JOINT REPAIR SUPPLEMENTS

(1) Glucosamine Sulfate and Chondroitin sulfate

Glucosamine and chondroitin sulfate are substances found naturally in the body. Glucosamine is a form of amino sugar that is believed to play a role in cartilage formation and repair. Chondroitin sulfate is part of a large protein molecule (proteoglycan) that gives cartilage elasticity.

Both glucosamine and chondroitin sulfate are sold as dietary or nutritional supplements. They are extracted from animal tissue: glucosamine from crab, lobster or shrimp shells; and chondroitin sulfate from animal cartilage, such as tracheas or shark cartilage.

Both are components of connective tissue (e.g. ligaments, tendons, cartilage)

—Chondroitin sulfate can be synthesized from Glucosamine sulfate

—Both aid in joint repair

ADDITIONAL NOTE: Hydrolyzed animal collagen (unflavored gelatin) is a great source of dietary cartilage and it aids glucosamine in joint repair.

(2) Methylsulfonylmethane (MSM)

MSM (methylsulfonylmethane) is a natural sulfur compound which can be found in a variety of foods. It has been reported that MSM has anti-inflammatory properties and has been used in cancer research (specifically breast and colon cancer). MSM has the ability to inhibit prostacylicin (PG12) synthesis in endothelial cells, which in turn can slow or prevent atherosclerosis (heart disease). In animal studies, oral supplementation with MSM decreased joint degeneration and anemia, while protecting against kidney damage.

In cases of arthritis, it is suggested that 6g of MSM per day can reduce joint pain and improve the ability to perform daily activities. It is also suggested that MSM supplementation reduces elevated serum homocysteine, which is a known risk factor of coronary artery disease. Usha et al. (2004) reported that as little as 1.5g of MSM per day stacked with 1.5g of glucosamine sulfate can significantly decrease joint pain. MSM’s effects seem to be amplified when used in conjunction with glucosamine.

Although most of the studies concerning MSM have been done regarding joint health, Barrager et al. (2002) found that MSM supplementation can reduce seasonal
allergies such as hay fever. After one week of supplementing with 2.6g of MSM per day, respiratory symptoms in all subjects were reduced significantly and were maintained throughout the duration of the investigation.

There is no known level of toxicity for MSM. The Oregon Health and Science University has reported that patients receiving upwards of 100 grams a day did not report any serious side effects. The lack of toxicity for MSM has been verified by the greater scientific community.

It is recommended that MSM be taken in doses ranging from 2 to 20 grams per day, however, as noted earlier when MSM is used with glucosamine, its effects are amplified. This means that when glucosamine is present, MSM dosages can be lowered to as low as 1 to 2 grams per day.

(3) SAMe (S-adenosylmethionine)

SAMe (pronounced "sammy") is short for S-adenosylmethionine, a molecule that the body continually produces to fuel numerous vital body functions. Discovered in 1952, the popularity of SAMe has soared recently with talk of its ability to ease depression as effectively as prescription antidepressants. (Proponents say SAMe also works faster than antidepressants and with virtually no side effects.) Long prescribed by European doctors for both arthritis and depression, SAMe recently became available in the United States as an over-the-counter supplement. It is also emerging as an effective therapy for arthritis, fibromyalgia, certain liver disorders, and possibly even Alzheimer's disease.

The body manufactures SAMe from methionine, an amino acid found in protein-rich foods, and adenosine triphosphate (ATP), an energy-producing compound found in all the body's cells. The SAMe molecule then donates a piece of itself (a methyl group) to body tissues and organs, providing a critical link in methylation, a chemical reaction that occurs billions of times a second throughout the body. In giving up a part of itself, SAMe promotes cell growth and repair.

SAMe also contributes to the formation of key compounds in the brain, including the neurotransmitter dopamine and the mood-enhancer serotonin. In addition, it helps to maintain desirable levels of glutathione, a major antioxidant that protects against cell damage from oxygen molecules called free radicals. Taken as a supplement, SAMe compensates for any deficiencies and encourages the body to run efficiently.

Lessen arthritis-related pain and inflammation.

The eventual breakdown of SAMe in the body yields substances that help to keep the gel-like cartilage that cushions joints intact. In the common degenerative joint disease osteoarthritis, cartilage wears down over time. Studies in thousands of osteoarthritis sufferers have demonstrated that SAMe can be as effective at increasing joint mobility and reducing swelling and pain as such NSAIDs (nonsteroidal anti-inflammatories) as ibuprofen and aspirin. Moreover, SAMe doesn't pose the risk of stomach bleeding or kidney damage that are serious risks associated with NSAIDs. SAMe also doesn't wear down joints, damage cartilage, or block the pain signals that could signal a worsening
condition. Although it's not exactly clear how SAMe works for arthritis, very preliminary but intriguing animal studies actually point to a role in repairing cartilage and lubricating joints, properties that may well extend to humans. Clearly more research is needed.