Hydrolyzed Collagen and Skin Health
2009 clinical studies results
A growing body of research is showing how nutricosmetics can contribute to healthy skin (11). While topical creams and cosmetic products can affect skin condition from the outside, nutritional supplements taken orally can have an impact from within the skin: this is called “Beauty from Within”.

To assess the efficacy and acceptability of Peptan™, two double-blind randomized clinical studies versus placebo were carried on 80 healthy female subjects aged 35 to 59. The objective of these clinical studies was to evaluate the effect of oral intake of 10g of Peptan™ Hydrolyzed Collagen on dermophysiological measures and its tolerance.

**Moisturizing effect measuring principle**

Cutaneous hydration measurements were performed with a COURAGE & KHAZAKA Corneometer® CM 825. This instrument determines the humidity level of the most external cutaneous layers of the stratum corneum. The principle of the Corneometer® is based on the modification of the electrical capacity of the detector. The surface of the probe head, in contact with the skin, modifies its electrical capacity according to the humidity level of the skin.

**Anti-aging effect measuring principles**

Polymer silicone skin prints are taken on the studied area, before and at each time of measurement, then studied using the Skin Image Analyser® (SIA) or 3D Roughness analyzer ASA-03R (Asahi biomed co). Oblique lighting (35°) brings out the relief of the replica that is then observed with a digital camera linked to a computer. A 1cm² area is studied. This produces a digitized image enabling different parameters to be obtained by analyzing shades of grey.

Cutometer® MPA 850 by COURAGE & KHAZAKA was used with a 2mm probe to measure the way skin reacts to the mechanical constraints. This method measures the degree of deformation and the time required for the skin to return to its original state.

**Acceptability questionnaire**

The volunteers’ perception of how Peptan™ performs was an integral part of the clinical study and, in addition to a daily diary record, all the women completed self-assessment questionnaires at the onset of the trial and then at the end of the study. The answers provided by the volunteers on the subjective self-assessment questionnaire were used to evaluate the efficacy of Peptan™ Hydrolyzed Collagen. These subjective criteria give an accurate indication of product acceptability over time and its tolerance.
Peptan™ increases skin hydration level by 28% compared to placebo after 8 weeks.

91% of Peptan™ volunteers saw their skin hydration level increased after 8 weeks.

There was a significant improvement for the Peptan™ test group of skin hydration by 28% compared to placebo after 8 weeks.

Peptan™ smoothes skin micro-relief furrows by 26% and prevents deep wrinkle formation.

The number of deep wrinkles (n=47) - Skin replica analysis

The skin suppleness increases by 19% in Peptan™ group.

Reduction in the depth and width of the wrinkles.
At the end of the study, the answers provided by the volunteers on the subjective assessment questionnaire were used to evaluate the organoleptic characteristics and efficacy of the tested products. These subjective criteria give an accurate indication of products acceptability over time.

Study YNTKK - 2008 - 4144

Skin hydration, reported by volunteers, significantly increased in the Peptan™ group. 68% of women have perceived the positive effect of Peptan™ Hydrolyzed Collagen on their skin dryness. The volunteers have assessed an improvement of the perceived loss of moisture after cleansing and in the make-up application.

The positive effect of Peptan™ Hydrolyzed Collagen oral intake on daily skin care routine is here confirmed. All the results lead to the same conclusion: Peptan™ improves significantly skin dryness and associated signs.

Study 2008 - A00654 - 51

Peptan™ was perceived as being more efficient than the placebo by volunteers on:
- skin suppleness
- skin tonicity
- skin brightness

Tolerance of the product was evaluated through a clinical examination and volunteer’s questionnaire. No adverse effects were reported on the Peptan™ group.

Conclusion

These two clinical studies demonstrated the benefits of Peptan™ on skin health.

Taken daily, up to 12 weeks, the results verify that regular intake of Peptan™ Hydrolyzed Collagen improves the basic skin condition and structure.

Thanks to these results and its regulatory status, Peptan™ represents a very potent ingredient for the nutricosmetic market.

Peptan™ has clinically shown to:
- Improve skin moisture level
- Improve skin smoothness by reducing the number of micro-relief furrows
- Prevent the formation of deep-wrinkles
- Improve skin suppleness

Peptan™, a completely characterized and scientifically objectivized natural bioactive ingredient that improves epidermis moisture content and prevents skin aging.
Mechanism of action

This commentary compiles the available scientific information, existing literature and Peptan™ clinical studies results. Peptan™ is a completely characterized and objectivized bioactive ingredient that improves epidermis moisture content and prevents skin aging.

Hydrolyzed Collagen from fish, porcine or bovine origin is currently used in various fields including functional food, beverages and dietary supplements. Several studies, including Rousselot in vitro assays, have demonstrated that Hydrolyzed Collagen is highly digestible. If native collagen is very resistant and regarded as indigestible, Hydrolyzed Collagen can be easily attacked by proteolytic enzymes. More than 90% of the hydrolysates are digested and quickly absorbed after oral ingestion (2 & 3). As a food ingredient, oral ingestion of Hydrolyzed Collagen has been reported as safe (1).

