

skinade 

better skin from within

Skin Beauty - inside and out





Content

- Collagen and skin
- Clinical Studies - Latest Results
- Mechanism Of Action

Collagen & Skin

Skin structure: The role of collagen

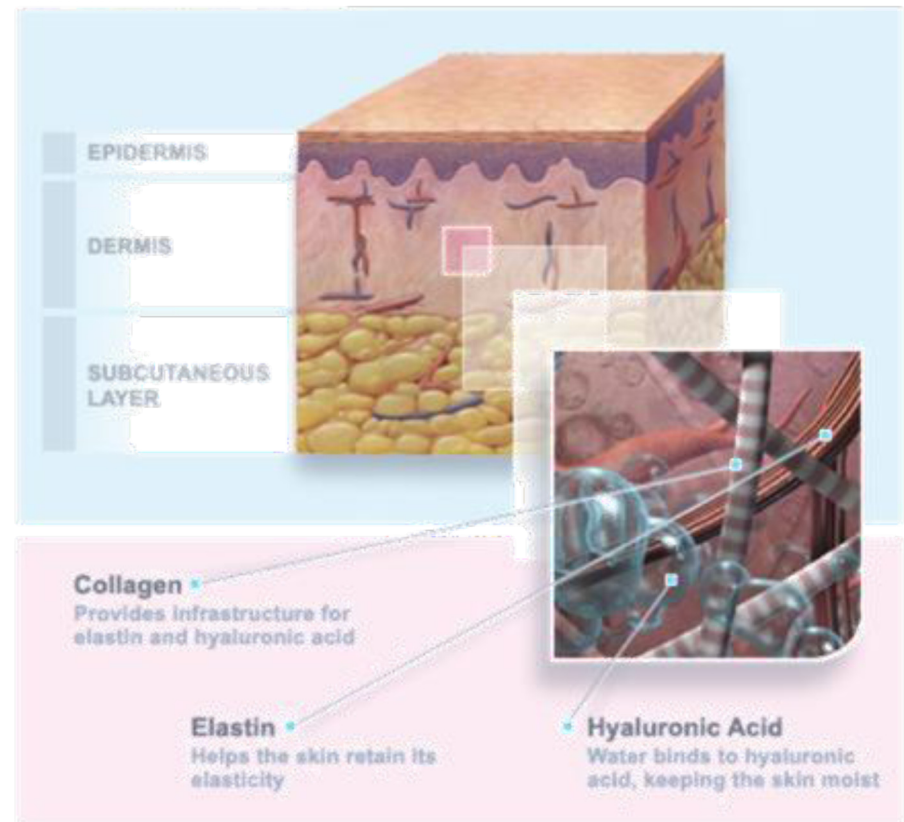
Collagen and elastin create skin's structure, **collagen provides infrastructure**, while **elastin** allows skin to stretch.

During aging, decreased fibroblast (skin cells) activity slows collagen+elastin synthesis:

- **Thinner skin, fine lines and wrinkles**
- **Dehydration**
- **Sagging**

Maintaining collagen and elastin levels allows skin to stay young, firm & smooth.

↳ SKIN STRUCTURE DIAGRAM



Absorption of collagen peptides

An in vivo experiment has been done with proline or collagen peptides labeled with ^{14}C .

^{14}C is then measured in different tissues after ingestion of the Collagen Peptides and or the proline during 0 to 6 hours and then until 14 days

The labeling remains in the skin at a high level after 14 days

Watanabe-Kamiyama et al. (2010)

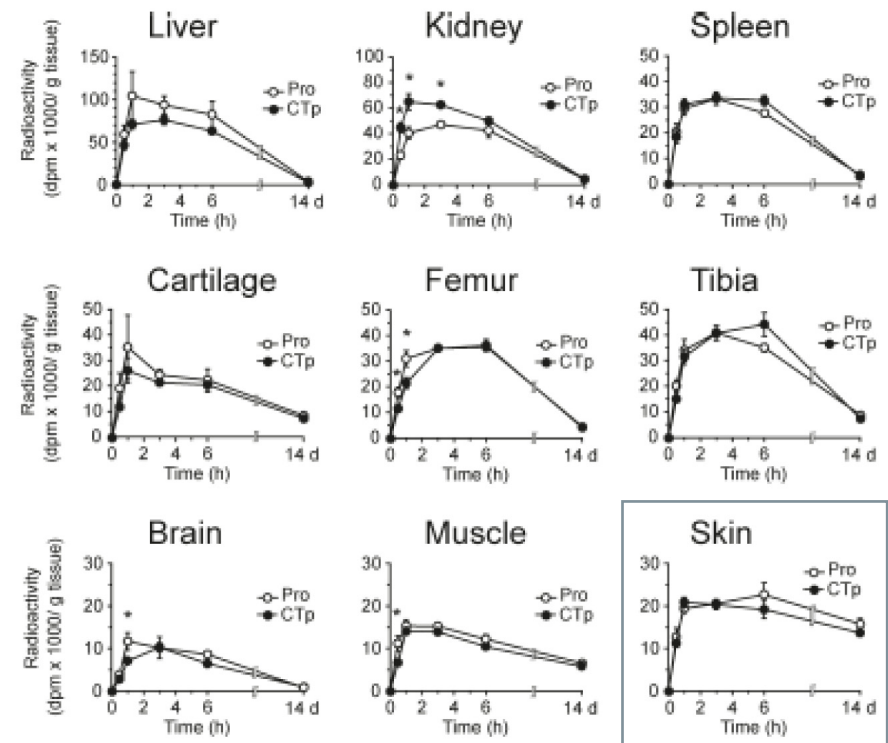


Figure 3. Tissue distributions of radioactivity in rats administered LMW-CH and radioactive tracers. Liver, kidney, spleen, cartilage, femur, tibia, brain, skeletal muscle, and skin were collected from rats in the Pro group and CTp group before and 0.5 h, 1 h, 3 h, 6 h, and 14 days after administration (each $n=4$). The radioactivity in each sample was adjusted with administered radioactivity and normalized to the value in 1 g of wet tissue. Values shown are the mean \pm SEM obtained from 4 rats. \circ , Pro group; \bullet , CTp group.

Clinical Studies - Latest Results

Peptan Clinical Studies

Comprehensive clinical studies carried out in Japan and France confirm the benefits of taking Peptan on skin health and appearance.

Peptan was tested in placebo controlled clinical trials carried out by global skin health research organizations:

- **SOUKEN based in Tokyo (Japan)**
- **DERMSCAN based in Lyon (France)**

SOUKEN and DERMSCAN are globally recognized laboratories and their clientele include a number of leading international cosmetic companies.



