

PEPTAN[®] FOR SPORTS NUTRITION



Collagen Peptides for a Healthy Lifestyle

PRODUCED & MARKETING BY ROUSSELOT

Peptan[®]

DARLING
INGREDIENTS

The global sports market is bursting with opportunities

Sports nutrition is a major growth market worldwide. Due to reach an estimated value of USD 37.7 billion in 2019¹, the market for sports and active nutrition products has suddenly evolved from a professional athletes' niche to a mainstream consumer market. The opportunities for manufacturers of nutritional solutions, not surprisingly, are huge.



Move freely and efficiently

The sports nutrition trend is being driven by a rapidly spreading consumer awareness of the benefits of exercise and balance nutrition – not just on our athletic performance, but also on the functioning of the musculoskeletal system and maintain our wellbeing and physical appearance. This means that as a manufacturer of sports nutrition products – such as nutritional bars and sports beverages – your potential buyers now



include not only professional athletes, but also recreational sports fans and almost everybody else pursuing an active lifestyle.

Scientific evidence of fitness benefits means long-term success

As this market expands, research into ingredients that will support consumers in their health and wellness pursuits has intensified. Leading manufacturers (and users) of sports nutrition and functional foods are placing ever higher demands on the benefits as well as the quality, safety and natural origins of the ingredients they use – and on the science behind it all. Offering safe ingredients with proven benefits are the secrets to dependable, lasting results in sports nutrition.

Watch your business peak with Peptan sports nutrition

Bioactive proteins, an essential nutrient for active people

Expert panels say physically active individuals need more protein than average: from 1.4 g/kg up to 2.0 g/kg of body weight daily². A higher protein intake can improve a sportsperson's training capacity, while also supporting quicker recovery afterwards. Meeting higher protein intake requirements through a varied, regular diet is feasible, but research shows that supplements can be a big help². In addition to ensuring a sufficient protein intake, the choice of protein source also matters. Often a blend of different complementary protein sources is optimal for sports nutrition formulations. Collagen peptides are specific bioactive proteins widely recognized as an essential nutrient for supporting musculoskeletal system to reduce the risk of injuries as well as speeding up recovery processes.

A unique amino acid composition offering specific benefits

With Peptan you add more value, creating an outstanding sports nutrition solution. Peptan collagen peptides have a unique amino acid profile, containing high levels of the amino acids glycine,

hydroxyproline, proline, alanine and arginine known to be conditionally essential, which are important for your body under physical stress..

Natural, bioactive and easily digestible

Proteins used for sports nutrition purposes need to be easily digestible and highly bioavailable to ensure efficient uptake by the body. Peptan offers these properties – and with no side effects. In fact, research has shown that over 90% of collagen peptides are digested and quickly absorbed after oral ingestion – ready to deliver their benefits to the consumer^{3,4,5}. Manufactured by means of a unique enzymatic hydrolysis process, Peptan collagen peptides represent small peptides that are easy for the body to absorb and put to use.

Clean label, free of additives and preservatives

Peptan is a natural, clean label food ingredient, free of additives and preservatives. It is the perfect solution for manufacturers seeking to serve customers in pursuit of an active, healthy and fit lifestyle.

References

¹ Thought for Food, 2014

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⁵ Watanabe-Kamiyama M. et al. 2010. Absorption and effectiveness of orally administered low molecular weight collagen hydrolysate in rats, *Journal of Agricultural and Food Chemistry*, 58: 835-841

Science's answer to optimizing movements in sports

Sports people are very aware and increasingly demanding when it comes to their nutrition. The good news is that together with Peptan you can fulfill those needs by delivering benefits which goes far beyond muscle regeneration - read further to see the key sports nutrition challenges, along with the science that makes Peptan the solution your customers are looking for.



Provide energy

protein
energy source

Build muscle

muscle
regeneration

Protect joints

connective
tissue support

Manage weight

increase
satiety

Extra energy

The promise of a safe, predictable energy level boost during training and while competing will gain you the attention of every athlete, whether recreational or pro.

Containing a high concentration of specific amino acids involved in body energy supply and metabolism, Peptan can help:

- **Improving performance during short bursts of exercise**

Human muscular function is dependent on the energy produced by the breakdown of a compound called adenosine triphosphate (ATP) in our cells. Creatine is a molecule consisting of three amino acids – glycine, arginine and methionine – that can aid muscular contraction during periods of high-intensity exercise, while it also helps to replace depleted ATP levels.



Peptan, which consists of 20% glycine and 8% arginine, can support the synthesis of creatine in the body, improving performance during short bursts of exercise. It also can help athletes to maintain their lean body mass and functional capacity⁶.

Oral arginine supplements may also have a beneficial effect on athletic performance, even at a low dose⁷. A daily recommended dose of 10g of Peptan produces almost 1g of arginine per day.

