

TECHNICAL DATA SHEET

Joint Formula



*Joint Formula has been scientifically and clinically developed to facilitate the greatest opportunity for more positive and effective patient outcomes in arthritic conditions. The main objective that we see occurring with regular use of our Joint Formula is the increased alleviation of both pain and inflammation in previously affected joints. **The ingredients used in Joint Formula work together to maximize the body's ability to decrease the inflammatory response and promote cartilage regeneration.** After reviewing many clinical studies and interpreting the scientific data we decided to use 1500 mg of glucosamine sulfate as a daily recommended dosage. We eliminated chondroitin sulfate because of its extremely large molecular size (16,900 daltons) that allows an absorption rate of only 8-18% (of orally administered chondroitin sulfate) (4). Glucosamine sulfate has an over 90% absorption rate.*

INGREDIENTS

Glucosamine (Sulfate) is an amino sugar, which is a constituent of cartilage proteoglycans. It is derived from marine exoskeletons or produced synthetically (we use the marine exoskeletons). Glucosamine is required for the synthesis of glycoproteins, glycolipids, and glycosaminoglycans (also known as mucopolysaccharides). These carbohydrate-containing compounds are found in tendons, ligaments, cartilage, synovial fluid, mucous membranes, structures in the eye, blood vessels, and heart valves. In osteoarthritis, glucosamine stimulates metabolism of chondrocytes in the articular cartilage and of the synovial cells in the synovial tissues. There is evidence that glucosamine has a disease-modifying effect, stopping or slowing the progression of osteoarthritis (1). Preliminary research suggests that glucosamine inhibits protein N-glycosylation and cytokine-stimulated production of mediators of inflammation and cartilage degradation (2). Some researchers think the sulfate moiety in glucosamine sulfate might be responsible for its effect on osteoarthritis. Sulfate is required for articular cartilage glycosaminoglycan synthesis. If the sulfate is the active moiety of glucosamine sulfate, theoretically glucosamine hydrochloride would be less effective (3). We use 1500mg of glucosamine sulfate per serving which is the amount clinical studies recommend for maximum daily benefit.

Boswellia Serrata (also known as Indian Frankincense) is an Ayurvedic herb from a large branching tree found throughout India and Nepal that has an extensive history of use for connective tissue and joint support. The major constituents are boswellic acids (pentacyclic triterpenic acids) and essential oils. These plant acids have been found to be beneficial in suppressing the proliferating tissue found in inflamed areas of soft connective tissues such as joints, tendons, and ligaments displaying potent anti-inflammatory properties (5). Boswellic acids inhibit 5-lipoxygenase and leukotriene synthesis, and inhibit leukocyte elastase, which are the likely mechanisms for its anti-inflammatory properties. Boswellia extract, standardized to contain 70% boswellic acids (we use 800 mg of this per serving), promotes healthy joint, connective tissue, and colon function primarily through maintaining normal leukotriene levels (6).

Methyl Sulfonyl Methane (MSM) is a naturally occurring organic sulfur-containing odorless metabolite of dimethyl sulfoxide (DMSO) (7). MSM is 34% elemental sulphur a compound that is essential in maintaining healthy connective tissue.

MSM (continued). MSM is a source of sulphur for cysteine and methionine. MSM inhibits degenerative changes in arthritis (8). We use 1000mg per serving of OptiMSM® from Cardinal Nutrition because of the fact every batch is distilled for purity and undergoes the most rigorous analytical testing available, guaranteeing unsurpassed quality. Researchers at Oregon Health Sciences University conducted tests on mice prone to the development of bone lesions similar to rheumatoid arthritis. Mice fed a diet of MSM daily for three months showed no lesions or cartilage damage, while those not fed MSM demonstrated cartilage degeneration (Morton 1985). Clinical evidence gathered on people with muscle and joint problems who used MSM showed there is "a significant relief of pain and stiffness along with reduced swelling and inflammation."