Japanese clinical study SOUKEN

Double-blind placebo-controlled trial of Oral supplementation of Peptan collagen peptides in improving skin condition.

Souken, Tokyo, Japan, 2008, Study YNTKK – 2008 – 4144

Objectives

Assess the efficacy of Peptan after 4 and 8 weeks during winter, and in particular:

- **Cutaneous water content**
- **Self-assessment by volunteers**

Study Design

- **33 volunteers (40-59 years old women)**
- **Normal to dry skin**
- **Double blind vs placebo (dextrins)**
- **10g of Peptan once a day in 100ml drink**
- **8 weeks (October – December)**

French clinical study DERMSCAN

Evaluation of the effects of an oral intake of Peptan Collagen Peptides on cutaneous properties versus placebo.

DermScan, France, 2008 - Study 2008 – A00654 – 51

Objectives

Assess the efficacy of Peptan after 6 and 12 weeks during winter.

- **Anti-wrinkle effect & Biomechanical properties**
- **Self-assessment**

Study Design

- **47 volunteers (35-55 years old women)**
- **Normal to dry skin**
- **Double blind vs placebo (dextrins)**
- **10g of Peptan / day (2 x 5g powder)**
- **12 weeks (October – January)**

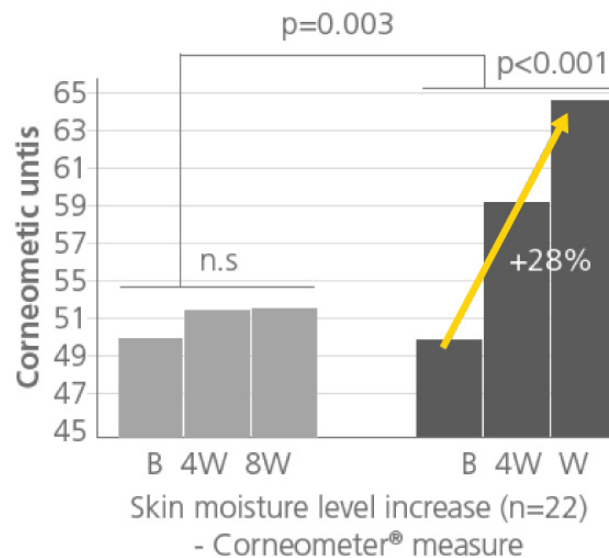
Materials & methods

Investigations were focused on:

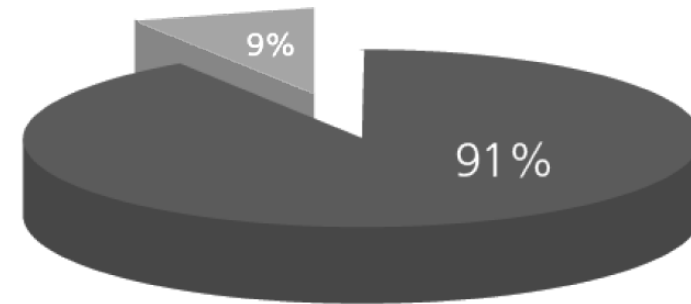
- **Dermophysiological measures:** in conditioning room (temperature, humidity)
- **Skin moisture level:** CORNEOMETER CM 825 – CK electronic
- **Elasticity of skin:** CUTOMETER MPA 850 – CK electronic
- **Skin replica image and analysis:**
 - 3D Roughness analyzer ASA-03R – Asahibiomed Co
 - Quantirides® SIA
- **Acceptability**
 - Self-assessment questionnaire
 - Product tolerance evaluation



Peptan® increases skin hydration



▶ Peptan® increases skin hydration by **28% after 8 weeks**

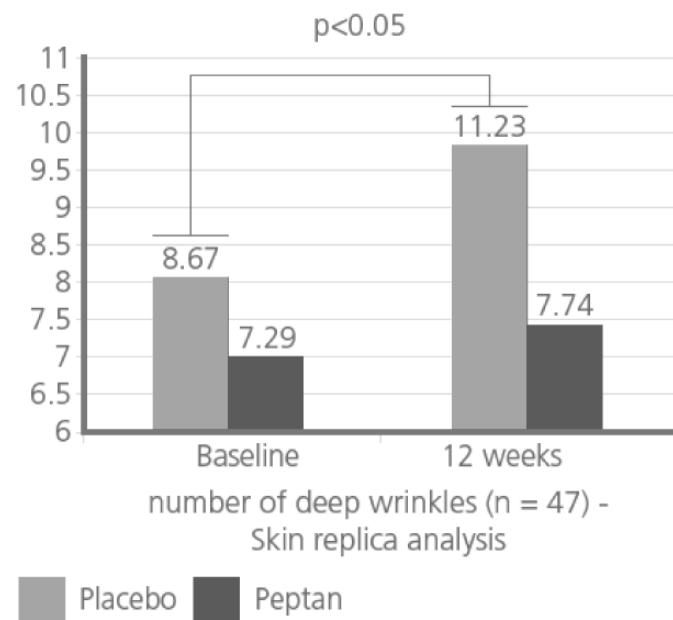


Based on Corneometer® measurement (n=22)

▶ The skin hydration level of **91% of Peptan® group volunteers** after 8 weeks

Study YNTKK – 2008 - 4144

Peptan® prevents deep wrinkle formation



▶ The number of deep wrinkles significantly increases with the placebo between baseline and 12 weeks: +30%

Study 2008 – A00654 - 51

Latest clinical study - COSderma France, 2012

Effect of oral ingestion of fish collagen peptides versus placebo on skin properties assessed in vivo by visual and laser scanning technology

DermScan, France, 2008 - Study 2008 – A00654 – 51

Objectives

Investigation of skins collagen structure using the latest advanced technology incl. laser

Study Design

- 106 volunteers , 40-65 years old women, Caucasian
- Double blind vs placebo, treatments given as powder drink
- Daily dosage of 10g in the morning
- Duration of 84 days.

Materials

- Peptan®F, fish collagen peptides
- Maltodextrins (placebo)

Materials & methods COSderma: Confocal laser technology

Investigations used latest skin analysis technology:

Vivascope® 3000 confocal laser technology

Using a laser ray of 830 nm, the Vivascope device takes images at different skin layer depths.

