

Glucosamine, Chondroitin & MSM 1300 mg Tablets



Product Summary:

While Glucosamine sulfate and chondroitin sulfate have long been recognized as useful in treating the pain and stiffness of Osteoarthritis, MSM is recognized for reducing pain and inflammation.

Properties/Uses:

The claim as approved by the *Natural Health Products Directorate* (NHPD): Helps relieve joint pain associated with osteoarthritis and protect against cartilage deterioration. A factor in maintaining healthy cartilage and joint health.



MUSCULAR
& SKELETAL



Pharmacology:

Glucosamine is commonly used for the relief of pain and symptoms associated with osteoarthritis and other joint disorders. Glucosamine is a natural endogenous metabolite of cartilage and other connective tissue anabolic biochemistry. It is present in meat, fish, and poultry, but is only harvested commercially from the shells of shellfish, which are principally chitin or N-acetylglucosamine.

Since its introduction in the early 1980s in commercial form, glucosamine has become highly regarded as first-line treatment for osteoarthritis in many countries. International research has demonstrated that osteoarthritis could be arrested with *glucosamine sulfate* supplementation, if caught before the onset of irreversible joint damage. Significant reductions in joint pain, stiffness, tenderness, and swelling, as well as increased joint performance are the hallmarks of glucosamine sulfate. Even when researchers compared it to non-steroidal anti-inflammatory drug therapy (NSAID), like *ibuprofen*, the glucosamine sulfate led to greater improvements in pain reduction and measurably better joint performance.^{1,2}

Glucosamine sulfate's role in halting or reversing joint degeneration appears to be directly due to its ability to act as an essential substrate for, and to stimulate the biosynthesis of, the glycosaminoglycans and the hyaluronic acid backbone needed for the formation of the proteoglycans found in the structural matrix of joints.

Concerning chondroitin sulfate, because greater insights into the pathogenesis of osteoarthritis have revealed the critical role of the *glycosaminoglycans* (GAG's) and because chondroitin sulfate is a GAG, representing 66 percent of the GAG production, those seeking to enhance the clinical work with *chondroprotective* agents have turned to chondroitin sulfate. Chondroitin sulfate demonstrates considerable tolerability and therapeutic efficacy. GAG's *in vitro*, generally are able to inhibit certain enzymes present in the synovial fluid such as *elastase* from leukocytes, and *hyaluronidase*, thus offering a greater opportunity for preserving cartilage anabolic success by reducing inordinate cartilage catabolism.^{6,7} Chondroitin sulfate has been shown to inhibit up to 60% of the enzymatic action of elastase. Furthermore, chondroitin sulfate has demonstrated *in vitro* anti-inflammatory action by inhibiting the complement system. Chondroitin sulfate has always yielded clinical improvement regarding painful symptoms and limited joint function, and this is interpreted as proof of its anti-inflammatory action.

Healthy cartilage is 65 to 80 percent water and hydration of the cartilage mass is directly controlled by the GAG's. Chondroitin sulfate supplementation redresses cartilage dehydration, which is critical to arresting further decline and is almost certain to be a factor in any case of osteoarthritis.⁸ Since cartilage cannot have a direct blood supply; it depends on adequate nutritional supply via water borne nutrients transferred from the blood supplied synovial membrane. Dehydration of the cartilage mass imposes a reduced infiltration rate of nutrients to the cartilage chondrocytes, resulting in compromised ability to rebound and thrive under wear and tear.





Chondroitin sulfate supplementation is considered a beneficial co-factor because it provides the immediate presence of the principal GAG of cartilage metabolism. Chondroitin sulfate will be produced by the influence of glucosamine, which is now recognized as the *rate-limiting-factor* in cartilage anabolic metabolism.⁹ However, there is a natural unpredictable lag time before the endogenous chondroitin sulfate supply is stable. In the compromised osteoarthritis joint, the pursuit of normalized cartilage metabolism is enhanced by ready-made molecules that are critical to the rehydration process. Many osteoarthritis sufferers have found a combined use to be beneficial. For those initiating treatment with glucosamine sulfate for the first time, it may be prudent to begin with the combination treatment.

MSM is found in most plant foods and in meats, as well as in the body. MSM is recognized as a safe and virtually side-effect-free remedy for addressing painful and inflamed conditions, including osteoarthritis, rheumatoid arthritis, juvenile rheumatoid arthritis, chronic back pain and muscle pain.