Muscle regeneration

Aiding recovery is crucial in sports nutrition. During long periods of exercise, oxidation causes protein loss in the muscle. Sufficient availability of amino acids can ensure optimum muscle regeneration.

■ Promoting muscle mass and strength

A clinical study showed that collagen peptides can help increase lean body mass, muscle strength as well as sensory motor control¹⁰. A pure, concentrated source of high-quality, natural protein, Peptan collagen peptides enhance and assist in muscle mass regeneration and optimization after exercise.

Healthy muscle and proper alignment of bones and joints are important to sportspeople. Healthy and well-functioning joints, tendons and ligaments are also the foundation for the ability to move freely and efficiently.

■ High nitrogen content for producing more proteins

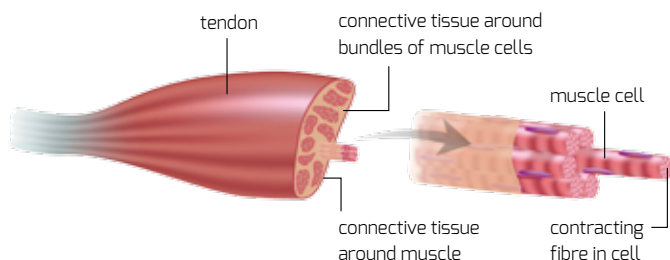
Collagen offers a high nitrogen content compared with whey (on a per g basis). This is because of collagen's high proportion of amino acids that have a low molecular weight or contain more than one nitrogen atom.

Clinical studies have demonstrated that collagen peptides are efficient in maintaining the user's nitrogen balance and in promoting muscle mass and strength¹¹.



Protecting connective tissues

Many popular sports, such as running and cycling, involve repetitive, high-impact movements. These can result in excessive stress on joints and even damage the cartilage, tendons and ligaments.



Studies backing the multiple benefits of collagen peptides in supporting connective tissues:

■ Regenerating cartilage and reducing joint inflammation

A recent in-vivo study confirmed Peptan's role in supporting joint health, providing scientific documentation of the mechanisms behind cartilage regeneration and joint inflammation reduction¹².

■ Reducing joint discomfort

Research has shown that collagen peptides may help protect the joint matrix. A study involving 147 sports enthusiasts showed a statistically significant reduction in joint discomfort among the group that took collagen peptides¹³. Another clinical study showed that Peptan helps to reduce joint stiffness¹⁴.

■ Supporting connective tissues

Collagen peptides support connective tissues and limit discomfort as well as the risk of any joint-related injury, by increasing the production of cartilage matrix, aggrecan and type II collagen¹⁵.

■ Decreasing tendon, ligament, joint and muscle injuries

In a large-scale study of different categories of athletes, those taking a mix of collagen peptides, BCAA and arginine over a period of two years experienced a decreased tendon, ligament, joint and muscle injury rate¹⁶.

■ Strengthening the Achilles tendon

An in vivo study investigated the effect of collagen peptides administration on the quality of the Achilles tendon. Collagen peptides were administered daily for 8 weeks, leading to a significant increase in collagen fibril diameter, indicating that collagen peptides can help to strengthen the Achilles tendon¹⁷.

References

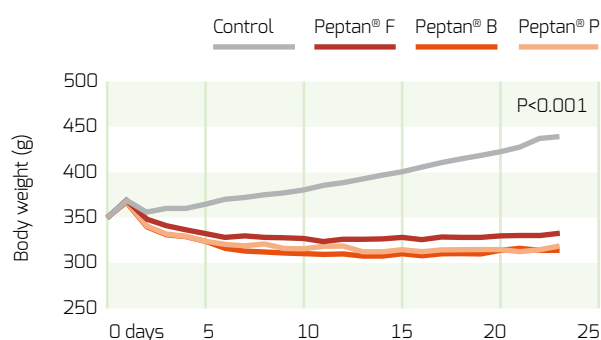
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Weight management

Weight management is a major point of attention in the wider trend towards healthier and more active lifestyles. Increasing numbers of consumers are looking to nutrition solutions for help in this area.

Known to be among the most satiating macronutrients, proteins can prevent cravings and help people reach their fitness and weight goals.

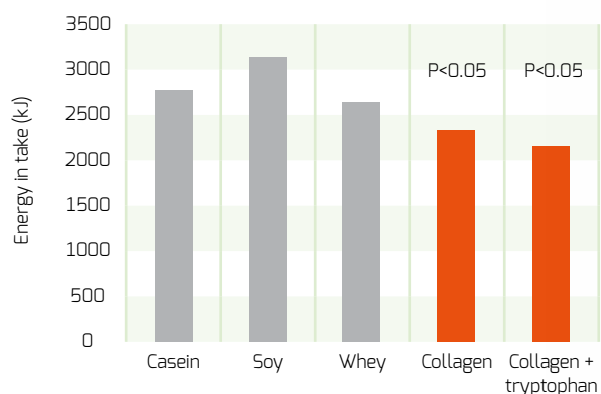
Satiating effect of Peptan (in vivo)



Body weight development of mice that were fed a diet containing Peptan F, B or P or a standard dairy protein as a control. The caloric and tryptophan content of all diets was standardized.

