ALL ABOUT COLLAGEN

Collagen Peptides for a Healthy Lifestyle

PRODUCED & MARKETED BY ROUSSELOT
SUMMARY

4/5 What is collagen
   Collagen and its role in the human body
   Structure of collagen
   What happens when we age?

6/7 Different forms of collagen
   Digestibility and bioavailability

8/9 Dual action effect
   Collagen is a unique protein

10/13 Collagen peptides’ health benefits

14/15 How to replenish collagen
   FAQ

16/17 Peptan, the world’s leading collagen peptide brand

18/19 Recipes for a healthy lifestyle
   Beet and berry smoothie
   Miso soup

FAQ

10/13 Collagen peptides’ health benefits

14/15 How to replenish collagen
   FAQ

16/17 Peptan, the world’s leading collagen peptide brand

18/19 Recipes for a healthy lifestyle
   Beet and berry smoothie
   Miso soup
What is collagen

Collagen is a protein found in animals and it is made up of amino acids. Since ancient times, collagen has been known to benefit human health. For centuries, people have been consuming collagen in the form of bone broth to support their joint and bone health and in more recent times, to promote skin beauty.

Collagen and its role in the human body

Collagen is the major protein in the connective tissues of the body. It holds all living tissues together and ensures the integrity, elasticity and regeneration of skin, cartilage and bones. It is the most abundant protein, representing almost 30% of all human protein content.

Structure of collagen

Collagen is a triple helix of alpha-chains of amino acids which build strong fibers used for the body’s structure.

Collagen distribution in human body (by weight ratio of dry mass)

- Skin 75%
- Tendons 85%
- Tendinous muscles 6%
- Bones 90% (organic bone mass)
- Joint cartilage 70%
- Ligaments 70%
What happens when we age?

Collagen production in our body peaks around the age of 20, and as we age, the body’s production of collagen metabolism slows down causing a gradual deterioration of collagen fibers in all connective tissues. This degradation process will affect different parts of our body, for example in the skin as shown in below image.

**Illustration of skin structure**

Skin:
As skin cells become less active, the collagen network that provides skin firmness and structure breaks down. Skin becomes dehydrated and thinner, plus lines, wrinkles and deep furrows start to appear.

Bones:
Bone turnover becomes imbalanced, that means there is more bone loss than bone formation. This causes bones to become more fragile and easier to break.

Joints:
Lower levels of collagen and other matrix components caused by aging can lead to loss of cartilage and joint function. This results in joint discomfort.

Muscles:
A gradual loss of muscle mass and strength caused by aging can affect balance, gait and overall mobility.
Different forms of collagen

Collagen is a safe and natural ingredient which can be obtained in different grades. It can be found in foods such as bone broth or gelatin-based desserts. The controlled breakdown of native collagen with the help of enzymes produces collagen peptides. The solubility, absorption and digestibility vary among different grades of collagen.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Form</th>
<th>Solubility</th>
<th>Absorption &amp; digestibility</th>
<th>Application examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native collagen</td>
<td></td>
<td>Insoluble</td>
<td>None</td>
<td>Medical materials, collagen casings</td>
</tr>
<tr>
<td>Gelatin</td>
<td></td>
<td>Medium</td>
<td>Low</td>
<td>Gelatin desserts, confectionery</td>
</tr>
<tr>
<td>Collagen peptides</td>
<td></td>
<td>High</td>
<td>High</td>
<td>Dietary supplements, functional foods</td>
</tr>
</tbody>
</table>
Digestibility and bioavailability

Collagen peptides are not exactly the same as gelatin. Both originate from collagen and are proteins made of amino acids. Collagen peptides are small molecules produced by an enzymatic hydrolysis and they have a much lower molecular weight than native collagen peptides. Collagen peptides do not have the gelling functionality of gelatin and are soluble in cold water. They are highly digestible and bioavailable and are used in dietary supplements and functional foods because of their proven health benefits.

Studies have demonstrated that over 90% of the peptides are digested and absorbed within a few hours after meals. This rapid absorption ensures an effective delivery of the essential peptides and amino acids to their site of action within the body.

Ichikawa, S. et al., 2010, Hydroxyproline-containing dipeptides and tripeptides quantified at high concentration in human blood after oral administration of gelatine hydrolysate. International Journal of Food Sciences and Nutrition, 61(1):52-60
Dual-action effect

Proteins are essential nutrients for our body. They are made from long chains of amino acids. Collagen peptides are proteins that are highly bioavailable. Consumption of collagen peptides will help supply your body with amino acids needed as building blocks to renew tissues such as skin, bones and joints. It has been proposed that collagen peptides may act as a messenger to the cells and trigger the synthesis and reorganization of new collagen fibers, therefore supporting skin tissue structure.

Role of vitamin C

Vitamin C is a co-factor which supports the production of collagen in the body. Therefore, it is important to ensure that you have sufficient vitamin C in your diet to boost the collagen synthesis.
Collagen is a unique protein with key amino acids

Collagen peptides are characterized by a high level of the key amino acids: glycine and proline/hydroxyproline. These represent around 50% of the total amino acid content.