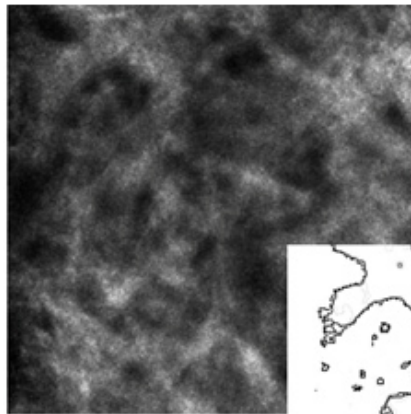
Collagen fragmentation analysed at two depths: 'S' (at surface of superficial dermis papillary) and 'D' (25 um deeper than S).

Dermcup® echography

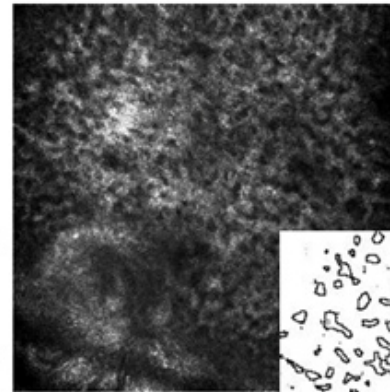
The dermis is echogenic, with echoes coming from the network of collagen fibers and elastic fibers. The Dermcup® applies high resolution echography using a 25Mhz probe to take images to quantify **collagen density**.

Collagen fragmentation is a key indicator of skin ageing!

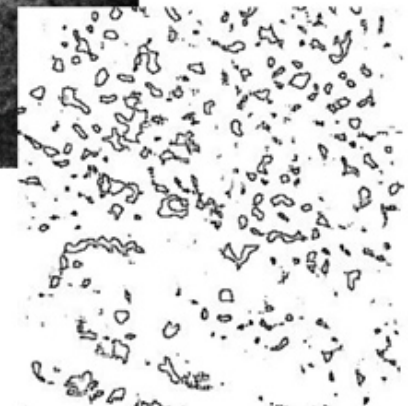
Illustration of increased fragmentation of collagen with age
(source ORION CONCEPT, Tours, France)



25 years old

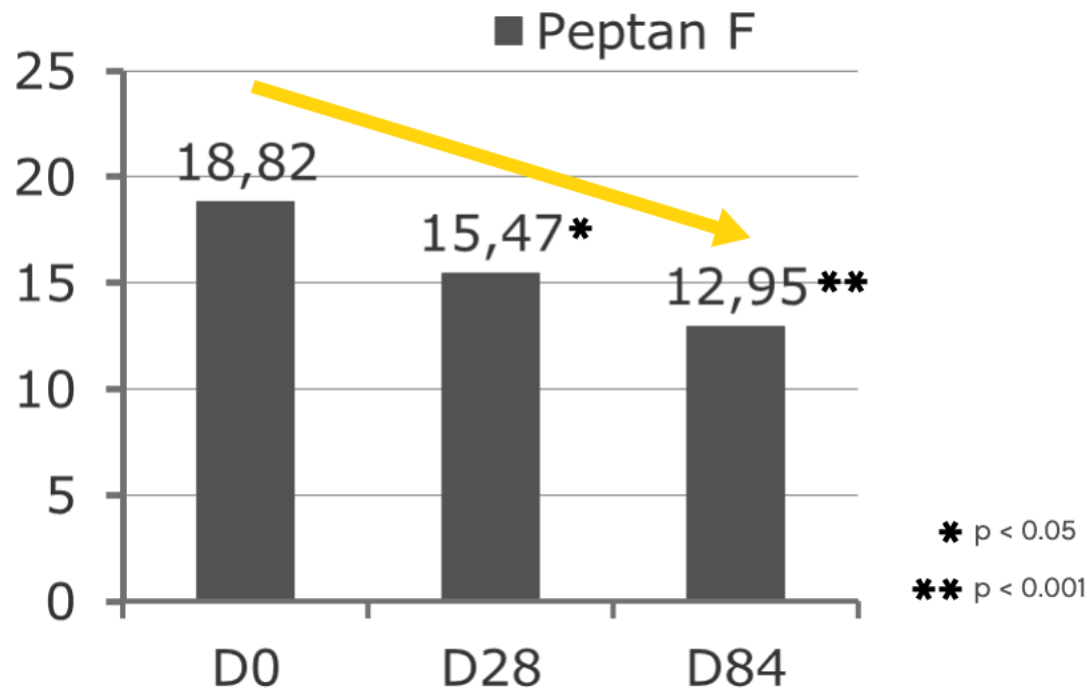


68 years old



Peptan® decreases collagen fragmentation

Documenting Peptan® efficacy in placebo controlled Clinical studies

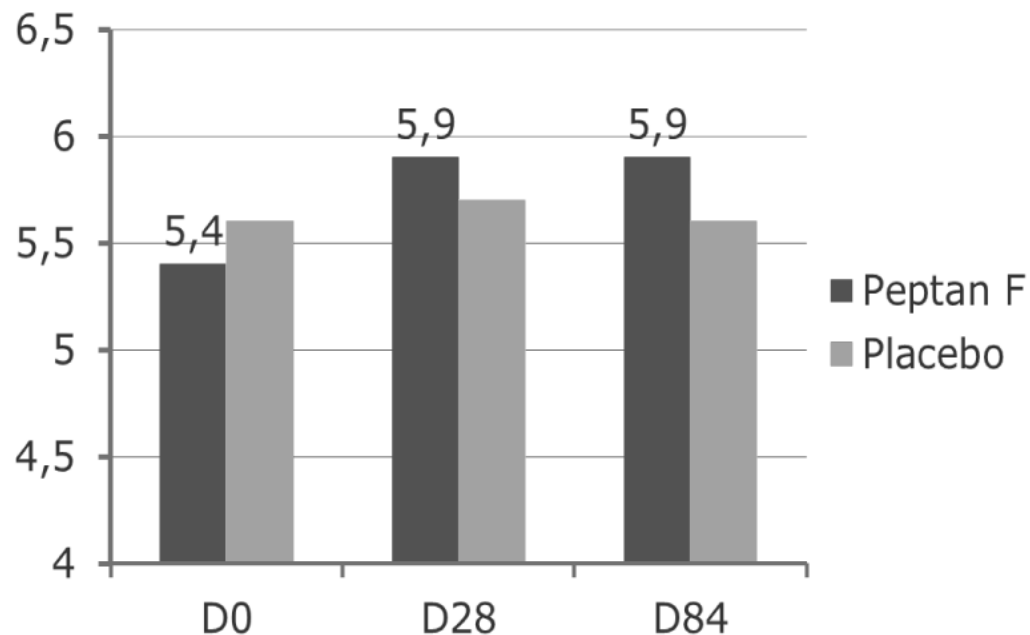


Peptan® F improves skin structure, by decreasing collagen fragmentation (Vivascope® confocal laser results)