MSM delivers chronic pain relief with a performance that is comparable to the standard array of drug analgesia, and in many cases out performing the drug approach. However, be aware that MSM does not work as fast as traditional drug analgesia, and decidedly is not for the quick fix. For many chronic sufferers though, who seek deliverance from drug toxicity they bear as an unwanted added burden, the MSM waiting period is refreshingly insignificant. Commonly, it is a mere one to three weeks for the onset MSM is thought to work along four lines.

Firstly, MSM is able to block pain impulses without toxic harm to the body associated with traditional and narcotic analgesic drugs. MSM's is thought to block the non-myelinated nerve fibers, referred to as the C-fibers. It is along the C-fiber network of nerves that deep aching pain is conducted. MSM has proved itself in significant pain control in approximately 70 percent of cases, with minor to no benefit in the balance of cases. It is appreciated for its ability to allow the user to eliminate or significantly reduce the quantity and frequency of analgesic drugs. There is also some indication that the pain controlling benefit partly stems from blocking the perception of pain in the brain, but without affecting cognitive or driving ability as seen with heavy narcotic use. Pain is also thought to be reduced in part by the anti-inflammatory action of MSM. It also blocks muscle spasms that can be a significant factor in neck and scalp related headaches, or the pain of neck whiplash or lower back spinal pain.¹⁰

Secondly, MSM is thought to be a sulfur-donor to the many metabolic operations that depend on adequate daily sulfur supply, including healing processes. Sulfur is critical to the production of collagen, the chief constituent of all connective tissue in the body. Therefore, adequate sulfur supply is central to restoring or maintaining musculoskeletal structural integrity, and especially so after traumatic injury when collagen production increases.¹⁰

Thirdly, MSM is thought to enhance the body's own anti-inflammatory control system. Chronic inflammation responds to MSM because, in some unexplained way, it drastically increases the effectiveness of cortisol. As we grow older, adrenal cortisol production to control inflammation may have waned enough that enhancing the body's sensitivity to a reduced supply of cortisol with MSM could pay great dividends.¹⁰

And fourthly, MSM seems to accelerate healing with marked improvement, even in cases that had been resistant to other treatments.¹⁰





Manufactured product information:

Manufacturer:

WN Pharmaceuticals® Ltd.

Size/UPC:

120's 7 77747 10342 3

NPN:

80008779

Expiry Date:

36 months from date of manufacture

Active Ingredients:

Each tablet contains :

Glucosamine Sulfate (potassium chloride from shrimp/crab exoskeleton)..... .500 mg

Chondroitin Sulfate (chondroitin sulfate sodium from bovine cartilage).....400 mg

MSM(Methylsulfonylmethane)400 mg

Non-Medicinal Ingredients (in descending order):

Microcrystalline cellulose, croscarmellose sodium, coating (carbohydrate gum, glycerin), stearic acid, magnesium stearate.

Appearance:

White to off-white, speckled, oval bisected coated tablet.

Packaging:

300 cc white round bottle with safety seal under a 45 mm white induction sealed cap with vented interior seal and a label applied to the bottle. Lot number and expiry date are printed on the label applied to the exterior of the bottle.

Storage:

Store in a dry place. Protect from heat and humidity.





Dose:

Glucosamine & Chondroitin: For osteoarthritis, glucosamine hydrochloride 500 mg three times daily has been used alone or in combination with chondroitin sulfate 400 mg three times daily.^{3,4,5}

MSM: For osteoarthritis, 500 mg three times daily up to 3 grams twice daily has been used.¹⁰

Directions:

(Adults): 1 tablet, 3 times daily, or as recommended by a physician. Use for a minimum of 4 weeks to see beneficial effects.

Caution:

The caution as approved by the *Natural Health Products Directorate* (NHPD): KEEP OUT OF THE REACH OF CHILDREN. Consult a physician prior to use if you are pregnant or breastfeeding. Consult a physician if symptoms worsen. Some people may experience mild gastrointestinal bloating, constipation or indigestion. STORE AT ROOM TEMPERATURE IN A DARK, DRY PLACE. DO NOT USE IF SEAL UNDER CAP IS BROKEN OR MISSING.

Deficiency Symptoms:

Not applicable.

Drug Interactions/Contraindications:

The sulfate radical in the Glucosamine Sulfate salt is not as likely to cause allergy as is *sulfite*, but it may be possible, even though sulfate is a metabolic necessity. The regular glucosamine sulfate products contain sodium in each 500 mg amount of product, which may not be suitable for those on sodium restrictions. The sodium-free glucosamine sulfate products contain potassium in each 500 mg amount of sodium-free product, which may not be suitable for those on potassium restrictions.

