



# Peptan™ SR marine

## 3-step skin regeneration collagen peptides

1. Stimulates fibroblast proliferation
2. Boosts collagen synthesis
3. Protects against oxidative stress

### Properties

Peptan™SR marine boosts fibroblast proliferation and favours the synthesis of the major structural collagen molecule of the dermis, thus preserving its structural organization. It also protects against free radicals, limiting their aging effects.

### Cosmetic application

Peptan™ SR marine is tailored for skin care where anti aging action is desired

### Formulation

- Versatility: pure water soluble spray-dried powder
- pH Stability: stable in the pH range of 3.0 to 7.0
- Thermostability: temperature of up 60°C for a short-time does not affect the stability and characteristics
- Incorporation: For cold processes, dissolve Peptan™SR marine into the aqueous phase. For cold/hot processes, add during the cooling phase below 40°C
- Preservative-free

### Suggested dosage

1%

### Product specifications

INCI/CTFA: Hydrolyzed Collagen  
EINECS: 295 - 635 - 5  
CAS: 92113 - 31 - 0  
Product source: Fish skin  
Molecular weight (average): 2000 Da  
Form: Spray dried powder  
pH: 5.0 - 6.5  
Color: white to pale amber  
Odor: none

### Science

Profound changes occur in the skin during aging, the dermis being the site of the most substantial histological and biological changes.

The skin can synthesise collagen fibres, essential protein constituents of the dermis. However, the production of new collagen fibres declines over time. Collagen synthesis by fibroblasts decreases for two reasons: a decrease in the rate of fibroblast renewal with age and an associated decrease in the amount of collagen secreted by these cells.

Collagen is also modified by the formation of bridges between fibrils, leading to the reticulation of fibres, rendering them more rigid. Cross-links may be established between two collagen fibres or between the collagen fibre and glucose molecules (collagen glycation), rendering the network more rigid.

Thus, the skin gradually loses its substance, through decreases in the amounts of its constituents, and becomes less supple, due to the loss of collagen fibre elasticity and to collagen dehydration. These changes in the extracellular matrix of the dermis lead to a loss of firmness, resulting in sagging of the skin and a loss of the harmonious volumes of the face. The tissues slide downwards and the face hollows out. This loosening of the skin also leads to the formation of wrinkles, laughter lines and gravity-induced wrinkles.

In parallel, the skin, like the rest of the body, is subject to numerous stresses that generate free radicals targeting cell membranes, proteins and DNA. The formation of these free radicals leads to changes in the skin over time, accelerating the cutaneous aging process.

## STIMULATION OF FIBROBLAST PROLIFERATION XTT cell proliferation test

Cultured human skin fibroblasts were treated after 24 hours with Peptan™SR marine at a concentration of 0.1 mg/ml. After incubation for 24 h, XTT cell proliferation test was used to assess the viability and proliferation of the fibroblasts. The absorbance at 450 nm is determined by spectrophotometry and the results are expressed as a percentage of the value for untreated controls.

The incubation of 0.1 mg/ml Peptan™SR with cultured fibroblasts for 24 hours induced a significant increase in fibroblast proliferation to 18% higher than that of an untreated control (p=0.016).

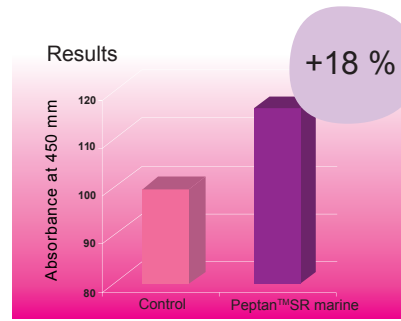


Figure 1: Stimulation of fibroblast proliferation by Peptan™SR marine at 0.1 mg/ml.

## STIMULATION OF COLLAGEN SYNTHESIS in vitro test vs BSA control

Human dermal fibroblasts were cultured and, 24 hours later, 0.01 mg/ml Peptan™SR marine was added to the culture medium. As a control, fibroblasts were incubated with 0.01 mg/ml BSA.

Two days later, collagen I in fibroblasts was quantified by staining with Sirius Red by a fluorimetric method.

The treatment of fibroblasts with 0.01 mg/ml Peptan™SR for 2 days induced a significant increase in collagen synthesis to 22.5% higher than that of the BSA-treated control (p<0.05).

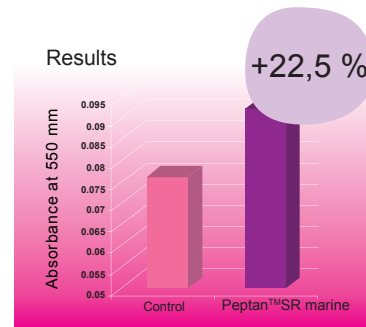
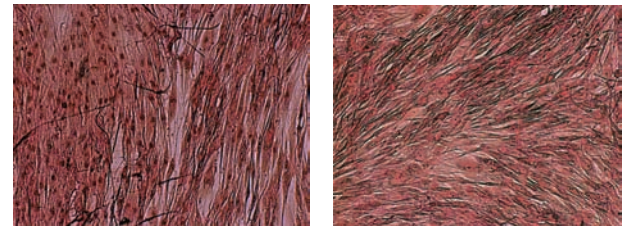


Figure 2: Stimulation of collagen synthesis by fibroblasts induced by Peptan™SR marine (0.01 mg/ml), as shown by comparison with Control at 2 days.

## EFFECT OF PEPTAN™SR marine on the organization and density of fibroblasts

Figure 3: Fibroblasts incubated for 7 days with 0.01 mg/ml BSA (left) and 0.01 mg/ml Peptan™SR marine (right), after staining with Sirius Red.



## PROTECTION AGAINST OXIDATIVE STRESS ORAC test in vitro

Decoloration of beta carotene was assessed in the presence and absence of 5 mg/ml Peptan™SR marine. The positive control used was butylhydroxyanisol (BHA) at a concentration of 2.5 mg/ml.

Spectrofluorimetry was used and the results are expressed with respect to the protection against oxidation conferred by the reference antioxidant (BHA) per gramme of product tested.

The antioxidant activity of Peptan™SR (5 mg/ml) was about 62% of that of BHA.

Results	Peptan™SR marine (5 mg/ml)	BHA (2.5 mg/ml)
Antioxidant activity (% that of BHA)	62%	100%

Figure 4. Antioxidant activity of Peptan™SR marine (5 mg/ml) Results of the ORAC test after 60 minutes.

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Peptan™SR marine activates collagen synthesis by fibroblasts. It restores the three-dimensional architecture of the dermis, increasing the volume of this tissue and providing it with cohesion and tonicity. Its effects on the extracellular matrix of the dermis thus counteract the loss of firmness that occurs over time and eventually leads to wrinkles. Peptan™SR marine thus has an antioxidant effect providing protection against agents generating free radicals.



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