

# Joint Pain and Cartilage Degeneration An Effective Natural Therapy

## Common Medical Treatment Can Actually Accelerate Osteoarthritis

Osteoarthritis, the most common form of arthritis, affects tens of millions of Americans. This disease is found in many different joints in the body, but particularly in the knees, neck, back, hips and fingers. It commonly causes pain, inflammation and decreased range of motion. Osteoarthritis is generally considered to be a relentless and irreversible process of joint destruction.

Medical treatment relies upon non-steroidal anti-inflammatory drugs (NSAIDs) such as aspirin, ibuprofen, etc., to treat the symptoms of osteoarthritis. While these drugs may relieve the symptoms, they do not slow the progression of the disease. In fact, there is evidence that long-term use of NSAIDs can cause further joint

## Glucosamine Sulfate Inhibits Cartilage Breakdown, Promotes Cartilage Repair and Relieves Joint Pain

Research indicates that damaged cartilage can be replaced by healthy new cartilage.<sup>(1,9)</sup> Therefore, treatment of osteoarthritis and rheumatoid arthritis should focus on both inhibiting cartilage breakdown and promoting cartilage repair. Glucosamine Sulfate can do both.<sup>(1-9)</sup>

Glucosamine is a naturally occurring amino sugar that is:

- Necessary for construction of connective tissue.<sup>(6)</sup>
- Both a precursor and stimulant of proteoglycan synthesis.
- Shown to inhibit the degradation of proteoglycans and to help rebuild damaged cartilage.<sup>(1)</sup>
- Shown to possess anti-inflammatory properties.<sup>(2)</sup>
- Highly absorbable in the sulfate form.<sup>(3,4)</sup>

The sulfate component appears to potentiate the therapeutic effect of glucosamine supplementation.<sup>(3,4)</sup> Sulfur is known to be an important mineral in cartilage, and sulfur baths have a long history as a popular treatment for arthritis. There is some evidence that people with arthritis have low levels of sulfur in their tissues.<sup>(2)</sup>

Glucosamine sulfate is also a component of mucopolysaccharides and glycoproteins which

### GLUCOSAMINE SULFATE

*Building Material for Cartilage*

Product No. 812      Fill Size: 60 Capsules

Each Capsule Contains:

Glucosamine Sulfate ----- 500 mg.

Other ingredients: rice flour, gelatin.

**Recommended Use:** 1 capsule three times daily with meals. Dosage may be decreased as symptoms abate. For maintenance, continue with one capsule daily.

damage and accelerate the progression of osteoarthritis by inhibiting synthesis of proteoglycans.<sup>(1,8)</sup>

Proteoglycans are a group of proteins that make up what is known as the "ground substance" of cartilage. This is what gives the joints their strength and resilience.

are integral parts of cell membranes, cell surface proteins, extra cellular membranes and the interstitial tissue which holds cells together. It plays a role in the formation of nails, tendons, skin, eyes, synovial fluid, bone, ligaments, heart valves and in the mucous secretions of the digestive, respiratory and urinary tracts. Absence of glucosamine sulfate can result in early aging of cells, loss of cellular function, susceptibility to bacterial and fungal infection and cell death.<sup>(4)</sup>

### Glucosamine Sulfate More Effective Than Ibuprofen for Joint Pain

In several studies, glucosamine helped relieve the joint pain and stiffness of osteoarthritis. With continued use, it was even more effective than ibuprofen for joint pain. In an 8-week double-blind study involving 40 patients with unilateral degeneration of knee joints, one group was given 500 mg. of glucosamine sulfate three times a day. A second group received 1.2 grams of ibuprofen per day. During the first two weeks, pain scores decreased faster in the ibuprofen group. As the study progressed, however, the glucosamine sulfate group showed more improvement. By the eighth week, glucosamine sulfate proved to be much more effective than ibuprofen.<sup>(7)</sup>

(over)

In another study, 30 patients with chronic joint pain and degeneration were divided into two groups. Half the patients received 400 mg. of glucosamine sulfate, per day parenterally for seven days, then 500 mg. three times per day orally for the next 14 days. The control group received injections of a commonly used arthritis drug daily for seven days, followed by an oral placebo for the next 14 days. Symptoms improved during both initial parenteral treatments, but to a greater extent in the glucosamine sulfate group. During the oral treatment period, patients receiving glucosamine sulfate continued to improve, while the placebo group reverted to pre-treatment levels. After three weeks, the glucosamine sulfate group showed dramatic improvements.<sup>(3)</sup> A second study performed in a similar manner obtained practically the same results.<sup>(5)</sup>

## Smaller Size Molecule Makes Glucosamine Sulfate More Efficient than Chondroitin Sulfate

Compared to chondroitin sulfate, glucosamine sulfate is better and more efficiently absorbed, more readily utilized and produces more effective clinical results.<sup>(4)</sup> Glucosamine sulfate is the monomer or single molecular unit of connective tissue. It is produced in the body by the combination of glucose with glutamine to form glucosamine through the enzymatic action of glucosamine synthetase. The molecule is then sulfated by the action of cellular enzymes to form glucosamine sulfate.<sup>(4)</sup>

The chondroitin sulfate molecule basic structure is a long chain of alternating glucuronic acid and glucosamine sulfate. It is a very large molecular complex known as the "backbone" of glycosaminoglycans (molecules that allow cells in tissues to adhere to one another).<sup>(4)</sup>

The small size of glucosamine, relative to chondroitin renders it more easily absorbable by the intestinal tract. Chondroitin sulfate has a molecular weight of 50,000 versus a molecular weight of 211 for glucosamine, making it effectively 250 times larger. For effective absorption, chondroitin sulfate must first be broken into its basic units, glucuronic acid and glucosamine. Once absorbed, glucosamine is preferentially taken up by cartilage and other joint structures where it is incorporated into the synthesis of larger glycosaminoglycans, including chondroitin sulfate.<sup>(4)</sup>

While most sugars come from dietary sources and are burned for energy, glucosamine and other

Investigators at the Institute of Biological Chemistry, University of Pavia, Italy, confirmed the therapeutic value of glucosamine sulfate. Electron micrographs of cartilage taken from arthritic individuals who received glucosamine sulfate supplements appeared more similar to healthy cartilage.<sup>(7)</sup>

These studies demonstrate the effectiveness of glucosamine sulfate for cartilage degeneration and joint pain. Because glucosamine sulfate is not an analgesic or a powerful anti-inflammatory, its beneficial effects do not appear rapidly. However, since it can apparently reverse the disease process, its effects are more pronounced and longer lasting than those of standard treatment. Also, because of its lack of damaging side effects, glucosamine sulfate should be considered the treatment of choice for patients with degenerative joint disease.

amino sugars are primarily formed within the body and used in manufacturing tissue components. Due to normal wear and tear, tissues are constantly being broken down and replaced or restructured. Under less than ideal conditions, production of amino sugars and their assembly into larger molecules may be impaired. Supplementing with glucosamine sulfate can eliminate many steps and increases tissue building.

**WARNING:** This information is provided for health care professionals only. **This publication and the product contained herein have not been approved or evaluated by the Food and Drug Administration. This publication, and the product contained herein are not intended to diagnose, treat, cure or prevent any disease.** The product relates to nutritional support only.

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