The sulfate in chondroitin sulfate is covalently bound to the chondroitin and is not free to body fluids.

Those allergic to shellfish have been concerned over a possible allergic reaction to glucosamine. Allergic reaction has not been reported as a practical concern, probably because the allergens are in the meat and the extraction process is able to denature any extraneous flesh protein. However,



it must be recognized that individuals sometimes display profound sensitivity where it is not expected. If there is concern over possible allergic reaction, especially if anaphylactic reactions are possible, have the customer discuss the matter with their physician before commencing use.

There are no documented contraindications with glucosamine sulfate salt or chondroitin sulfate.

After many years of clinical use, MSM has not been associated with adversely interacting with prescribed medications.

DMSO has been found to counteract platelet aggregation. MSM as a derivative has not been so studied but there is indication that it also will present a blood thinning effect. Those using coumadin or other blood thinning medication, including other natural blood thinning products like high doses of garlic, salmon oil, grape seed extract, and high doses of vitamin E, may be at risk of bleeding problems if using high doses of MSM. MSM use is contraindicated with pharmaceutical blood thinners or those using high or frequent doses of ASA or NSAID's unless prescribed by a physician.

Toxicity/Adverse Reactions:

There are virtually no adverse side effects and no toxicity reported with glucosamine sulfate salt or chondroitin sulfate.¹ Some have complained of initial gastric upset when using these substances, so recommend with meals.

Orally, MSM has been linked to reports of nausea, diarrhea, bloating, headache, fatigue, insomnia, and difficulties concentrating in clinical studies however, these side effects do not appear to occur more often than with placebo.¹¹





Allergen Content/Ingredient Sensitivity:

NO	YES
Artificial Colors	Shellfish
Artificial Flavors	
Artificial Sweeteners	
Corn Products	
Egg Products	
Fish	
Gluten	
Hydrolyzed Plant Protein	
Lecithin	
Milk Products	
Peanuts	
Preservatives	
Sesame Products	
Soy Products	
Starch/Modified Starch	
Sulphites	
Tartrazine	
Tree Nuts	
Wheat Products	
Yeast	

NOT ACCEPTABLE FOR THE FOLLOWING DIETARY RESTRICTIONS:

Free of animal products

Kosher





References:

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2. McCarty, M.F., "The Neglect of Glucosamine as a Treatment for Osteoarthritis – A Personal Perspective", *Medical Hypotheses*, 42, 323-327, 1994
3. Houpt JB, McMillan R, Wein C, Paget-Dellio SD. Effect of glucosamine hydrochloride in the treatment of pain of osteoarthritis of the knee. *J Rheumatol* 1999;26:2423-30.
4. Clegg DO, Reda DJ, Harris CL, et al. Glucosamine, chondroitin sulfate, and the two in combination for painful knee osteoarthritis. *N Engl J Med* 2006;354:795-808.
5. Messier SP, Mihalko S, Loeser RF, et al. Glucosamine/chondroitin combined with exercise for the treatment of knee osteoarthritis: a preliminary study. *Osteoarthritis Cartilage* 2007;
6. Pipitone, V.R., "Chondroprotection with Chondroitin Sulfate", *Drugs In Experimental and Clinical Research*, 17:1, 3-7, 1991
7. Conte, A., et al, "Biochemical and Pharmacokinetic Aspects of Oral Treatment with Chondroitin Sulfate", *Arzneim-Forsch*, 45, 918-925, 1995
8. Theodosakis, Jason, et al, *The Arthritis Cure*, St Martin's Press, New York, 1997
9. McCarty, M.F., "The Neglect of Glucosamine as a Treatment for Osteoarthritis – A Personal Perspective", *Medical Hypotheses*, 42, 323-327, 1994
10. Jacob, Stanley W., Lawrence, Ronald M., Zucker, Martin, *The Miracle of MSM The Natural Solution For Pain*, GP Putnam's Sons, New York, 1999
11. Natural Medicine Comprehensive Database [Sited. February 25, 2009] MSM Monograph [http://www.naturaldatabase.com/\(S\(vj33as45opmj3bfquxqsl55\)\)/nd/Search.aspx?cs=&s=ND&pt=100&id=522&fs=ND&searchid=13618356](http://www.naturaldatabase.com/(S(vj33as45opmj3bfquxqsl55))/nd/Search.aspx?cs=&s=ND&pt=100&id=522&fs=ND&searchid=13618356)

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