Chondroitin Sulfate is a Mucopolysaccharide that can Boost Cartilage, Tendon and ligament Health

Chemically, chondroitin sulfate is a glucosaminoglycan, with alternating n-acetylgalactosamine and glucuronic acid units in the chain. However, there are a large number of combinations, and it is not economically viable to attempt to separate these and there has been no evidence that it is necessary.

Because the chondroitin chain can be composed of more than a hundred different sugars that can be sulfated to various degrees and in different positions, then it is easy to understand how chondroitin sulfate is not an individual chemical entity. Nevertheless, it is regarded as such, and there is no need to separate the various possible combinations since its effect on osteoarthritis appears to remain constant and therefore not be dependent on any specific chemical composition.

The substance can be extracted from shark cartilage, of which it is a major component, and also from the trachea and cartilage of cattle and fowl. It is also possible to manufacture the substance synthetically. It is a very important part in the structure of cartilage and is responsible for much of the resistance of cartilage to compression. Chondroitin together with glucosamine is widely used as a dietary supplement by those suffering from osteoarthritis.

There are two types of arthritis: osteoarthritis and rheumatoid arthritis, and they are completely different types of condition. Rheumatoid arthritis is caused by the immune system attacking the joints. In fact it is a systemic condition that also affects the blood vessels, the heart and other parts of the body, but it is in the joints that the effects are most noticeable. It is an inflammatory condition, predominantly treated with anti-inflammatories, and chondroitin and glucosamine have no effect in its treatment.

Osteoarthritis, on the other hand, can have inflammatory components, especially when the bone becomes eroded, but that is not cause of the condition. It is caused by wear tear, and is frequently seen in athletes or those that have excess pressure consistently placed on their joints such as blacksmiths and other used to handling heavy weights. The cartilage becomes worn and thin, and eventually they lose their protection and shock absorbance properties that protect the bones in the joint concerned.

Eventually the bones start to abrade, and the synovial fluid that lubricates the joint breaks down and loses its lubricant properties. This can cause inflammation and swelling, and eventually the condition becomes so painful that in extreme conditions the joint can seize up completely.

The use of chondroitin in osteoarthritis has been studies since the 1980s, most reporting positive results in respect of alleviation of pain, improved mobility and a reduction in the need for anti-inflammatories. The chondroitin can help to repair the cartilage and reduce pain, particularly with those that suffer moderate to severe pain levels. This is particularly the case in osteoarthritis of the knee or the hip.

The benefits it appears to provide in addition to a reduction in pain levels include improved functionality, and making walking a bit easier. Chondroitin treatment also reduces stiffness in the joint, helps to get the swelling down and the results appear to continue for about three months after stopping treatment.

Although there has been some discussion on the oral bioavailability of such a large molecule as chondroitin sulfate, the bulk of the evidence is that it can be absorbed orally and be bioavailable up to just over 20% of the dose. It therefore makes sense to take a larger dose, and doses of 3,000 mg, or three grams, are not unusual, and also do no harm. Tracer studies have shown that a high proportion of chondroitin ingested is found in the cartilage and in the synovial fluid that lubricates the joints.

So how does chondroitin sulfate work to effect these improvements? There has been a lot of work carried out to find this out, and it appears that there are a number of factors involved.

First are the anti-inflammatory properties, that help to reduce inflammation and the resultant pain that it causes. However, it also stimulates the production of hyaluronic acid which is a component of the synovial fluid. This acts as a lubricant for the joints and also as a shock absorber, especially in the knee and hip joints. Hyaluronic acid can be injected directly into the joint, but is far more effective when its biosynthesis is given a jolt by Chondroitin.

Collagens are the main forms of connective tissue in your joints, that help to form the tendons, cartilage and so on, and there is a form of collagen that are also proteoglycans. In rheumatoid arthritis collagen and the connective tissues can be can be attacked and inflamed by the immune system, but in osteoarthritis, chondroitin sulfate can help to strengthen and repair damaged cartilage and connective tissue by glycosylating those specific proteoglycans to form collagen.

Articular cartilage is the form of cartilage that covers the surface of joints that allow movement, such as the knee and hip joints. Chondrocytes are the cells from which cartilage is made, and their death destroys articular cartilage and so causes osteoarthritis. There are substances that can and do destroy these cells, including nitric oxide and proteolytic enzymes. Chondroitin sulfate inhibits the formation of these substances in the body, and not only helps to prevent arthritis occurring, but also help to repair the damage that has been done by these substances on the cartilage.

These are three of the major ways in which chondroitin sulfate is believed to work in order to reduce the incidence of osteoarthritis and also to repair the damage that it causes. Chondroitin sulfate is believed to be a natural component of joint tissue, which is why it is believed to work when introduced to diseased joints. However, recent studies have indicated another two ways in which the supplement could work in your joints.

However, these involve concepts such as subchondral bone, the bone immediately under the cartilage that protects it and also transcription factors, both of which are beyond the scope of this article. However, it is encouraging that new evidence and explanations of how this previously maligned supplement operate to alleviate the symptoms of osteoarthritis.

Chondroitin sulfate can promote the health of connective tissue such as cartilage, tendons and ligaments, and the way in which it works is now being scientifically established. It can be used with confidence by anybody suffering from this form of arthritis.

About the Author

More information on Chondroitin Sulfate is available at VitaNet ®, LLC Health Food Store. http://vitanetonline.com/

Source: http://www.healthcrazed.com