Collagen fragmentation decreases significantly in the deep layers of the skin with Peptan F.
(No change was observed with placebo treatment) Cosderma France, 2012

Peptan® increases collagen density

Documenting Peptan® efficacy in placebo controlled Clinical studies



Peptan® F increases collagen density
(Dermcup® high resolution echogenicity)

Density of collagen network significantly increases in just 28 days for Peptan F with no change for placebo group.
Cosderma France, 2012

Multiple skin benefits scientifically documented

- Decreased collagen fragmentation in dermis
- Increase in collagen density in dermis
- Increase in skin moisture level
- Improve skin suppleness
- Skin replica image and analysis:
 - Reduced number of micro-relief furrows
- Prevention of the formation of deep wrinkles

Skin's collagen is **boosted from the inside**, providing visual **anti-age benefits on the outside!**



3 Clinical studies, 1 conclusion:



Peptan is a scientifically proven natural bioactive ingredient, that improves

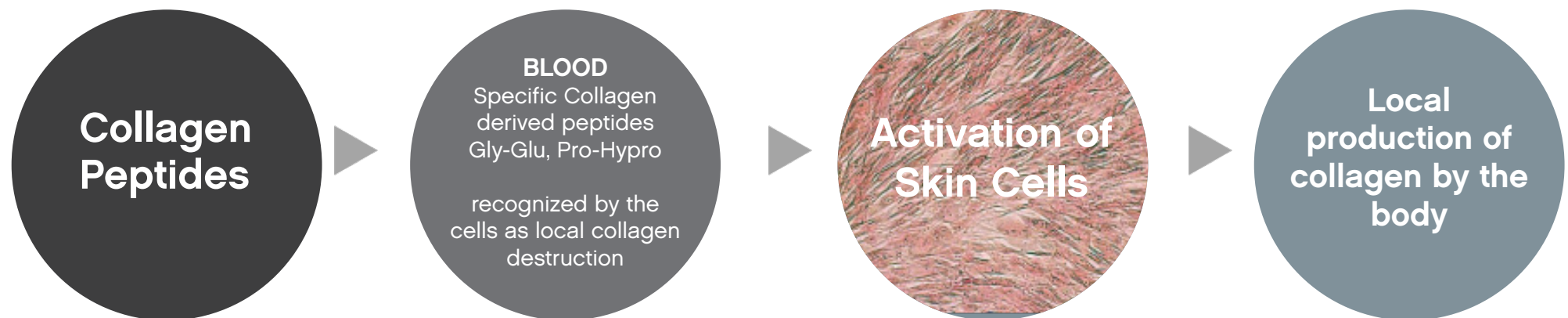
- dermis moisture level, collagen structure & density
- and prevents skin aging

Mechanism of action

Mechanism of action of collagen peptides

1- Production of collagen:

- **Hydrolyzed collagens have an effect on the cells of connective tissues**
- The main hypothesis of action is that peptides coming from the oral intake of collagen **may be recognized as a fake signal of the destruction of endogenous collagen**
- Two Japanese studies show that ingestion of collagen peptides increases the size of the collagen fibrils, (Minaguchi, 2005) and enhances formation of the collagen fibrils (Matsuda, 2006).



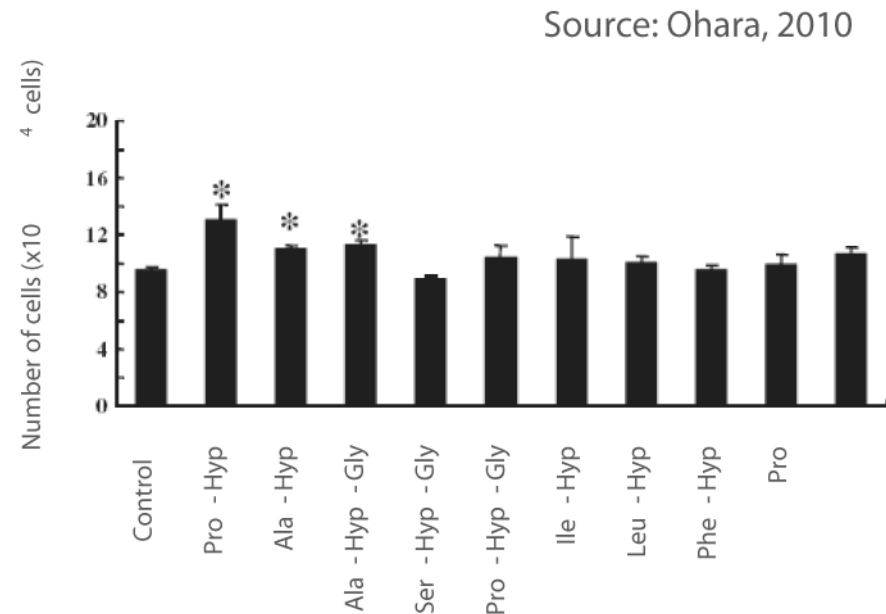
Mechanism of action of collagen peptides

2 - Fibroblast proliferation

Collagen di- and tri-peptides **Pro-Hyp**, **Ala-Hyp**, **Ala-Hyp-Gly**, **Ser-Hyp-Gly**, **Pro-Hyp-Gly**, **Ile-Hyp**, **Leu-Hyp**, **Phe-Hyp** are used at 200nmol/ml in media culture of the fibroblasts.

Pro-Hyp, **Ala-Hyp**, **Ala-Hyp-Gly** slightly increase cell proliferation measured after 7 days.

Pro-Hyp increase by 1.5 cell proliferation compared with control (significant $p > 0.05$)

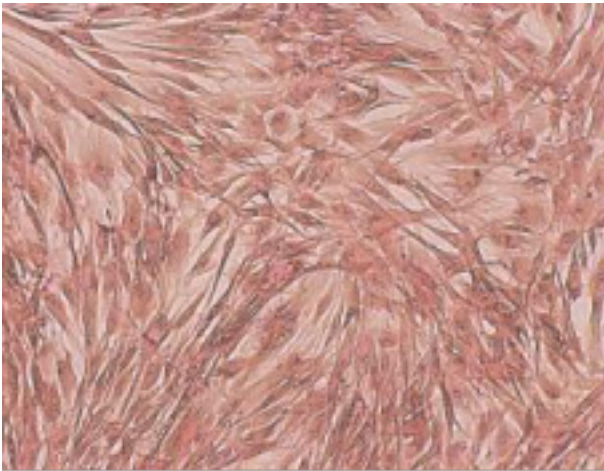


Mechanism of action of collagen peptides

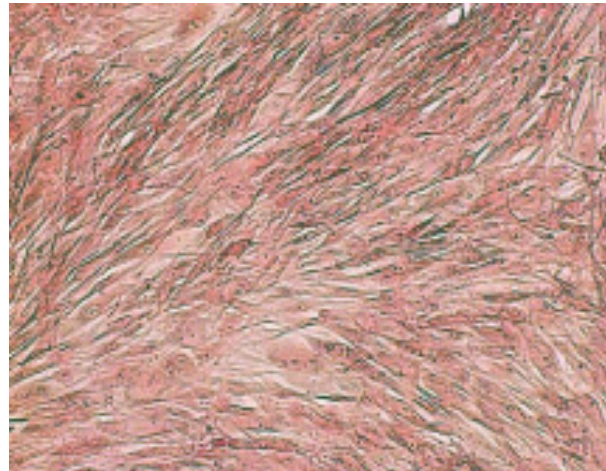
2 - Fibroblast proliferation and differentiation with Peptan

