

# Glucosamine & Chondroitin: How they Work Together

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Glucosamine and chondroitin are normal substances found in the body of living animals. They are at their highest concentration in cartilage. Through degradation during digestion and processing, almost all of the glucosamine in an animal's diet is unavailable for use. The body, therefore, synthesizes most of its own glucosamine through a biochemical reaction utilizing glucose. In normal, healthy animals, the body is able to synthesize enough glucosamine to keep the existing cartilage healthy, but when the animal ages or there is damage to joint cartilage it cannot produce enough to keep up with the body's needs. This is when your dog needs a supplemental form of glucosamine.

**Supplemental glucosamine:** Glucosamine is obtained from chitin, an ingredient found in the shell of crustaceans. Crustacean shells have a very high concentration of chitin and because the shells are often discarded, this provides a reliable and cost effective source of glucosamine.

**Chondroitin:** Chondroitin is a naturally occurring product found in animal cartilage. Supplemental chondroitin is derived primarily from bovine (cow) cartilage, particularly the cartilage rings of the trachea. The source does not appear to have any impact on its effect.

How do glucosamine and chondroitin work?  
Glucosamine provides a building block of cartilage.

The way that glucosamine works is a very complicated process. In a nutshell, cartilage consists of several different cells, one of which is chondrocytes. Chondrocytes are responsible for synthesizing new cartilage. Through normal wear, cartilage is constantly being broken down and replaced. Glucosamine provides the building blocks to synthesize new cartilage. Glucosamine is the building block necessary for the production of the substances called glycosaminoglycans. The glycosaminoglycans are combined with hyaluronic acid to make the substance proteoglycans. The proteoglycans and collagen are the main structures of cartilage.

Chondroitin is also one of the products necessary for the synthesis of glycosaminoglycans. But it probably plays a more important role by combating and neutralizing destructive enzymes in the joint. There is always a low level of destructive enzymes found in the joint, but when injury or abnormal wear occurs, the destructive enzymes and agents increase, accelerating cartilage destruction.

Supplementation with glucosamine and chondroitin

The concentration of actual glucosamine and chondroitin vary from product to product. Canine products may be flavored or fortified with other minerals. The most expensive product is not always the best. Compare the ingredients between products to ensure that you are getting what you pay for.

These products are not painkillers; they generally take at least six weeks to show results and most animals need to be maintained on these products the rest of their lives. Because these products are naturally occurring compounds, they are very safe and show very few side effects.