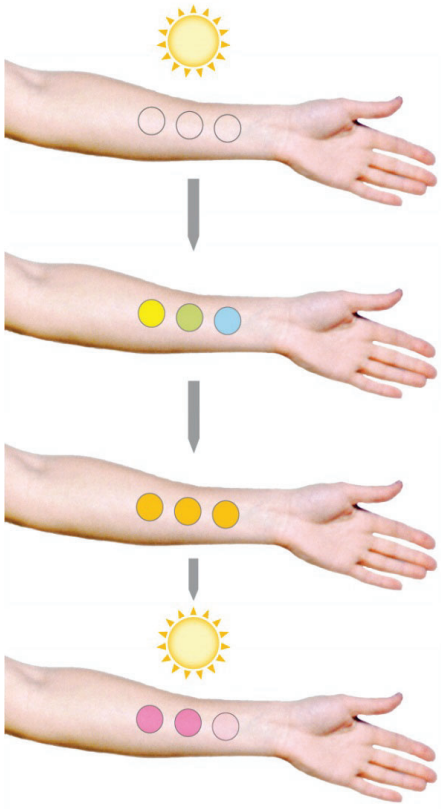
Study design



1. Determination of MED
2. Application, twice daily, 7 days
   - untreated
   - O/W placebo
   - O/W 5% Phytosan™ K
3. Application of sunscreen
   - Sunscreen SPF 4
4. UV exposure
5. Recording of skin color, determination of SPF

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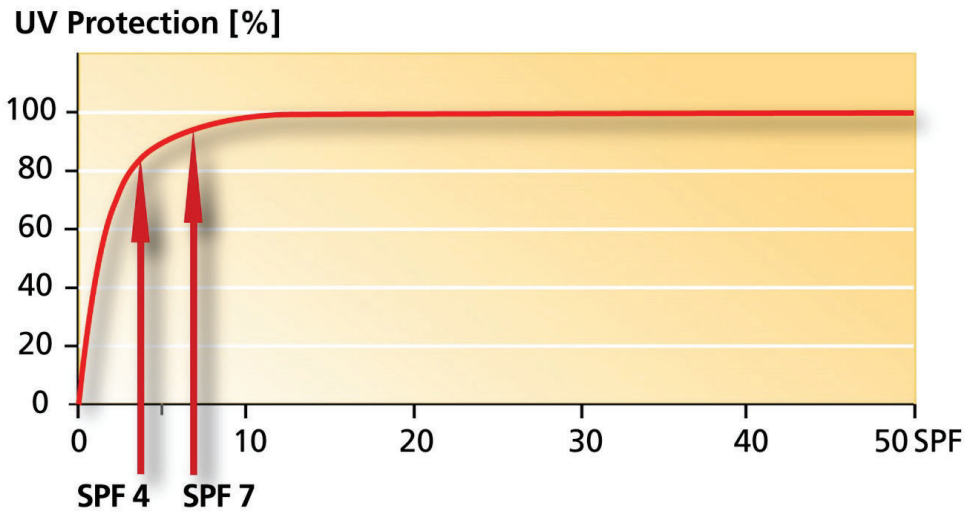
Increase of tolerance against UV light (MED)

12 volunteers were pretreated with a 5% Phytosan™ K cream against placebo twice a day for a period of one week.

Before UV exposure a sunscreen with a SPF 4 was applied to the Phytosan™ K and placebo treated test areas.

The SPF in the test areas was determined by Colipa-Method.

Product	SPF (mean)	Standard Deviation
O/W (Placebo) + Standard SPF 4	4.2	0.7
O/W with 5% Phytosan™ K + Standard SPF 4	7.0	0.9