Hydroxyproline is unique to collagen. The amino acids in collagen are the same as found in skin, joints and bones.

This very specific composition of amino acids provides collagen peptides with unique biofunctional properties that cannot be found in other protein sources.
Collagen peptides’ health benefits

Skin

Collagen makes up 75% of the skin’s dry mass skin content. As a key component of the skin’s structure, collagen fibers provide the infrastructure for elastin, which maintains the skin’s elasticity, and for hyaluronic acid to trap moisture.

Skin dryness and an accelerated fragmentation of the collagen network in the dermis are hallmarks of skin aging. The causes can be natural aging, UV from sunlight, pollution, lifestyle and nutritional choices.

Collagen’s effects on skin beauty

Clinical trials showed that collagen peptides (Peptan) consumption effectively supports the intrinsic collagen network of deeper skin layers: the fragmentation of collagen in the deep layers of the skin was reduced already after 4 weeks and decreased by 31% after 12 weeks. At the same time, the density of the collagen layer increased, providing more strength to the skin.

Peptan further increased skin moisture by 28% after 8 weeks. This restructuring of the skin is key to bringing about anti-aging benefits and a more youthful appearance.

Peptan is also proven to stimulate collagen production and moisture by increasing the amount of water-binding hyaluronic acid in the epidermis.
Bone

Representing around 90% of organic bone mass, collagen is a protein that provides bones their soft framework. Calcium phosphate is the mineral that adds strength and hardens the framework. Together, collagen and calcium give bones their strength and at the same time flexible enough to withstand stress. A cycle of continuous bone formation and breakdown replaces approximately 15% of bone mass in healthy adults each year. When this balance tips towards faster bone loss and slower bone formation, the bone density decreases leaving the bones more fragile.

Collagen’s effect on bone health

Collagen peptides (Peptan) are demonstrated in scientific studies to promote bone health by stimulating bone renewal, maintaining bone mineral density and improving bone solidity and strength.2,3,4,5

OSTEOBLASTS
Star-shaped cells

OSTEOCLASTS
Round black cells

The image on the left shows bone cells that are cultured in the presence of Peptan (A) or a control protein (B). Peptan stimulates the development of bone forming cells (osteoblasts) visible as star-shaped cells much more than the control protein. Bone resorbing cells (osteoclasts) are not affected by Peptan or the control protein.
Joints
Collagen fibers make up to 70% of dry cartilage mass and are responsible for its structure and strength. Aging and high impact sports can cause wear and tear to the cartilage. This can lead to joint discomfort, tenderness, stiffness and locking.

Collagen’s effect on joint health
Collagen peptides (Peptan) have been proven to stimulate cartilage cells synthesis, producing increased aggrecan and collagen. A clinical study showed that an intake of Peptan can reduce joint discomfort and improve joint flexibility and function.

The Peptan treatment resulted in a significant decrease of the WOMAC score linked to an improvement of 37% in joint pain score, 44% in stiffness score and 22% in function score. A recent in-vivo study showed that Peptan uniquely combines anti-inflammatory effects with clear joint structure benefits, as it supports cartilage regeneration.

Muscle
Sarcopenia is the age-related loss of muscle mass and function. Exercise and adequate intake of easily digestible protein is vital to counteracting the condition’s effects.

Collagen’s effect on muscles
Collagen peptides are bioactive proteins promoting muscle regeneration. Study showed that collagen peptides can help maintain nitrogen balance and preserve lean body mass in elderly adults. Collagen peptide supplementation in combination with resistance training has been shown to improve body composition and increase muscle strength in elderly sarcopenic men.
Other benefits of collagen peptides

Collagen peptides such as Peptan is a bioactive and pure protein, and as a protein it can help contribute to different health benefits. Protein is a vital part of the diet and the WHO recommends a mean daily intake of 0.8g/kg body weight of good quality protein.

Prevent injuries
Repetitive, high-impact movements can exert excessive stress on joints and even damage the cartilage, tendons and ligaments. Collagen peptides can support connective tissues and limit discomfort as well as the risk of any joint-related injury.11,12

Post-workout recovery
A high protein diet containing collagen peptides just after exercise may enhance muscle anabolism, replace lost proteins, help maintain and restore the protein content of the muscles while also reducing the recovery time.

Satiety effect
Providing a high satiety effect, collagen peptides are an excellent protein source to control appetite and moderate cravings.13
How to replenish collagen

Daily intake
In order to continuously boost the production of collagen in the body, it is recommended to consume collagen peptides on a daily basis. If you have a medical condition or are pregnant, please consult your medical doctors or health care professionals.

Dietary supplements
Collagen peptides are available in different forms for daily intake. They are available in the form of drinks, powders, tablets and more, depending on your preference and lifestyle.

Functional foods
Neutral in taste and providing multiple functional benefits, different types of foods and beverages can be enriched with collagen peptides to boost their health benefits. Functional foods and beverages such as dairy and nutritional bars are also good sources of collagen peptides and can be alternatives to dietary supplements.
FAQ

Are collagen peptides safe?
Collagen peptides such as Peptan are a pure and bioactive protein, derived from a 100% natural source and free from any side-effects.

