Collagen peptide

SOLUGEL®

The natural solution for your sports nutrition and active life

SPORTS NUTRITION

PB LEINER
PB GELATINS

SOLUGEL® FOR SPORTS NUTRITION

The rising global sports nutrition markets

Today, more and more people are aware of the importance of maintaining healthy life style by engaging in sports activities and paying attention to their nutrition. The sports nutrition market, originally focused on niche markets targeting professional athletes and sports enthusiasts, is now moving to mainstream markets, from those who pursue sports as hobbies, to lifestyle non-athletic, and even the ageing population.

Consumers are increasingly looking for nutritional products tailored to their specific athletic requirements to excel with fitness and performance, and there is also more of a focus on health, wellness and convenience.

The global sports nutrition market is expected to grow at a compound annual growth rate of 7% from 2012 to 2017. Despite being the most mature and the most developed market, the United States is projected to keep pace with the global market [1].

Collagen peptide, a unique protein for sports nutrition

One of the most known nutrient in sports nutrition is protein, which accounts for almost 58% of the total market [2].

Presented in every cell, tissue and organ in our bodies, the proteins are constantly being broken down and replaced. The body doesn't store protein for later use, therefore consuming adequate high quality protein is necessary.

Proteins are composed of amino acids which are linked together in different patterns to form specific proteins with different characteristics. There are twenty different amino acids of which nine are considered essential because they can't be synthesized by the body.

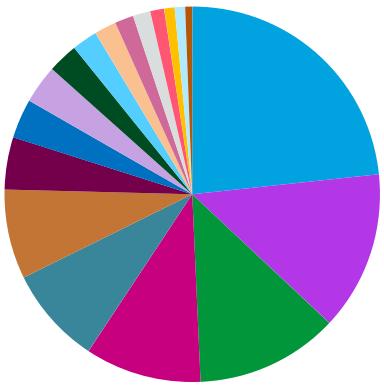
In nature, proteins can be found in plants and animals. Studies have proven that animal protein source has multiple benefits over plant based proteins such as better digestibility, growth performance, and gut health [3].

As the most abundant protein in mammals, collagen connects and supports body tissues such as tendons, muscles and cartilage. It makes up about 30% of the body's protein and over 28 different types of collagen are identified.

By breaking the collagen down enzymatically into smaller molecular peptides, bioactive collagen peptides are obtained that can be easily digested and quickly absorbed in the blood stream.

Consisting of a unique combination of amino acids, Solugel® is a high quality collagen peptide obtained from natural animal source (see figure 1). It is a pure protein and is considered as a natural ingredient which can be easily used in a wide range of nutritional applications such as sport drinks and cereal bars.

Figure 1: Amino acids in Solugel®



* Essential amino acids

SOLUGEL® FOR PHYSICAL PERFORMANCE

Multifunctional proteins

Protein is one of the most popular dietary supplements marketed to athletes and active individuals because of its ability to enhance performance in various ways. During exercise, proteins can provide energy and specific proteins such as collagen peptides act as protective agents for the joints and tendons. After exercise, it helps to regenerate muscle tissue, repair damaged structures, sustain the immune function, and delay fatigue [4].

Help to fight physical fatigue

Scientific studies suggest that increased levels of serotonin may cause fatigue. Free tryptophan(fTRP) is a precursor to serotonin and enters the brain cells to form serotonin.

During prolonged aerobic endurance exercise, muscle glycogen may become depleted and the muscle may increase its reliance on Branched Chain Amino Acid(BCAA) – valine, leucine, isoleucine – for fuel, thereby decreasing the plasma BCAA:fTRP ratio. Because BCAA and fTRP compete for entry into the brain, a low BCAA:fTRP ratio would make it easier for fTRP to enter the brain and, therefore, making the formation of serotonin easier. BCAA supplementation may delay central nervous system fatigue by increasing the BCAA:fTRP ratio and inhibiting the formation of serotonin [5,6,7].

As collagen peptide contains BCAA's while no tryptophan is present, it could help to delay physical fatigue.

Muscle recovery and regeneration

In daily life, the proteins in the body are continuously broken down and regenerated. During sports, the protein breakdown is more pronounced than protein synthesis. BCAAs increase the protein balance by decreasing the rate of protein breakdown and/or by increasing the rate of protein synthesis [8,9], especially more significant with leucine [10]. Glutamine, present in collagen peptides, may also promote muscle glycogen synthesis and potential enhancement of muscular strength [11]. These findings prove that the specific amino acids present in collagen peptides could have a beneficial effect on the muscle recovery from exercise. Another study demonstrates that collagen peptides have a potent antioxidative activity [12], which could protect the muscles against damage, in addition to other benefits.

Protect your joints and your immune system

Collagen peptides also have positive effects on joint protection and infection prevention.

Physical activity is known to increase type I collagen synthesis in peritendinous tissue, which has an important role in force transmission [13,14,15]. A study has proven the benefit of collagen peptides in individuals with joint pain associated with sports who had not been diagnosed with a medical disorder. The result provides data supporting the view that collagen peptide as a nutritional supplementation (at 10g/d) may be administrated to athletes to reduce the symptoms of joint pain associated with athletic activity [16].

Glutamine-supplemented marathon runners have also proven to have significantly lower infection incidences compared to runners in a control group [17]. Collagen peptide contains glutamine and its corresponding glutamic acid, so it could help to reinforce the immune system.

