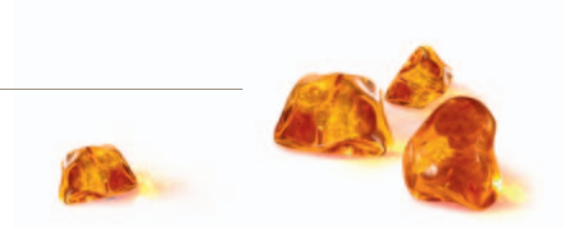


## TEGO® Pep 4-17

The ECM boosting peptide



TEGO® Pep 4-17 is a unique, high performing, nature inspired tetrapeptide which boosts ECM proteins to smooth the skin surface and minimize the appearance of all kinds of wrinkles.

### **Evonik delivers:**

1. Unique ECM-derived tetrapeptide
2. Superior collagen boosting activity
3. Improvement of all types of periorbital wrinkles

## Benefits

- Shows superior collagen, hyaluronic acid and fibronectin boosting activity
- Minimizes the appearance of all kinds of wrinkles
- Smooths the skin surface
- Reduces skin roughness
- Shows strong skin firming activity
- Increases skin elasticity

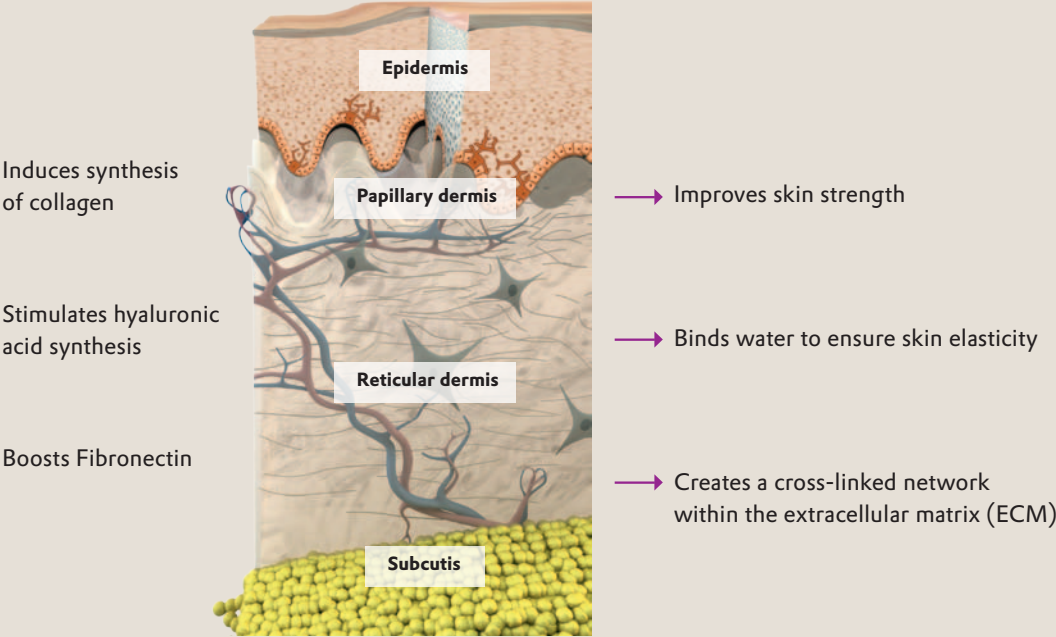
## Properties

- Pure tetrapeptide in solution (2000 ppm Tetrapeptide-21)
- Identified by in silico approach
- Patent protected by Evonik
- Recommended use level: 0.5 – 5.0%
- INCI: Tetrapeptide-21, Glycerin, Butylene Glycol, Aqua