Rousselot unpublished data 2006

Collagen has a more pronounced satiating effect compared to other proteins



Ad libitum energy intake at lunch of human volunteers that consumed a breakfast containing proteins of different sources (constituting 25% of its energy content)¹⁹

Veldhorst, 2009

Inducing a satiation effect

Peptan's ability to induce a satiating effect has been proven in an *in vivo* study¹⁸.

More effective than standard dairy proteins

An *in vivo* study¹⁸ has shown that Peptan is more effective than a standard dairy protein in weight management.

A 2009 study demonstrated the improved satiating effect of collagen peptides on humans, in comparison to other proteins¹⁹. The study showed that collagen peptides – taken on their own or supplemented with tryptophan – are up to 30% to 50% more satiating than casein, soy or whey.



Peptan, your multifunctional solution for sports nutrition

Satisfy your customers and get ahead of the competition

Peptan's unique technical and functional benefits will satisfy your customers and give you an edge on your competitors. Whether your product is a purely functional sports bar, a supplement for connective tissue support or a guilt-free indulgence, Peptan can boost its profile.

High protein content, neutral taste and odor

Containing more than 97% protein (dry weight basis), Peptan powder is neutral in taste, odor and color. It is instantly soluble and easy to incorporate in any product, even at a very high protein content. Due to Peptan's excellent organoleptic profile, you can even use it to help offset the bitterness typical of many other proteins.

Easily blendable for added performance

If you want to optimize the amino acid balance in your active nutrition product, you can blend Peptan with high-quality whey or soy protein. Another option is to supplement it with BCAA (branched chain amino acids) and tryptophan. You can also blend Peptan with other vitamins and minerals for a synergistic effect.



Highly stable and heat-resistant

A highly stable ingredient, Peptan has excellent compatibility with other ingredients. Its high heat resistance makes it suitable for use in long shelf-life beverage applications.





Unique benefits across applications

Peptan's unique benefits make it suitable for all your sports performance and active nutrition products.



Dairy



Powder drinks



Beverages



Tablets and capsules



Nutritional bars



Other applications

In powder drinks and beverages

- Excellent solubility in cold water
- Low viscosity
- Heat-resistant and stable
- Transparent in solution
- No tendency towards sedimentation

In nutritional bars

- Improves shelf-life
- Enhances texture and softness
- Improves water binding capacity

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Peptan is not only an active ingredient, but it comes with other add on values such as formulation support. This has been a decisive factor in the success of our products

Jose Luis Rodríguez Herrera,
Sales Manager, Endo-Met Farma

Benefit from our (co-)innovation, commitment & world-class expertise

With Peptan, you will have a reliable, closely connected partner

Our global leadership in collagen peptides, combined with our worldwide presence and customer-centric culture, enables us to be a closely connected, reliable partner to you as a manufacturer.

We can help you with virtually any product requirement or innovation you have in mind. Here are some key benefits you will enjoy as you partner with Peptan.



1. Trustworthy, up-to-date science

Peptan offers proven efficacy in extensive in vitro, in vivo and double blind, placebo controlled clinical studies and is recognized worldwide for its unrivalled scientific backing.

We'll help you communicate the science, too.

2. Quality & safety

Peptan is manufactured in-house in state-of-the-art certified plants which meet the highest international food quality standards and ensure traceability of products and processes. A premium quality collagen peptide, Peptan is free from preservatives or additives.

Full control from source to final product.

3. Formulation optimization

The Peptan Expertise Center focuses on new product and application developments and innovation in nutritional science and research. We optimize nutrition and health benefits, while making sure product taste and consumer appeal stay in focus.

We can help get your product faster to market.

4. Co-innovation

Global network of experts are available to help you develop successful, marketable product innovations with Peptan -we are happy to co-innovate with you.

Join our Innovation Day to gain insights of the latest marketable innovations.

5. Brand development

We also offer outstanding brand development support. You can benefit from endorsement by Peptan branding and the opportunity to list Peptan as one of the ingredients used in your product.

Contact us to know more about our co-branding program.



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About Rousselot and Peptan:

Rousselot and Peptan are both¹ brands of Darling Ingredients Inc. Rousselot is the global leader 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.

¹ Grand View Research, Gelatin Market Analysis and Segments Forecasts to 2024, 2014

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