

# Nutri-Joint

A Glucosamine and Mucopolysaccharide Complex

5241 – 120 vegetarian capsules

5244 – 480 vegetarian capsules

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## The Possible Benefits of Nutri-Joint, a Dietary Supplement

- Delivering the most thoroughly researched nutrients known to support healthy joints.
- Contains the metabolically active form of vitamin B12, as well as folic acid and the trace mineral molybdenum to enhance the body's utilization of the primary ingredients.

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## Description

Nutri-Joint is a glucosamine and mucopolysaccharide complex designed to restore joint mobility and flexibility. Mucopolysaccharides, when combined with proteins, make up the ground substance or glue between cells. Therefore, the physical integrity of the tissues in an organ, especially the degree of hydration in articular tissues, is important to the healthy functioning of a joint. Mucopolysaccharides also make up a substantial part of the weight of cartilage in the form of chondroitin sulfate, a particularly important type of mucopolysaccharide. In addition, they provide a matrix upon which collagen, the major structural protein of ligaments and tendons, is built. Mucopolysaccharides add elasticity and resiliency to skin and other connective tissues. It has been found that aging brings about a change in the amount and compositions of mucopolysaccharides in tissues and this in turn compromises the metabolic and physical properties of these tissues, resulting in changes typically described as senescent. Some examples of mucopolysaccharides are dermatan, found in the skin, and chondroitin, a major component of cartilage.

Research has discovered these benefits of chondroitin sulfate (CS):

- Decreases inflammation
- Anti-thrombogenic and anti-clotting effects -- as does heparin, a serum mucopolysaccharide used routinely in hospitals to prevent blood from clotting in storage
- Decreases serum LDL and VLDL levels
- Has immunomodulating effects
- Accelerates regeneration and repair of cartilage by stimulating chondrocytes (cartilage remodeling cells) and providing precursors for cartilage synthesis
- Inhibits enzymes such as collagenases which degrade connective tissues
- Stimulates secretion of synovial (joint) fluid

Evidence for these effects came from researchers in Europe, Japan, and the U.S. In the U.S., Dr. John Prudden, Professor of Surgery at Columbia, has investigated the anti-inflammatory and anti-tumorigenic effects of chondroitin, and used chondroitin sulfate for the treatment of osteoarthritis. Studies in West Germany also found chondroitin sulfate effective for weight bearing infirmities. In Japan, CS is used routinely in over 20,000 patients every day for burns, neuralgia, hearing loss, arteriosclerosis, and various ophthalmological diseases. CS in ophthalmic solutions, for which the bulk of chondroitin is used in Japan, has proven effective in the treatment of conjunctival keratitis, herpetic infection of the cornea, and some forms of opacity.

A clinical trial conducted at Charles University in Prague has documented injections of a refined CS in the recovery of patients suffering from osteoarthritis of the knee. The control group given CS made steady improvements such that 50 to 80 percent returned to work. A subsequent study done on 112 matched pairs of subjects with hip arthritis confirmed the efficacy of treatment with a refined chondroitin product.

## Sulfur's Important Role

We also included MSM (methylsulfonmethane) in the formula. MSM is a naturally occurring form of sulfur which is found in plants and rapidly degraded by modern food processing techniques. Sulfur is important to joint health because disulfide bonds derived from MSM, cysteine, or methionine, are crucial in the maintenance of specific

protein conformation via disulfide bridges, without which, many proteins become non-functional. MSM is an odourless, stable, natural compound used by veterinarians to treat lameness in animals. Experiments using radio-labelled MSM have confirmed that MSM contributes its sulfur to such connective tissues as keratin, the protein of hair and nails, serum albumins, connective tissue components such as chondroitin sulfate and immunoglobulins. Since the synthesis of MSM, many humans have used it to effectively reduce symptoms of arthritis and restore joint health. Aside from sulfur, glucosamine, and chondroitin, many other factors, briefly attended to below, should be considered before supplementation for arthritis commences.

#### Other Important Nutrients

Just as there is evidence that high homocysteine levels may predispose one to atherosclerosis, so too does evidence exist that high homocysteine levels may increase the risk of the development of arthritis. It is unclear as yet how this may occur, but perhaps homocysteine chelates copper from an important antioxidant enzyme, superoxide dismutase (SOD) -- which, incidentally, has been found, when injected into arthritic joints to suppress inflammation, increase mobility, and decrease pain. Knowing this, we have added vitamin B6 (pyridoxine), vitamin B12 (methylcobalamin), and folic acid, all known to play a role in the detoxification of homocysteine to either methionine or cysteine. Lower homocysteine levels may result in higher activity levels of superoxide dismutase in the joint and improved recovery.

Manganese is another trace element which may play a role in arthritis. Manganese is known to be necessary for the proper development of bone and connective tissues, and to stimulate chondrocyte (cartilage cell) activity. Manganese deficiency, however, is virtually unknown in humans (average consumption is 2-9 mg daily), probably because some of the metalloenzymes that require it as a cofactor can employ other cations. And although there is no evidence that manganese deficiency is in any way prevalent, there are some reasons to believe that suboptimal levels may be somewhat prevalent. For example, it has been reported that 30% of all children who have epileptic convulsions have low levels of manganese in their blood. Also, many people in America eat considerable quantities of refined wheat flour-based products. Milling removes approximately 87% of the manganese from unrefined wheat. Chromium and other important trace elements are also removed in the milling process.

#### Glucosamine Alleviates Knee Pain

According to a recent study, people who experience knee pain due to articular cartilage damage and/or osteoarthritis can benefit from glucosamine supplements. In the 12-week study, researchers randomly divided subjects into two groups. One group of 24 subjects received 2,000 mg daily of glucosamine. Another group of 22 subjects received a placebo. During the course of the study, the investigators conducted four testing sessions where they noted changes in knee pain and function. The tests included a duck walk and a repeated, walking stair climb. They also relied on two questionnaires to determine glucosamine's effect on knee injury and osteoarthritis symptoms.

The researchers found that the glucosamine-treated group had an improved quality of life in regards to osteoarthritis symptoms and lower levels of knee pain compared to the placebo-treated subjects. On self-reported evaluations of knee pain, 88% (21 subjects) of the glucosamine group reported some degree of improvement compared to only 17% (3 subjects) in the placebo group. According to the study authors, These results suggest that glucosamine supplementation can provide some degree of pain relief and improved function in persons who experience regular knee pain, which may be caused by prior cartilage injury and/or osteoarthritis. The trends in the results also suggest that, at a dosage of 2,000 mg per day, the majority of improvements are present after eight weeks. Glucosamine is often paired with chondroitin sulfate (as in Nutri-Joint) and MSM for the most beneficial effects.

#### Reference:

1. Usha PR, Naidu MUR, et. al. Clin Drug Invest. June 2004;24:353-363
2. Braham R, Dawson B, Goodman C. The effect of glucosamine supplementation on people experiencing regular knee pain. Br J Sports Med. 2003 Feb;37(1):45-9.
3. Arch Intern Med. 2003;163:1514-1522.

\* As per US federal guidelines, we need to inform you that these statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.