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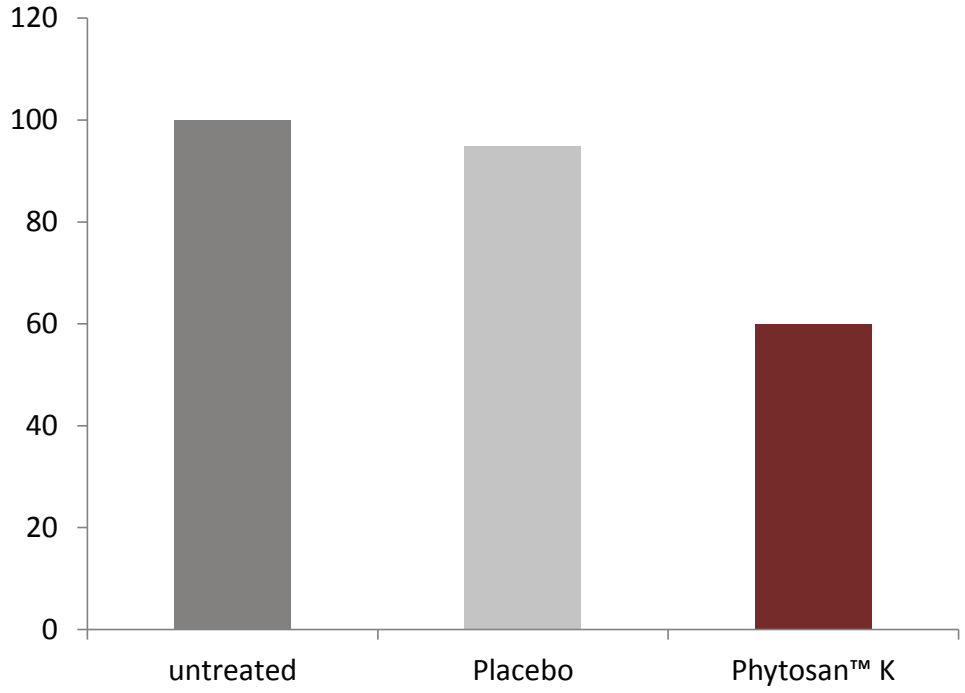
Influence on UV-induced increase in Elastase Activity

Elastase Activity (%)

A formulation containing 5% Phytosan™ K and the placebo formulation were applied by 5 volunteers twice daily. After 1 week, the skin was UV-irradiated and elastase activity was determined.

Values are related to elastase activities in the untreated, irradiated areas (= 100 %).



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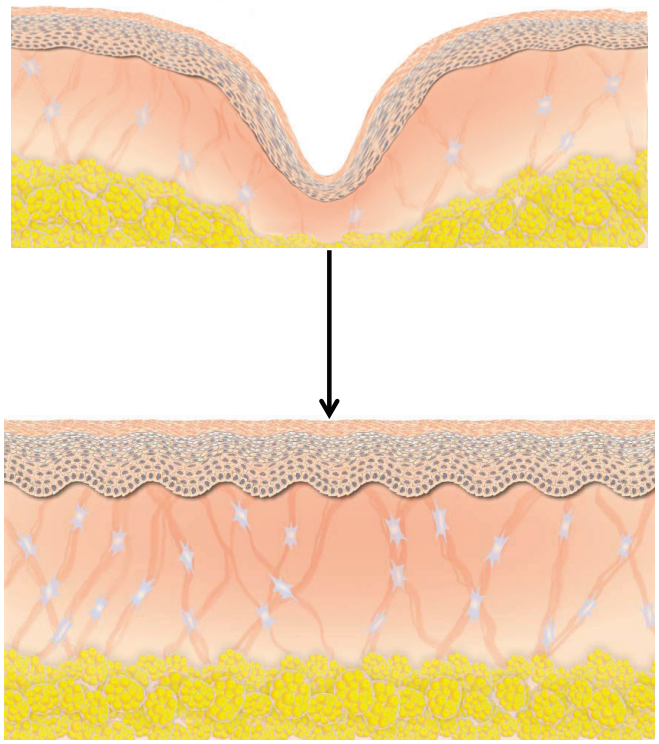
Skin Regeneration

Skin regeneration: firmer skin, less wrinkles



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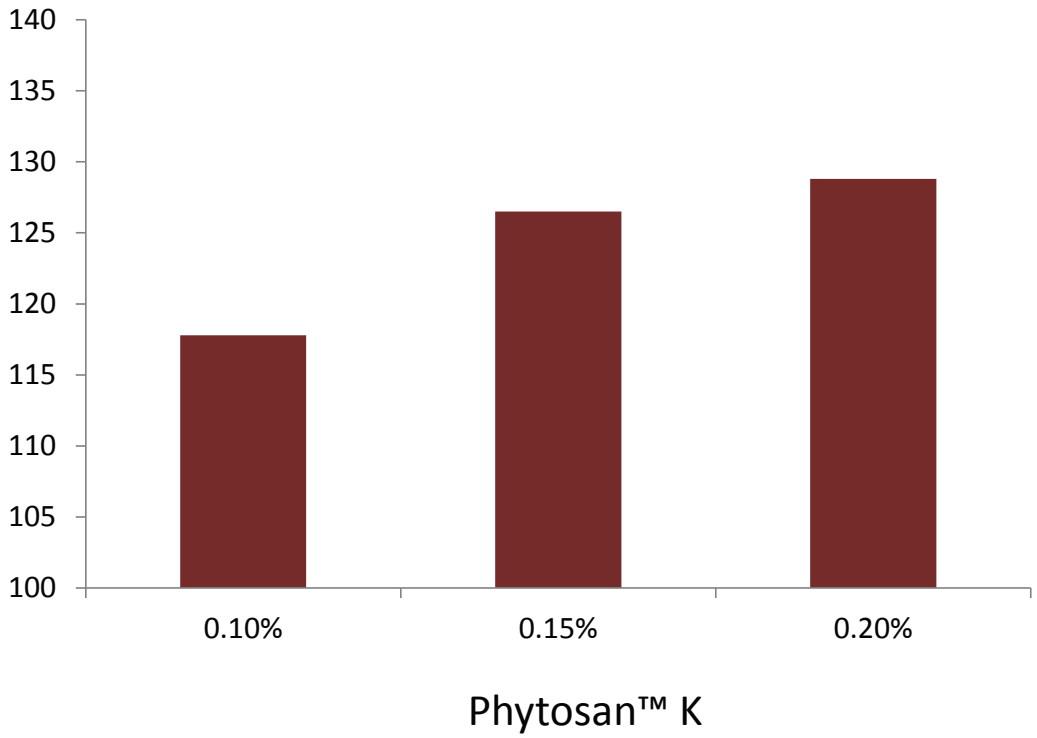
Stimulation of Collagen Type I Biosynthesis

