

Collagen Information

A key ingredient in patented ProMotion that provides benefits for maintaining healthy joint function is collagen. Collagen provides structural strength to ligaments and tendons. Hydrolyzed collagen is important for bioavailability to ensure the nutrient reaches the joint tissue. Hydrolyzed collagen is derived by peptonization, a controlled enzymatic reduction of collagen protein to produce a purified form of collagen. It is a substance consisting of many essential and nonessential amino acids that are readily bioavailable to the body. Its low molecular weight makes for excellent absorption of its amino acids. By hydrolyzing the collagen, you have now put the collagen components into a much more absorbable, effective, and utilizable form.

The process of hydrolyzing proteins is well researched because it is used to reduce the antigenicity of food proteins for specialty diets fed to allergic animals. In the November 2006 issue of *Veterinary Clinics of North America, Small Animal Practice, Dietary Management of Nutrition*, they discuss hydrolyzed protein. For molecular size or kilodaltons (kd), they state “proteins of greater than 70 kd are unlikely to be efficiently absorbed intact through the enteric mucosa”. They further state “The digestibility of a protein hydrolysate is predicted to be superior to that of the intact protein source. In fact, numerous studies have shown that small peptides are even better absorbed from the intestine than free amino acids. Thus, extensively hydrolyzed proteins seem to be the ideal source of amino acids for maximal digestibility. The digestibility of the protein fraction of a soy-hydrolysate-based diet is reported by the manufacturer to be 90.7%. By comparison, intact soy protein isolates have been shown to have apparent total tract digestibility’s of 84.7% to 89.3%. In addition, the ideal protein digestibility of a chicken-based hydrolysate diet has been found to be 82.4%. Thus, although the digestibility may be higher, it is not dramatically so compared with some forms of the intact protein source.”

The molecular size of the hydrolyzed collagen in ProMotion is 4,000 to 5,000, or 4 to 5 kd. This is well below the 70 kd size for proteins that are unlikely to be efficiently absorbed according to the *Veterinary Clinics of North America* reference listed above.

Another published study also supports the bioavailability of hydrolyzed collagen. The *Journal of Medical Food* published “Evaluation of the hypotensive potential of bovine and porcine collagen hydrolysates by Faria M et al. in 2008. It states, “These results suggest that the commercial collagen hydrolysates of bovine and porcine origin may be a potential source of bioactive peptides.”

Hydrolyzed collagen gives the body more of the building blocks necessary for making healthy cartilage. Cartilage is, after all, largely collagen. The structure, flexibility and strength of cartilage are due to collagen. In addition to the scarce amino acid hydroxyproline, many other amino acids are available to the body for use as well. Since the cartilage within the joint capsule relies on diffusion of nutrients through the joint capsule and synovial membrane, an additional supply of the raw materials, or amino acids, needed for tissue synthesis will help speed up the process of building new cartilage. Readily available tissue components will help not only the chondrocytes within the joint matrix maintain and support the cartilage matrix but will also allow the chondroblasts that line the synovial membrane to lay down new cartilage and matrix at a more rapid rate. Because diffusion of nutrients can be a slow process, consistent supplementation with ProMotion is important. The rate of synthesis is important for maintaining healthy joints because too often the anabolic events cannot keep up with the catabolic events. Hydrolyzed collagen in combination with other ingredients in ProMotion supply the body with the rate limiting factors for synthesis so building healthy joint tissue can become more efficient.

Since cartilage regeneration involves the production of collagen built from the amino acids proline, hydroxyproline, hydroxylysine, and glycine, other known approaches to maintaining joint health teach the use of peptides soluble in cold water, in particular, hydrolyzed collagen. The molecular weight for hydrolyzed collagen varies between 4,000 to 80,000 (4 to 80 kilodaltons). They are soluble in cold water, as compared to gelatin which is soluble in hot water, making them more bioavailable by the body.

Please contact AHO for a list of references about collagen’s bioavailability and effectiveness in the literature.

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