Rousselot obtained the same results on fibroblasts showing a slight cell proliferation and a better cell organisation and differentiation

Pictures of fibroblasts after staining in Sirius Red (100X*MO µm) after 7 Days



Control with BSA 0.01mg/ml



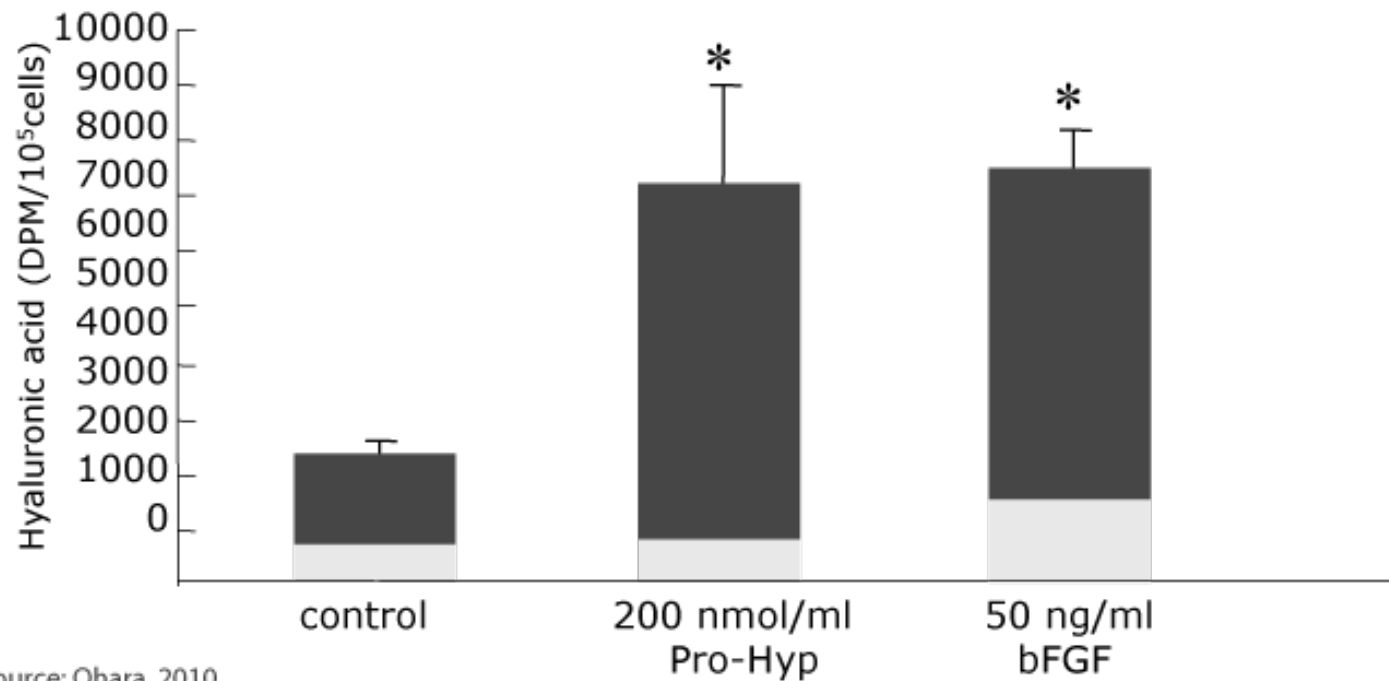
Peptan F2000 0.01mg/ml

Mechanism of action of collagen peptides

3- Hyaluronic acid synthesis:

Ohara shows an increase of Hyaluronic acid synthesis using Collagen peptides in human fibroblasts

Fig.: Hyaluronic acid synthesis is increased by Pro-Hyp. Cells with basic growth factor (bFGF) for 24h were used as a positive control.