What is the source of collagen peptides?
Collagen has a long history of use in foods, mainly in the form of gelatin found in gummies and of the desserts. Collagen is also naturally present in high amounts in some cooked foods, e.g. bone broth and in the skin of fish and chicken.

Collagen peptides are extracted from high quality raw materials, are purified and dried to produce a pure protein powder.

How much time is needed to see the first results?
Most studies showed positive health effects on skin and joints within 1-3 months of daily intake. However it is vital to keep up a regimen of daily collagen intake to ensure efficient metabolism and optimal effects.

Can collagen peptides simultaneously support multiple health benefits?
Absolutely, collagen peptides like Peptan are backed by published scientific evidence for their benefits on skin beauty and joint health. Further indications from preclinical models suggest that Peptan helps to maintain healthy bones. Thus, Peptan is a holistic solution to maintain the health of musculoskeletal system and also support skin beauty.
What is Peptan®

Peptan collagen peptides are Type 1 Collagen peptides. Peptan is a high-purity and natural product, containing more than 97% protein (on a dry weight basis). Peptan is optimized for high bioavailability and activity, and its hydrolyzed form makes it easily digestible. Peptan is a bioactive ingredient that has been specifically developed to deliver multiple health benefits and functional properties. Numerous scientific studies, including *in vitro*, *in vivo* and double-blind, placebo-controlled clinical studies, have demonstrated Peptan’s ability to promote healthy living and its proven benefits in key areas of healthy aging, joint and bone health, skin beauty and sports nutrition.

Easy to use

Peptan is a bioactive protein in powder form. It is neutral in taste and odor, highly soluble and heat-resistant. These characteristics make Peptan easy to be incorporated into a range of formulations from dietary supplements to functional foods and beverages such as confectionery, dairy and more. Peptan can be used as a supplement or directly as a powder addition to foods and drinks. Peptan is compatible with other active ingredients such as vitamins and minerals.
Quality first

As a premium collagen peptide, Peptan is 100% natural, safe and free from any preservatives or additives. Peptan is manufactured by Rousselot’s state-of-the-art certified plants in France and Brazil and meets the highest international food and quality standards with full traceability throughout the process. Peptan can be provided under Halal or Kosher certification.

Scientific references:

5. Daneault, A. et al., 2015, Biological effect of hydrolyzed collagen on bone metabolism. Critical Reviews in Food Science and Nutrition, 10:1040-8398
13. Veldhorst, M.A. et al., 2009, A breakfast with alpha-lactalbumin, gelatin, or gelatin TRP lowers energy intake at lunch compared with a breakfast with casein, soy, whey, or whey-GMP. Clinical Nutrition, 28(2):147-15
Recipes for a healthy lifestyle

Beet and berry smoothie
A healthy and colorful way to start your day. Delicious and loaded with Peptan collagen peptides, antioxidants, vitamins and lots of other nutrients, this beet and berry smoothie can help boost health and fitness, and promote a radiant and fabulous looking skin too.

INGREDIENTS
Serves: 4
• 150g cooked red beets, chopped
• 50g frozen raspberries
• 50g frozen blackberries
• 1 large banana
• 225g Greek yogurt
• 50g Peptan collagen peptides
• 250ml apple juice
• 4 fresh mint leaves (as edible garnish)

1. Combine all ingredients in a blender.
2. Blend on high speed until smooth.
3. Pour in glasses and garnish with mint leaves.
4. Serve immediately.
Miso soup

Miso soup is a traditional Japanese soup, the intense umami flavor nourishes and warms you from the inside. High in protein, vitamins and with added Peptan, this miso soup is not only a tasty comfort food, but also helps to support your mobility.

INGREDIENTS
Serves: 4
- 1 liter dashi stock or fish stock
- 20g wakame seaweed or dried nori
- 75g red miso paste
- 150g silken tofu, cubed
- 4 spring onions, finely sliced
- 50g Peptan collagen peptides

1. Place the dashi or fish stock in a large saucepan over medium heat. Bring to the boil. Reduce heat to low. Add the seaweed and and the tofu cubes, simmer gently for 5 minutes.
2. Place the miso paste in a small bowl. Add a little of the dashi, stirring until miso dissolves. Add the miso mixture to the saucepan and gently stir to combine. Add Peptan slowly in the soup, stir for 1 minute until dissolved and bring the soup to a simmer. Remove from heat.
3. Sprinkle the spring onions and serve in bowls.

Enjoy!

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ONE PEPTAN®, A WORLD OF HEALTH BENEFITS

At Peptan, we believe in our science. Peptan provides multiple health benefits by acting as building blocks for healthy joints, bones and muscles as well as skin. Globally recognized as the leading collagen peptides brand, Peptan consistently delivers the highest quality and support to meet your innovation and formulation needs. Peptan is the one bioactive ingredient that brings you a step closer to a healthier tomorrow.

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