A new randomized, double-blind, placebo-controlled clinical study shows that taking Peptan® collagen peptides goes beyond just helping smooth wrinkles. The study provides powerful scientific evidence that the oral supplement reduces skin pore visibility and strengthens hair, and proves these benefits happen at lower doses shown before.1


Collagen Peptides for a Healthy Lifestyle
Collagen peptides are bioactive directly in the target tissues

Collagen is naturally present in the body and made up of a unique combination of amino acids, some of which form very stable peptide bonds with each other. Those bonds are resistant to breakdown by the digestive system. Therefore, when orally taking collagen peptides, small bioactive peptides, in addition to free amino acids, can cross from the intestine into the bloodstream. The peptides also resist further breakdown in the bloodstream and reach connective tissues intact.

Studies with radioactively labelled collagen-derived peptides show that soon after absorption they enter into target tissues, such as bone, cartilage, muscle and skin. In skin they could be detected until 14 days after administration. Thanks to these remarkable properties, and their specific bioactivity, studies in humans have shown that Peptan collagen peptides improve skin hydration and dermal collagen density, reducing fragmentation of the dermal collagen network, which is a key factor in aging. In its most recent study, Rousselot sought to evaluate skin and hair properties after 90 days of daily supplementation with 5g of bovine Peptan collagen peptide. This supplementation led to significant improvements in skin appearance scores, dermal density, and hair strength in an ethnically diverse Brazilian population.

INTRODUCING DR. JANNE PRAWITT

Dr. Janne Prawitt is the Scientific Director Peptan at Rousselot where she is responsible for the Nutrition and Health Science portfolio supporting Peptan, Rousselot’s collagen peptides brand. As a nutritional scientist by education, she has spent 10 years in academic research in Germany and France, investigating mechanisms that contribute to the development of metabolic diseases such as obesity and diabetes. Janne joined Rousselot in 2013, where her work focuses on extending the scientific evidence for collagen in musculoskeletal health and skin physiology, and on building scientific ground for the development of new health applications and new products for the global market.

References:
1 Rousselot unpublished study.
Collagen peptides promote smooth-looking skin and also benefit hair

Peptan collagen peptide supplementation is an effective way of strengthening hair, as well as making skin look better - this is the conclusion of this new clinical trial in 60 healthy Brazilian women, varying in the age of 45 to 60 years old. Those who took Peptan experienced statistically significant benefits.

This study builds on existing evidence on how oral collagen supplementation can reduce the signs of skin aging. Sitting underneath the skin's outer epidermis layer, our dermis gives skin strength and firmness. As people age, the dermis changes structure because its collagen network breaks up and thins.7 At the same time skin fibroblast cells slow down production of the matrix that surrounds them, so that degraded matrix components are not replaced fast enough.8 This leads to loss of skin elasticity, hydration and strength, causing visible sagging and wrinkle formation.7,9

Illustration of skin structure

However, those changes triggered by aging differ between ethnic groups. The onset of aging typically begins earlier in less pigmented compared to more darkly pigmented skin.10,11 One reason is that darkly pigmented skin offers better UV protection, but the biochemical and physiological processes involved are complex.

In animals, oral collagen peptide supplementation slows down aging processes by stimulating collagen production and hampering the enzyme that breaks down collagen.2,10

In humans, such supplements improve skin hydration,6,12,13,14 elasticity,12,13,14 and dermal collagen density.6,8,14 Rousselot has tested 10g daily dosages of Peptan from porcine and fish origin in 33 women in Japan and 130 in France, respectively.6 The results, published in 2015, showed increased collagen density and decreased dermal collagen network fragmentation after just four weeks of supplementation. In another study, published in 2015, 60 women in Brazil took 10g of bovine collagen peptides for 90 days.9 This improved dermal collagen density, skin elasticity and reduced the size of wrinkles and pores.

In addition to benefits on skin, collagen supplements are used to improve the quality of hair. So far, there is not yet any scientific evidence proving that collagen is effective. Hair consists of 65-95% protein, with age, hair fibers can be weakened15 making them easier to break and to appear less shiny. Rousselot has therefore included the investigation of hair properties in its recently conducted clinical study. Since hair characteristics differ according to ethnicity and hair type, it was especially interesting to investigate this parameter in the study in Brazil, which has an ethnically diverse population having skin phototype II and III.

In this study, 30 women received 5g per day of bovine Peptan collagen peptides, and another 30 women a placebo (maltodextrin) supplement for 90 days. The skin properties on their cheeks and around their nose, eyes and mouth was investigated before starting, and after 45 and 90 days of supplementation, as were the characteristics of the hair.
Collagen peptides reduce skin wrinkles and skin pore scores

Rousselot studied the skin of the participating women by taking high resolution images and scoring the appearance of wrinkles and skin pores by a software-assisted method. Significant decreases in the wrinkles around the eyes and mouth, reduced scaliness and roughness of the skin, and a lower visibility of skin pores were observed only in the group that was taking Peptan.