## Applications

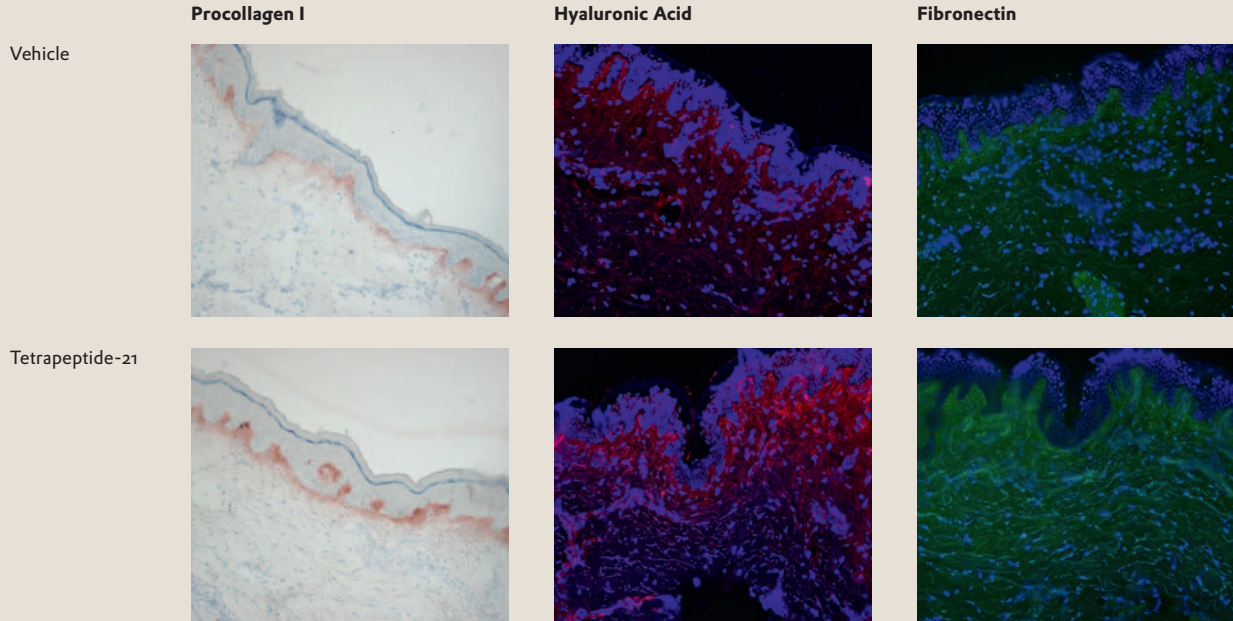
- Anti-wrinkle preparations
- Anti-aging eye care products

# Working mechanism of TEGO® Pep 4-17



# Tetrapeptide-21 shows strong induction of most important ECM proteins

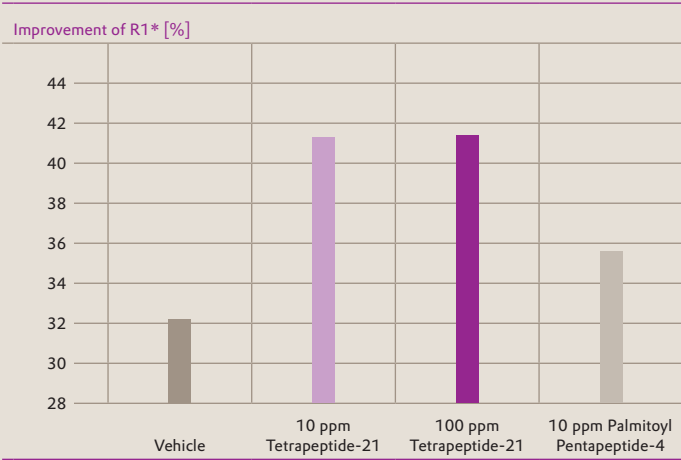
*In vivo* biopsy and elasticity study – test results