Collagen Type I Biosynthesis (%)

Related to the number of fibroblast cells and to collagen amounts produced by fibroblast cells grown in the presence of 5% FCS (= 100%).



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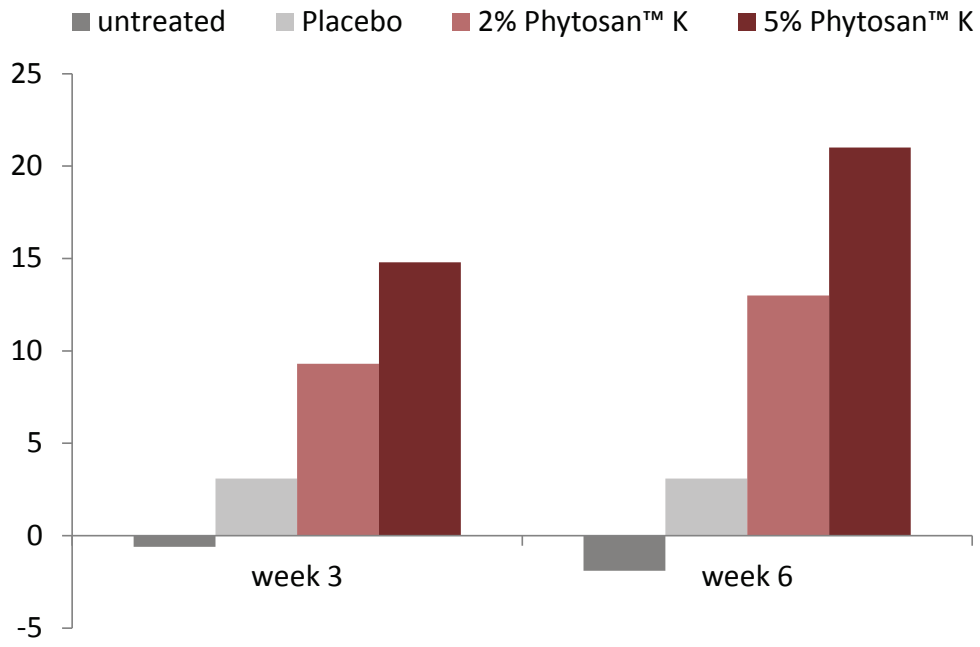
Increase in Skin Smoothness

Skin Smoothness (%)

Formulations were applied by 25 volunteers (age range: 35 – 58) twice daily. After 3 and 6 weeks, skin roughness was determined.

Values are related to initial conditions.