In order to be active, Hydrolyzed Collagen must have an excellent bioavailability. This has been confirmed in animals and human after oral administration: 95% was absorbed within the first 12h. Radioactivity in cartilage attained its peak value 12h after the oral administration of 14C labeled Hydrolyzed Collagen, and in contrasts to plasma, 14C-activity remained relatively high after 96h (3). Hydrolyzed Collagen derived hydroxyproline peptides appeared in human blood after 12h fasting. Their amount increased after Hydrolyzed Collagen intake with a peak level after 2h and then decreased to half after 4h from the ingestion. Proline-Hydroxyproline (Pro-Hypro) can be considered as one of the indigestible peptide against peptidase in human blood since 75% of Pro-Hypro remained after the in vitro reaction with human serum for 24h (4).

When type I collagens are digested by collagenase, the resulting peptides are chemo-attractants for fibroblasts. Chemotactic response of dermal fibroblasts of collagen derived peptide was quantified through an in vitro assay.

In addition, synthetic di- and tri-peptides containing Hypro were also chemotactic. Collagen peptides may act as messenger and trigger the synthesis and reorganization of new collagen fibers by stimulating fibroblast cells (5). Furthermore, some studies show that Hydrolyzed Collagen increases the fibroblast density and the diameter of collagen fibrils in the dermis. Hydrolyzed Collagen may improve the mechanical strength of the skin by increasing decorin ratio (6 & 7).

Decorin interacts with collagen and influences collagen fibrillogenesis, thus regulating excessive bundle-like aggregation of collagen. Rousselot clinical studies show that Peptan™ increases skin suppleness which could come from the better cohesion of collagen fibers. Some clinical studies have shown that the oral intake of 5 to 10g per day of Hydrolyzed Collagen may have a positive effect on human tissues containing collagen such as skin. The moisture content of forearms and backs of the necks increased significantly. This implies that ingestion of Hydrolyzed Collagen improves the function of the outermost part of the epidermis. Skin’s relief was also improved (8,9 & 10). Those results were perfectly in line with Rousselot clinical studies: Peptan™ improves skin’s hydration and smoothness. Therefore it might boost epidermis cells turnover, speeding the water moves through the skin layer, improving the water-binding function of the outermost part of the epidermis and preventing the formation deep-wrinkles by stimulating collagen synthesis.

References

rhc@rousselot.com
www.rousselot.com
www.rousselot-rhc.com

VION

Rousselot is part of VION N.V.,
an international food company
with production and sales facilities
on all continents. With two international
divisions, VION Food and VION Ingredients
the company is active
in the field of high quality foodstuffs
and health products for humans and animals.
Rousselot is part of the Ingredients division.
VION has annual sales of EUR 9.6 billion
and provides employment
for 35,000 people worldwide.
VION’s head office is in Son,
The Netherlands.
www.vionfood.com

Our sales offices around the world

For France, Southern Europe,
Middle-East, Africa
Rousselot S.A.S.
10, avenue de l’Arche
92419 Courbevoie Cedex
France
Phone: +33 (0) 1 46 67 87 20
Fax: +33 (0) 1 46 67 87 21

For Northern, Central
and Eastern Europe,
U.K. and Ireland
Rousselot N.V.
Meulestedekaai 81
9000 Gent
Belgium
Phone: +32 (0) 9 255 18 60
Fax: +32 (0) 9 255 18 61

For Spain and Portugal
Rousselot Gelatin S.L.
Paratge Pont de Torrent, S/N
17464 Cervia de Ter
(Girona)
Spain
Phone: +34 972 49 67 00
Fax: +34 972 49 62 79

For South America and Central America
Rousselot Gelatina Do Brasil S.A.
Rua Santo Agostinho, N° 280
Distrito de Arcadas
CEP 13908-080
Amparo – São Paulo - Brasil
Teléfono: +55 (19) 3907 9000
Fax: +55 (19) 3907 9010

Rousselot Argentina S.A.
Avenida Gobernador Vergara 2532
1688 Villa Tesei - Hurlingham
(Provincia de Buenos Aires)
Argentina
Teléfono: +54 11 44 89 81 00
Fax: +54 11 44 89 81 01

For North America and Mexico
Rousselot Inc.
1231 South Rochester Street
Suite 250
Mukwonago, WI 53149
USA
Phone: +1 (888) 455 3556
Fax: +1 (262) 363 2789

For China
Rousselot China
25/A, No. 18 North Cao Xi Road
Shanghai – PO: 200030
China
Phone: +86 21 6427 7337
Fax: +86 21 6427 7336

For Japan
Rousselot Japan K.K.
Teikokushoin Bldg.
3-29 Kandajinbochou
Chiyoda-Ku
Tokyo - Zip 101-0051
Japan
Phone: +81 3 3239 2800
Fax: +81 3 3239 2801

For South East Asia, Taiwan,
Hong Kong, Australia, New Zealand,
India, Malaysia and Sri Lanka
Rousselot (M) SDN. BHD.
Block P3-21, Plaza Damas
Jalan Sri Hartamas 1
50480 Kuala Lumpur
Malaysia
Phone: +603 6201 8282
Fax: +603 6201 8787