# Tetrapeptide-21 shows an improvement of skin elasticity after eight weeks

In vivo elasticity study inner forearm – test results

## Skin elasticity R1\*

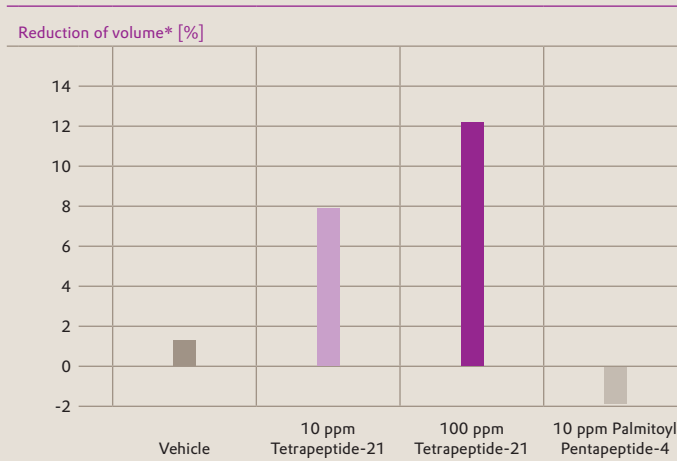


\*R1: Remaining deformation after stretching. Skin with strong elasticity shows a very small remaining deformation

# Tetrapeptide-21 shows overall improvement of skin structure resulting from reduction of skin wrinkles in number and depth

*In vivo* long-term evaluation inner forearm – test results

## Skin volume\*: fine lines and wrinkles

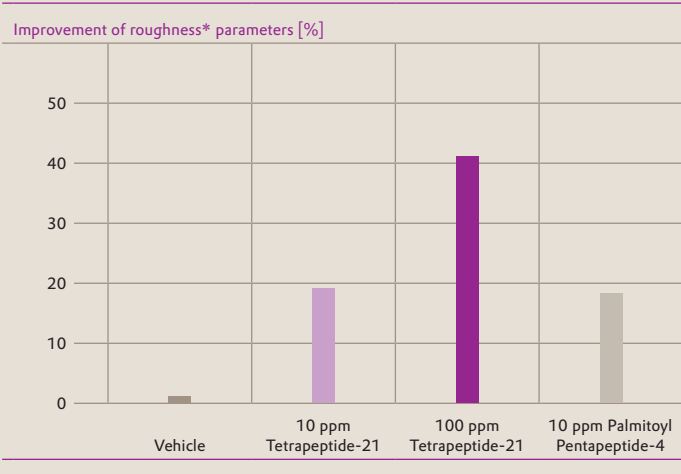


\* Volume: Represents the required theoretical volume to fill wrinkles to generate a plain surface.

# Tetrapeptide-21 shows an increased reduction of skin roughness

*In vivo* long-term evaluation inner forearm – test results

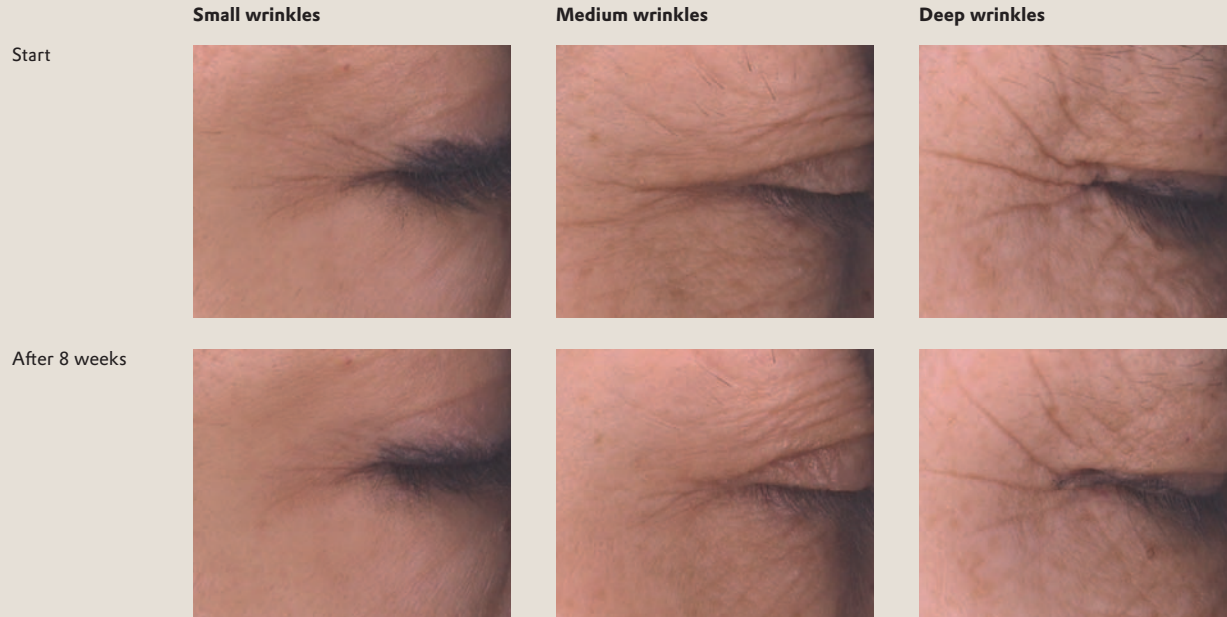
## Roughness parameters\*: skin surface structure