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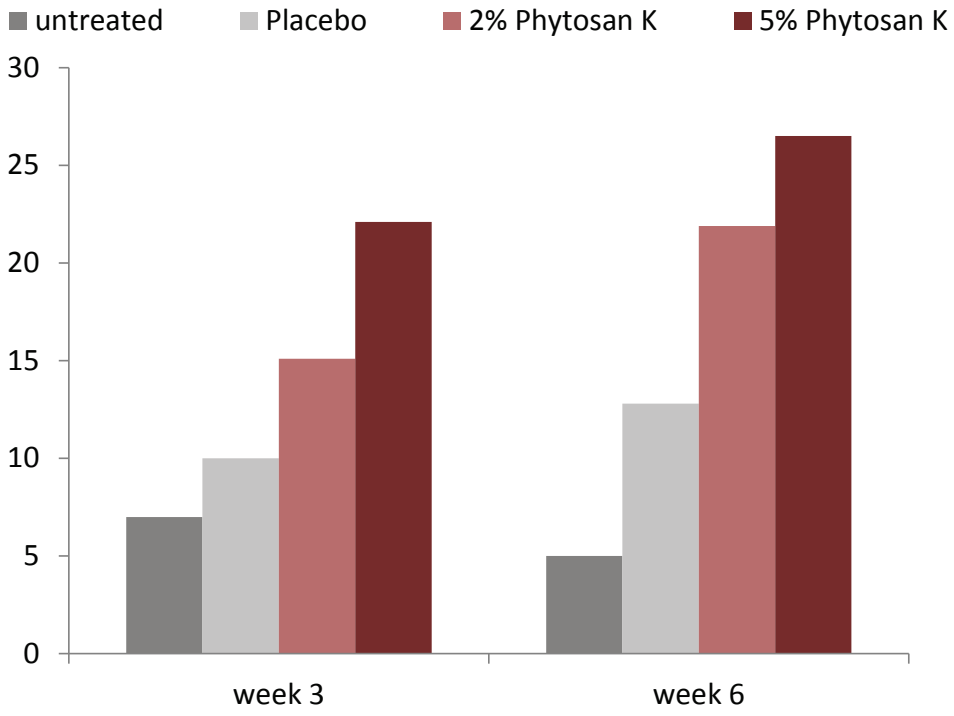
Increase in Skin Firmness

Skin Firmness (%)

Formulations were applied by 25 volunteers (age range: 35 – 58) twice daily. After 3 and 6 weeks, skin elasticity was determined.

Values are related to initial conditions.



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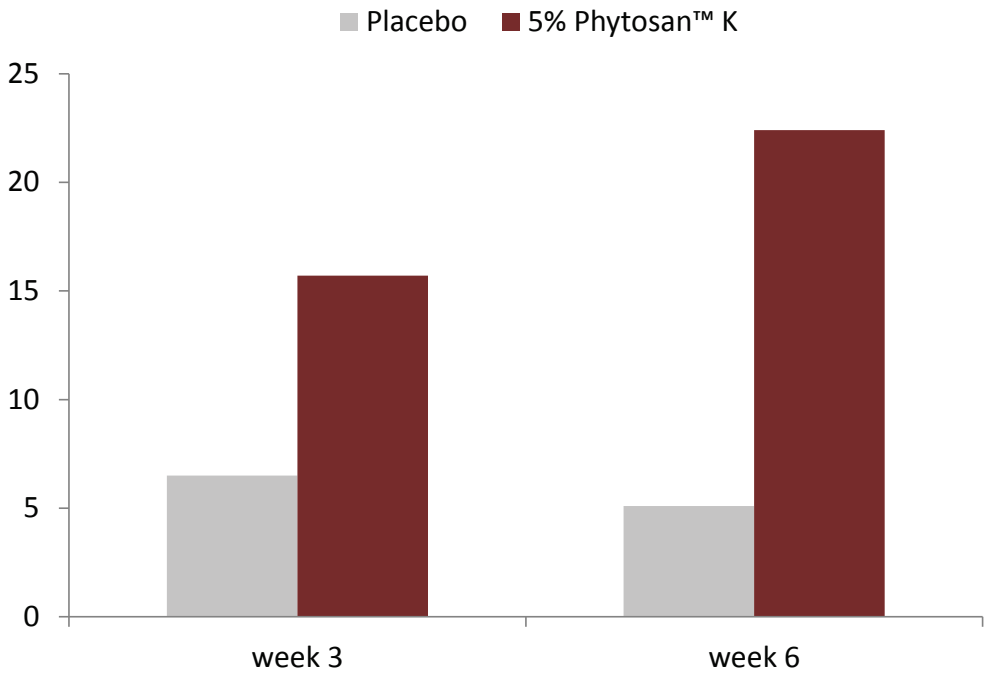
Reduction of Depth of Wrinkles

Reduction of Depth of Wrinkles (%)

Formulations were applied by 25 volunteers (age range: 35 – 58) twice daily around the eyes. After 3 and 6 weeks, the depth of wrinkles was determined.

Values are related to initial conditions.



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Summary

in vitro Results

- Stimulation of protein and Collagen (Type I) biosynthesis
- Maintenance of a higher energy level after UV irradiation
- Activation and Stabilization of tumor suppressor gene p53
- Strongly reduces TT-Dimer formation and stimulates DNA repair
- Reduction of apoptotic cells

in vivo Results

- Reduction of skin redness after UV irradiation
- Strongly increases tolerance against UV light after a 1 week pre-treatment
- Increase in skin smoothness
- Improvement of skin elasticity / Increase in skin firmness
- Reduction of wrinkle depth

INCI Name:	Water, Glycerine, Glycine Soja (Soybean) Seed Extract
Dosage:	2.0 - 5.0%
pH-range:	3.0 – 7.5
Preservation:	Preserved with phenoxyethanol and potassium sorbate

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