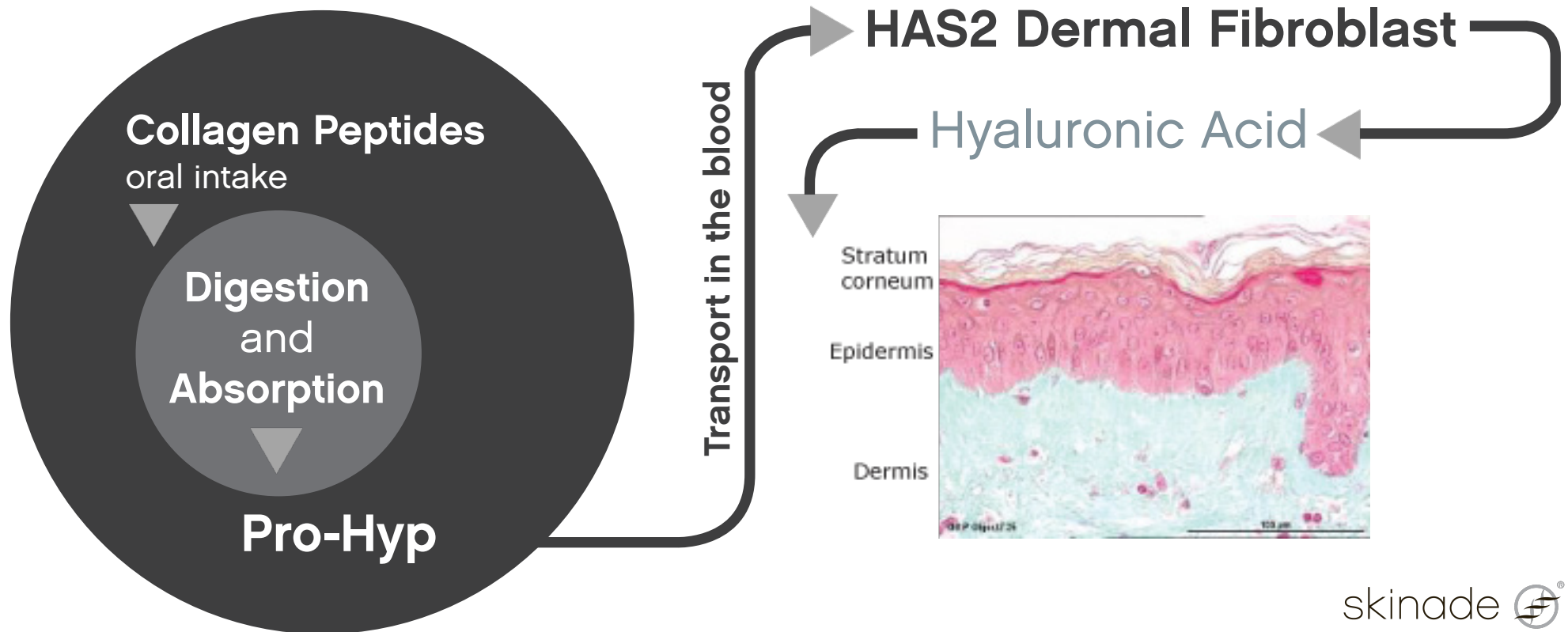


Source: Ohara, 2010

Mechanism of action of collagen peptides

3- Hyaluronic acid synthesis:

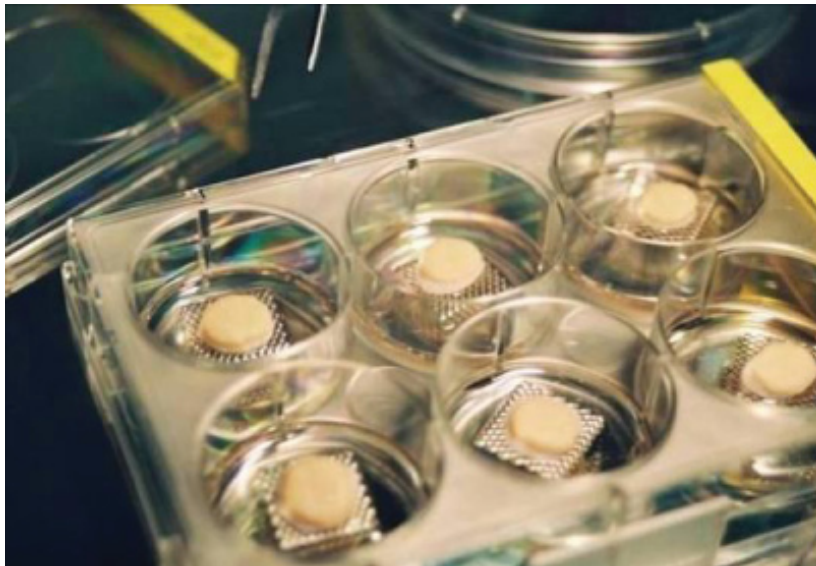
The increase of hyaluronic synthesis is due to the stimulation of Hyaluronan synthase 2 (HAS2), the enzyme mediating production of hyaluronic acid.



In vitro studies

A new model was used to test Peptan on human skin explants: Measurements of collagen production of human skin samples coming from surgery of one person. The samples are maintained alive in a media during 9 days.

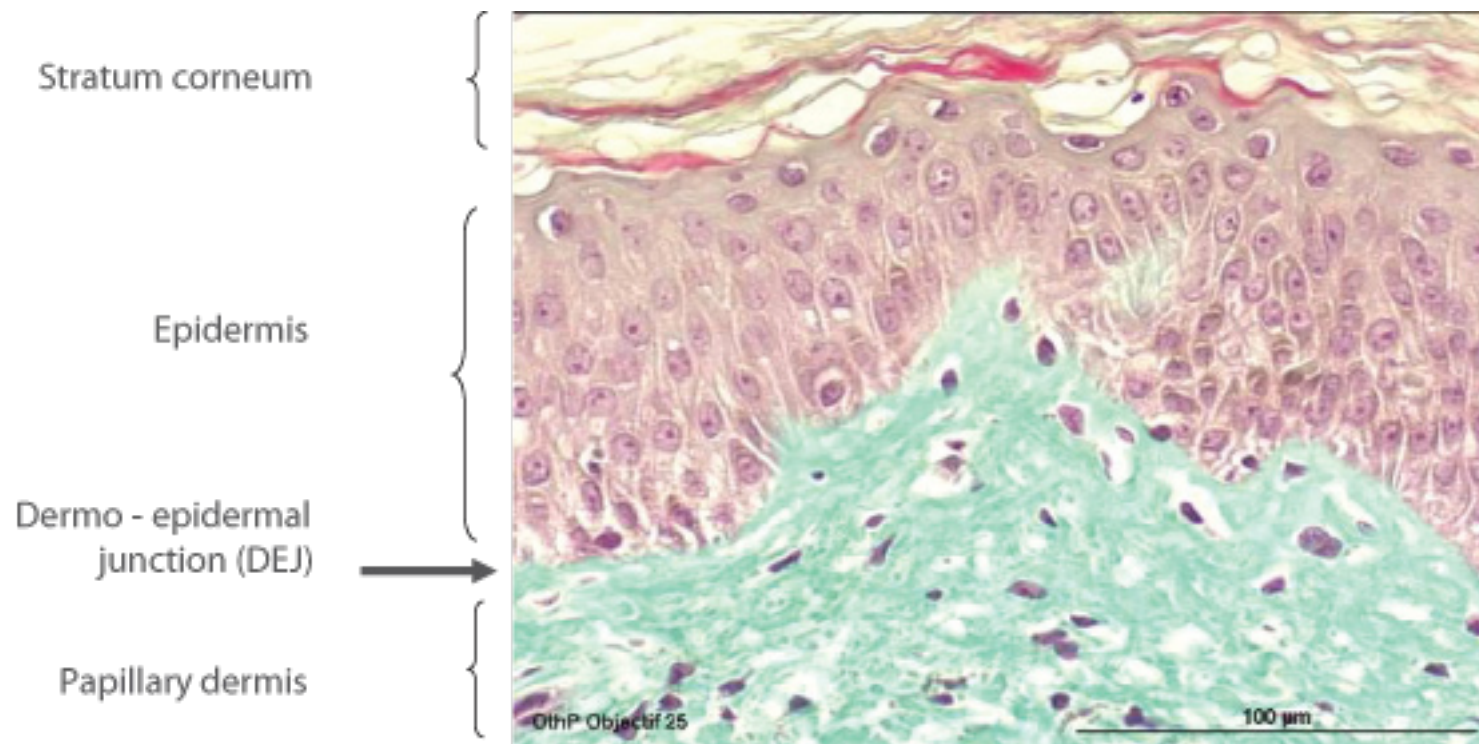
The culture media is enriched with different **Peptan Collagen peptides** and one control remains without Peptan. This experiment mimic the irrigation of the dermis by collagen peptides contained in the blood after oral ingestion of **Peptan**