Peptan® reduces wrinkles around the eye
Representative photographs of the wrinkles of the crow feet region close to the eye before (baseline) and after supplementation with either placebo or Peptan.

Changes of the wrinkle score for the crow feet region after 45 and 90 days of supplementation as % compared to baseline (before supplementation). A decrease of the score represents a decrease in wrinkles.

References:
13 Ohara H et al. Improvement in the moisture content of the stratum corneum following 4 weeks of collagen hydrolysate ingestion. Food Science and Technology Research 2009; 56: 137-145.
**Peptan® reduces the visibility of pores**

Representative photographs of the pores of the cheekbone region before (baseline) and after supplementation with either placebo or Peptan. Pores are indicated with a green (small) or red (large) line.

Quantification of the number of study participants presenting a decrease in pore visibility: Peptan supplementation reduces the visibility of pores in 57% of the volunteers. Reference 1

Reduced wrinkle appearance in response to oral collagen peptide supplementation is often linked to an increased density of the dermis, which contains the strength-providing collagen network. Rousselot investigated the dermal density using a 20 MHz ultrasound device that measures how well ultrasonic waves are reflected by the skin, a property known as echogenicity. The echogenicity ratio decreased signifying an increased dermis density, which contributes to repair skin damage and slow down aging processes caused by time and light.

**Peptan® Increases dermal density**

Representative echogenicity images of the dermis before (baseline) and after 45 or 90 days supplementation with either placebo or Peptan. Changes of the abundance of a low intensity signal in the dermis after 90 days of supplementation with placebo or Peptan relative to baseline (before supplementation). A decrease in the low intensity signal represents an improved (increased) dermal density. Reference 1
Improved hair strength

To investigate the effect of Peptan on hair properties, the break force of the hair of trial participants was measured using a special texture analyzer system. After supplementation with Peptan, the women's hair break stress values showed a statistically significant increase, which was not present in the control group. Such results show that oral Peptan collagen peptide supplementation strengthens the hair. That can be especially important for aging hair, which is thinner and weaker than in younger people.

Peptan® Increases the mechanical strength of hair
Changes in hair strength after 90 days of supplementation of placebo or Peptan relative to baseline (before supplementation).

Reference 1
Conclusion

This study investigated the effect of a 5g daily oral dose of bovine origin Peptan collagen peptides or placebo to 30 women per group, aged 45-60 years, for a duration of 90 days. The results clearly show that 5g/daily of Peptan supplementation helps make skin denser and better-looking, and strengthens hair. The skin benefits include less visible skin pores and wrinkles, reduced scaliness and roughness, and higher dermal density.

“Convincing evidence for the efficacy of Peptan collagen peptides in promoting skin beauty and hair health.”

This study delivers solid scientific proof that Peptan produced from bovine collagen provides the same benefits to those previously found for non-bovine collagen peptides. It further proves that Peptan collagen peptides are effective for skin beauty at a daily dose of 5g compared to the 10g dose initially investigated. It also reveals the novel finding that hair tests on people taking Peptan show higher break strength. All these findings hold true for Brazilian women from various ethnic groups, making a strong case that supplementation can help everyone. These results show that collagen peptides are therefore a very powerful nutricosmetics supplement adding to the benefits for skin appearance that have already been proven for Peptan.
### Peptan® is a safe, natural ingredient for effective nutricosmetics applications

<table>
<thead>
<tr>
<th><strong>Product brand name</strong></th>
<th>Peptan® collagen peptides</th>
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<tbody>
<tr>
<td><strong>Appearance</strong></td>
<td>White to cream powder</td>
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<tr>
<td><strong>Solubility</strong></td>
<td>Instant cold water soluble</td>
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<tr>
<td><strong>Organoleptic properties</strong></td>
<td>Neutral</td>
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<tr>
<td><strong>Applications</strong></td>
<td>Dietary supplements, functional foods and beverages</td>
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<tr>
<td><strong>Safety &amp; quality</strong></td>
<td>Physical and chemical characteristics, instant solubility (wettability and dispersibility), organoleptic properties and packaging are strictly controlled to meet Rousselot’s stringent quality and food safety standards. Peptan carries GRAS status.</td>
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**Your Rousselot and Peptan sales contact information:**

**About Rousselot and Peptan:**

Rousselot and Peptan are both brands of Darling Ingredients Inc. Rousselot is the global leader¹ of gelatin and collagen peptides. Rousselot’s wide range of collagen peptides are marketed under the Peptan brand. We work in partnership with our customers all over the world, delivering innovative and advanced ingredient solutions manufactured through state of the art operations. We help our customers achieve their goals, enabling them to create world class pharmaceutical, food and nutritional products to inspire and excite today’s demanding consumers.

² Global Industry Analysts, Inc. Gelatin a Global Strategic Business report

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