SOLUGEL® HELPS TO MANAGE YOUR WEIGHT

Obesity and overweight

Worldwide obesity has nearly doubled since 1980 and 35% of adults aged 20 and over were overweight in 2008, and 11% were obese. Once considered a problem only in high income countries, overweight and obesity are now dramatically on the rise in low- and middle-income countries, particularly in urban settings [18].

Being overweight or obese can lead to many other health problems such as high blood pressure, diabetes, coronary heart disease, stroke and also cancers. Increased consumption of carbohydrates foods and drinks with a high glycemic index* is widely believed to be contributing to the global obesity pandemic.

The long lasting satiety

It is known that low carbohydrate and high protein diets favorably affect body mass and composition independent from energy intake [19]. In addition, the combination of the specific diet and athletic activities could help to lose weight and body fat mass [20].

Several in vivo experiments on rats show that protein is clearly more satiating than other macro-nutrients because of its activation of several specific neuronal transmitters involved in satiety [21,22].

Scientifically proven Solugel® effects

A clinical study, conducted with Solugel® collagen peptides, evaluated the effect of casein, soy, whey, alpha lactalbumin, collagen peptides and collagen peptides + tryptophan(TRP) in two concentrations(10 and 25%) during the breakfast. The effect was measured by the energy intake at lunch, which was offered 3 hours after breakfast.

The study involved 30 healthy male and female volunteers with a normal weight and between 18 and 45 years old. Solugel® and Solugel® + TRP containing breakfasts caused a significant ~20% lower energy intake at lunch compared to casein and soy breakfasts at both protein concentrations (see figure 2 and 3). The reduced energy intake of 20% was related to a ~40% reduction in appetite [23].

Scientific evidences prove that Solugel® outperforms other proteins by providing long lasting satiety and delaying hunger. Solugel® is the ideal protein source for your weight management diet [23,24].

> "Scientifically proven: Solugel® provides long lasting satiety and delays hunger!"

Figure 2: Protein concentration 10%

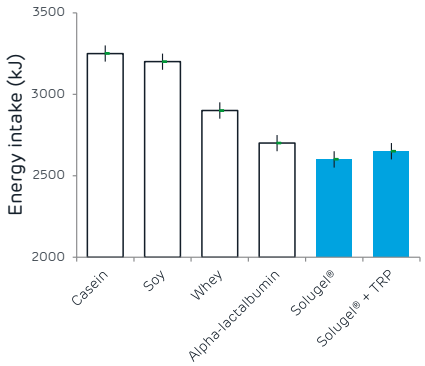
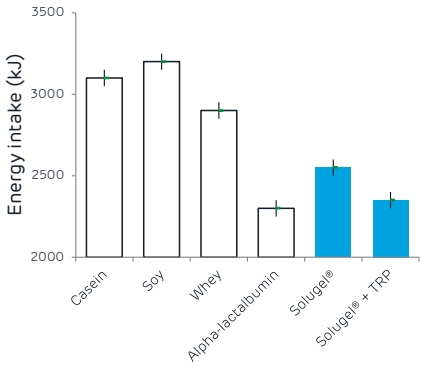


Figure 3: Protein concentration 25%



* Glycemic Index (called GI) is a numerical Index that ranks carbohydrates based on their rate of glycemic response. Glycemic Index uses a scale of 0 to 100, with higher values given to foods that cause the most rapid rise in blood sugar. Pure glucose serves as a reference point, and is given a Glycemic Index of 100.

SOLUGEL® FOR YOUR HEALTHY LIFESTYLE

Diabetes and low glycemic index

Type 2 diabetes is a chronic disease that occurs when the body cannot effectively use the insulin it produces to regulate blood sugar. It comprises 90% of people with diabetes around the world, and is largely the result of excess body weight and physical inactivity [25].

Proteins help to reduce energy intake and maintain a low blood glucose level, which has a favorable impact on weight management. When broken into smaller peptides, protein hydrolysates can be absorbed much faster than intact proteins which has strong insulinotropic effect [26]. Insulin responses are even positively correlated with plasma leucine, phenylalanine and tyrosine concentrations, which are present in collagen peptides [27,28].

Collagen peptides could create more convenient ways of controlling the blood sugar level by avoiding glucose peaks in the blood.

Hypertension

Food and food supplements containing angiotensin I-converting enzyme (ACE) inhibitor peptides may be part of an active lifestyle approach, as they have proven to be effective in both the prevention and treatment of hypertension [29]. Collagen peptides also have an antihypertensive effect in the body as they contain ACE inhibitor peptides [30,31].

SOLUGEL® PERFORMS

Solugel® is a high quality collagen peptide containing a unique combination of amino acids. Scientific studies suggest that collagen peptides are more satiating than vegetable protein which can help to lose weight. It could also help to control the blood sugar level by avoiding glucose peaks in the blood and could help the physical performance by delaying fatigue, sustaining the immune system and producing muscle tissue.

As a pure protein, Solugel® can be easily digested and absorbed by the body, making it an ideal ingredient for sports and active life style.

It can be quickly dissolved in water and has neutral odor and flavor. It is available with different molecular weight profiles and there is a choice of different raw materials, including halal and kosher products. High protein concentrations can be achieved with low viscosity, ideal for beverages, bars, confectionery and instant preparations.

Solugel® provides added value for your various applications, from food supplements to nutrient enriched foods.

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