Measured parameters:

- **Morphology of the skin**
- **Collagen production**
- **Glycoaminoglycans (GAGs)**

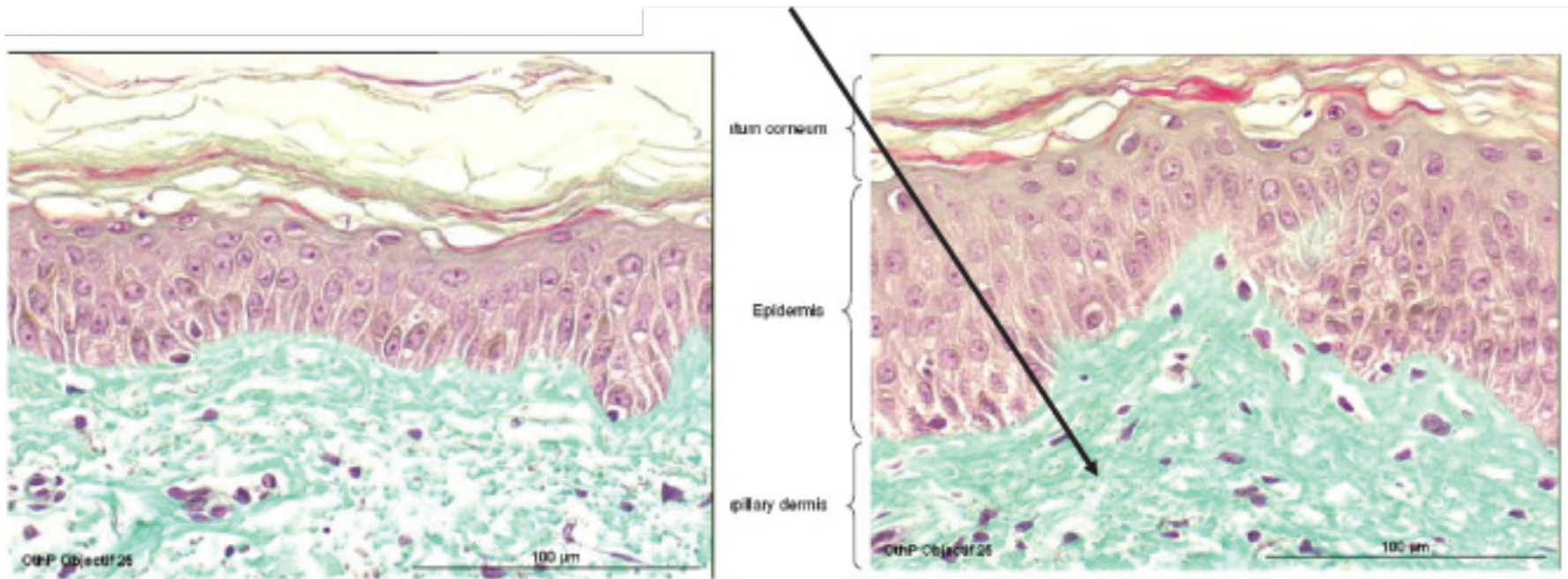
Structure of the upper layers of the skin



In vitro studies

Higher collagen fiber density

General morphology of the skins with a first coloration (Masson's trichrome coloration),
more blue color indicates more collagen fibers.



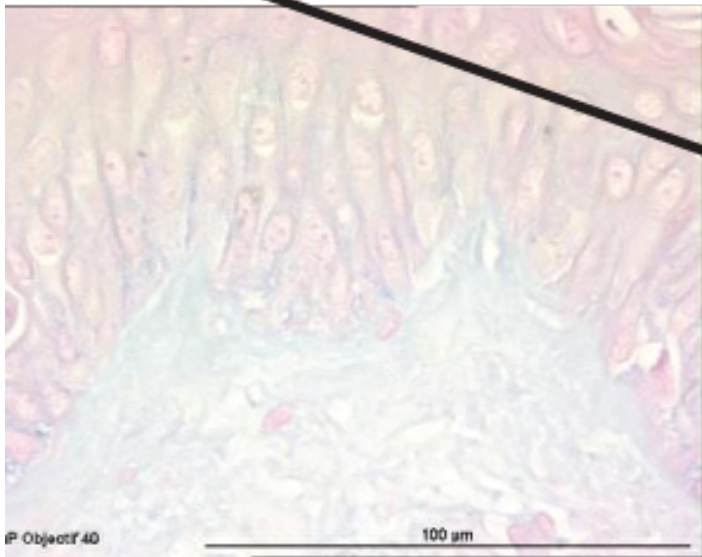
Untreated batch after 9 days

Batch treated with hydrolyzed collagen after 9 days

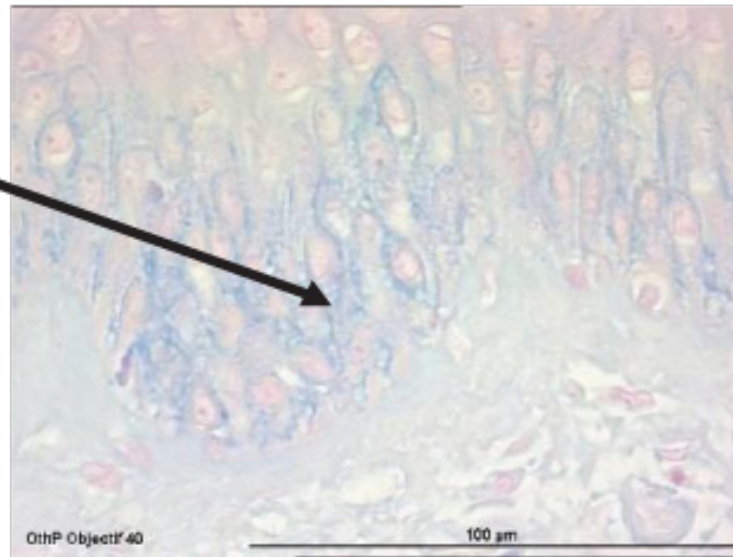
In vitro studies

Increase in Glycoaminoglycans:

After 9 days of treatment, acidic GAGs are clear and quite regular in the inter-cellular spaces (**alcian blue coloration**) in the epidermis and very slightly in all the papillary dermis



Untreated batch after 9 days



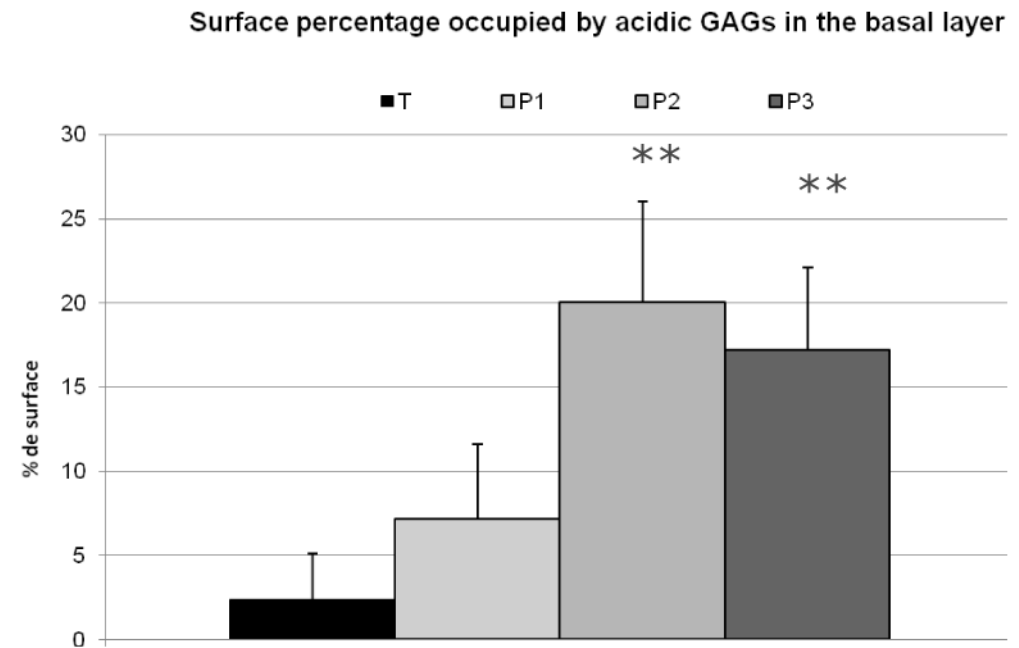
Batch treated with Fish hydrolyzed collagen after 9 days

In vitro studies

The image analysis shows a **significant increase of the collagen production** by skin explants

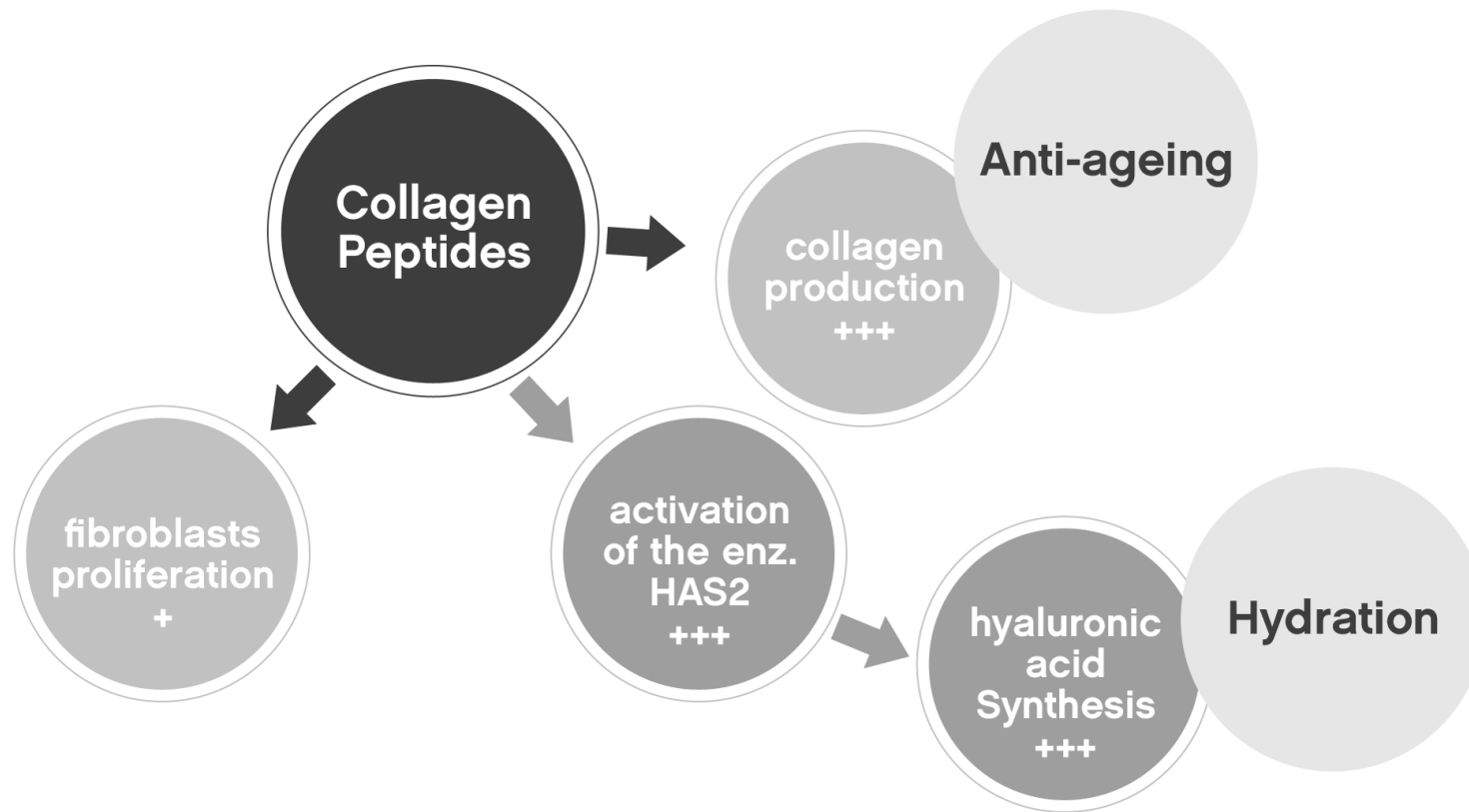
The collagen peptides **increase the production of GAGs** with the various concentrations.

The difference vs T is significant ($p < 0.001$) with 0.1mg/ml and 1mg/ml.



Mechanism of action of collagen peptides

Conclusions



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