\* Roughness: Describes the depth of fine and coarse wrinkles.

## TEGO® Pep 4-17 improves all types of periorbital wrinkles

*In vivo* facial anti-wrinkle study – test results





## Guideline formulation

### Power serum for aged skin\*

A	TEGO® Care 450 (Polyglyceryl-3 Methylglucose Distearate)	2.0%
	TEGOSOFT® DEC (Diethylhexyl Carbonate)	5.0%
	TEGOSOFT® OP (Ethylhexyl Palmitate)	5.0%
	TEGOSOFT® OER (Oleyl Erucate)	1.5%
	Avocado (Persea Gratissima) Oil	1.5%
B	Water	75.9%
	<b>TEGO® Pep 4-17</b> (Tetrapeptide-21; Glycerin; Butylene Glycol; Aqua)	2.0%
	HyaCare® 50 (Hydrolyzed Hyaluronic Acid)	0.1%
C	TEGO® Carbomer 141 (Carbomer)	0.2%
	TEGOSOFT® OP (Ethylhexyl Palmitate)	0.8%
D	TEGO® Stemlastin (Algae Extract)	3.0%
E	Sodium Hydroxide (10% in water)	q.s.
Z	Preservative, perfume	q.s.

\* MM 216/2

### Processing

1. Heat phase A and B separately to approx. 80 °C.
2. Add phase A to phase B with stirring<sup>1)</sup>.
3. Homogenize.
4. Cool with gentle stirring to approx. 60 °C and add phase C.
5. Homogenize for a short time.
6. Cool with gentle stirring and add phase D, E and Z below 40 °C.

<sup>1)</sup> Important: If phase A has to be charged into the vessel first, phase B must be added **without stirring**.

## Guideline formulation

### Skin perfecting cream\*

A	ABIL® Care XL 80 (Bis-PEG/PPG-20/5 PEG/PPG-20/5 Dimethicone; Methoxy PEG/PPG-25/4 Dimethicone; Caprylic/Capric Triglyceride))	2.00%
	TEGINACID® C (Cetareth-25)	2.00%
	TEGO® Alkanol 18 (Stearyl Alcohol)	4.00%
	TEGIN® M Pellets (Glyceryl Stearate)	2.00%
	Stearic Acid	10.00%
	TEGOSOFT® CR (Cetyl Ricinoleate)	10.00%
	TEGOSOFT® OER (Oleyl Erucate)	4.00%
	TEGOSOFT® M (Isopropyl Myristate)	2.00%
	Phytosphingosine SLC (Salicyloyl Phytosphingosine)	0.25%
	B	Water
Glycerin		58.45%
<b>TEGO® Pep 4-17</b> (Tetrapeptide-21; Glycerin; Butylene Glycol; Aqua)		
	TEGO® Cistus (Cistus Incanus Extract; Maltodextrin)	