Curcumin (Turmeric) contains curcuminoids including curcumin (diferuloylmethane), a yellow pigment as its major active constituents. Standardized curcumin's anti-inflammatory activity stems from inhibiting cyclooxygenase-2 (COX-2), prostaglandins, and leukotrienes (9). Bromelain is used to enhance curcumin absorption and bioavailability. The free radical scavenging/antioxidant effects of curcumin aid in reducing pain and inflammation associated with trauma, as well as providing potent cell protection from future damage. Curcumin has shown the capacity to enhance tissue repair and wound healing (10). Our curcumin extract is standardized to contain 97% curcuminoids, the purest and most potent available. Curcumin, boswellia, and ginger appear to compliment and work synergistically together.

Bromelain is a general name for proteolytic enzymes obtained from the stem and fruit of the pineapple. Bromelain inhibits the production of kinins and fibrin, which promote the inflammatory process (11). Bromelain has been clinically shown to reduce pain and inflammation associated with arthritis, trauma or sports injury (12).

Ginger contains active constituents known as gingerol, gingerdione, and shogaol. These constituents seem to have a variety of pharmacological properties including antipyretic, analgesic, antitussive, anti-inflammatory, sedative, weak antifungal, and other properties (13). The active constituents gingerol and shogaol are used for inflammatory conditions like arthritis by possibly inhibiting cyclooxygenase (COX) and lipoxygenase pathways (14). We used a standardized ginger root extract that is standardized to contain 5% gingerols and 3% shogaols.

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Vitamin C is a very important nutrient in the formation of collagen. Collagen contains about one-third glycine and one-third proline and hydroxyproline. Vitamin C is required for the hydroxylation of proline in collagen synthesis. Hydroxyproline is almost exclusively associated with collagen (15). In a university of Sidney research study vitamin C has been shown to increase collagen and proteoglycan production (16) and at the University of California, San Francisco a study showed the synthesis of glycosaminoglycans increased 30-90% when vitamin C was added to the culture (17). Oxidative stress mediated by reactive oxygen species (ROS) has been implicated in tissue degeneration of osteoarthritis. Antioxidant nutrients such as vitamin C and vitamin E are well known to reduce or prevent oxidative stress. A Boston University study showed that osteoarthritic patients with high intake of vitamin C may reduce the risk of cartilage loss and progression of the disease (18).

Manganese is an essential nutrient that acts as a cofactor in the formation and maintenance of connective tissue and bone. Manganese is found in high amounts in the synovial fluid that provides cushioning in weight-bearing joints (such as knee, hip and ankle). Manganese citrate is a highly bioavailable form of manganese.

Zinc and Copper Zinc is a biologically essential trace element and is the second most abundant trace mineral in the body (only 2 grams). About 30% of cellular zinc is found within the nucleus. Zinc is found in more than 300 enzymes (19). Nearly 100 enzymes depend on zinc as a catalyst. Zinc is better absorbed when there is copper present. Zinc and copper have been found to be deficient in patients with rheumatoid arthritis, according to researchers at the Albany NY medical college, and supplementation may be appropriate (20). Reactive oxygen species (ROS) and other pro-oxidant agents can aggravate arthritic inflammation. The zinc and copper containing enzyme super oxide dismutase (SOD) can interact with and neutralize these free radicals, thereby reducing the inflammatory response (21)

This formula is designed to be safely used with Ultra High Formula.

Joint Formula

Quantity: 90 capsules
Serving size: 4 capsules
Directions:

Each 3 capsules contain:

Vitamin C (as Poly C Ascorbate)	75 mg
Zinc (as Methionate)	30 mg
Copper (as Aspartate)	1.5 mg
Manganese (as citrate)	10 mg
Glucosamine Sulfate	1500 mg
MSM (as Methylsulfonylmethane)	1000 mg
<i>Boswellin Extract</i> (70% <i>Boswellic Acid</i>)	800 mg
Curcumin Extract (97% Curcuminoids) (rhizome)	100 mg
Bromelain (2400 GDU/3600 MCU)	100 mg
Ginger Root Extract (5% Gingerols and Shogaols)	50mg

Other ingredients:

Gelatin capsules

Contains No: wheat, dairy, soy, corn or preservatives. No fillers, binders, or flowing agents.

Patients: Consult with your healthcare professional for the proper dosage and use of this formula.

For more information about this and other Condition Specific Formulas®, please visit our website at:

www.mpn8.com



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