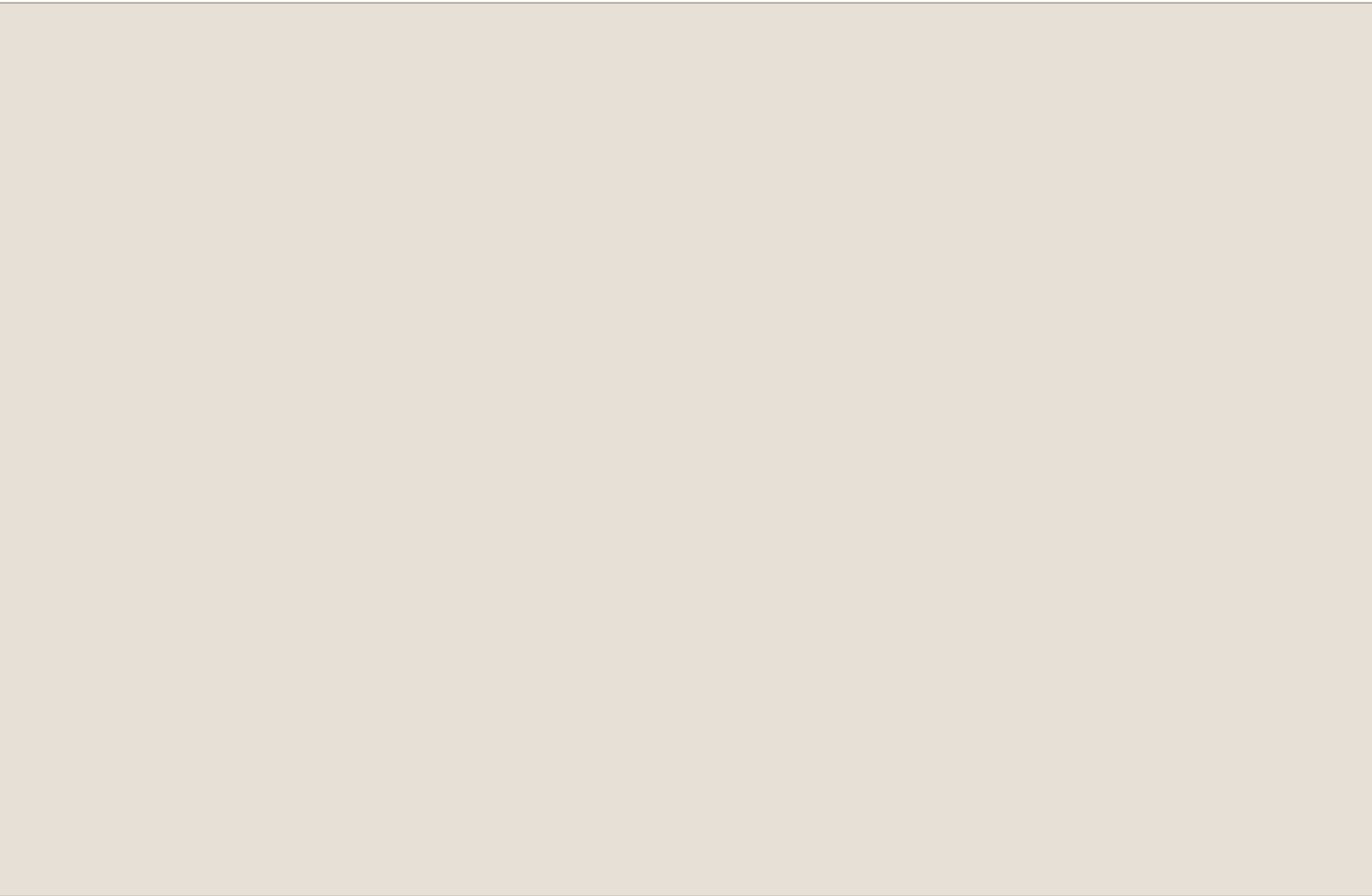
C	TEGO® Carbomer 134 (Carbomer)	0.10%
	TEGOSOFT® M (Isopropyl Myristate)	0.40%
D	Sodium Hydroxide (10% in water)	q.s.
Z	Preservative, perfume	q.s.

\* MM 209/9

### Processing

1. Heat phase A and B separately to approx. 80 °C.
2. Add phase A to phase B with stirring<sup>1)</sup>.
3. Homogenize.
4. Cool with gentle stirring to approx. 60 °C and add phase C.
5. Homogenize for a short time.
6. Cool with gentle stirring and add phase D below 40 °C.

<sup>1)</sup> Important: If phase A has to be charged into the vessel first, phase B must be added **without stirring**.



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February 2013

