

JointRoX™

Ultra-Pure Joint Support*



Available in 120 capsules

Discussion

Glucosamine Sulfate is a naturally occurring amino sugar and a constituent of healthy cartilage. It is the most fundamental building block required for the biosynthesis of glycolipids, glycoproteins, hyaluronate, and proteoglycans. Although exact mechanisms of action are yet to be established, research suggests that glucosamine supplementation directly stimulates chondrocytes, incorporates sulfur into cartilage, modulates cytokine production, and helps protect against degradative processes.^[1,2] Glucosamine sulfate is neither a pain reliever nor an anti-inflammatory compound; yet, in combination with chondroitin sulfate, it may be helpful in supporting normal joint function and the health of joint tissues.^[3-7] Glucosamine does not appear to have an effect upon glucose tolerance tests or hemoglobin A1c readings.^{*[6]}

Chondroitin Sulfate is a primary proteoglycan and a major component of articular cartilage. It helps cartilage tissue retain water, which is needed for resistance and elasticity; it has protective effects on cartilage cells; and it supports normal joint width space. Proteolytic enzymes, such as elastase, collagenase, and proteoglycanase, accelerate the breakdown of collagen and proteoglycans.^[8,9] An ample supply of proteoglycans may help balance this metabolic action. Experimental research suggests that chondroitin has cytokine-balancing properties and can also decrease the levels of reactive oxygen species and lipid peroxidation that affect cartilage cells.^{*[10,11]}

Methylsulfonylmethane (MSM) is a naturally occurring, sulfur-containing, water-soluble compound also known as DMSO₂. MSM clinically appears to have the same benefits as its parent compound, DMSO. In vitro studies demonstrate that MSM modulates cytokine production and has antioxidant properties,^[12,13] and MSM has been shown to remain in the blood for up to five times as long as DMSO.^[14] In a 12-week, randomized, double-blind, placebo-controlled study on 50 patients, 3 g/d of MSM supported healthy knee joint function.^{*[15]}

Clinical Applications

- » Supports Joint Structure and Function*
- » Supports Proteoglycan Synthesis for Healthy Connective Tissue*
- » Helps Protect Cartilage Cells*
- » Supports the Body's Normal Response to Inflammation*

*JointRoX™ combines distilled methylsulfonylmethane (MSM) with naturally occurring glucosamine sulfate and chondroitin sulfate that are BSE and heavy metal free. These three ingredients work together to provide targeted support for healthy joint structure and function.**

JointRoX™ Supplement Facts

Serving Size: 2 Capsules

	Amount Per Serving	%Daily Value
Chloride (as glucosamine sulfate potassium chloride)	120 mg	4%
Potassium (as glucosamine sulfate potassium chloride)	120 mg	3%
Glucosamine Sulfate (as glucosamine sulfate potassium chloride)	750 mg	**
Chondroitin Sulfate	600 mg	**
Methylsulfonylmethane (MSM)	500 mg	**
** Daily Value not established.		

Other Ingredients: HPMC (capsule), vegetable stearic acid, vegetable magnesium stearate, medium-chain triglycerides, and silica.

Contains: Shellfish (crab and shrimp)

DIRECTIONS: Take two capsules twice daily, or as directed by your healthcare practitioner.

Children and pregnant or lactating women should consult their healthcare practitioner prior to use. Do not use if tamper seal is damaged.

DOES NOT CONTAIN: Wheat, gluten, corn, yeast, soy, dairy products, fish, peanuts, tree nuts, egg, ingredients derived from genetically modified organisms (GMOs), artificial colors, artificial sweeteners, or preservatives.

STORAGE: Keep closed in a cool, dry place out of reach of children.

**References**

- Selvan T, Rajiah K, Nainar MS, et al. A clinical study on glucosamine sulfate versus combination of glucosamine sulfate and NSAIDs in mild to moderate knee osteoarthritis. *Scientific World Journal*. 2012;2012:902676. Epub 2012 Apr 1. [PMID: 22577354]
- Dahmer S, Schiller RM. Glucosamine. *Am Fam Physician*. 2008 Aug 15;78(4):471-76. Review. [PMID: 18756654]
- Distler J, Anguelouch A. Evidence-based practice: review of clinical evidence on the efficacy of glucosamine and chondroitin in the treatment of osteoarthritis. *J Am Acad Nurse Pract*. 2006 Oct;18(10):487-93. [PMID: 16999714]
- 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 Feb 23;354(8):795-808. [PMID: 16495392]
- Matheson AJ, Perry CM. Glucosamine: a review of its use in the management of osteoarthritis. *Drugs Aging*. 2003;20(14):1041-60. [PMID:14651444]
- Muniyappa R, Karne RJ, Hall G, et al. Oral glucosamine for 6 weeks at standard doses does not cause or worsen insulin resistance or endothelial dysfunction in lean or obese subjects. *Diabetes*. 2006 Nov;55(11):3142-50. [PMID: 17065354]
- Zerkak D, Dougados M. The use of glucosamine therapy in osteoarthritis. *Curr Rheumatol Rep*. 2004 Feb;6(1):41-45. [PMID: 14713401]
- Chevalier X, Groult N, Texier JM, et al. Elastase activity in cartilage extracts and synovial fluids from subjects with osteoarthritis or rheumatoid arthritis: the prominent role of metallo-proteinases. *Clin Exp Rheumatol*. 1996;14:235-41. [PMID: 8809436]
- Kleesiek K, van de Leur E, Reinards R, et al. Pathobiochemical significance of granulocyte elastase complexed with proteinase inhibitors: effect on glycosaminoglycan metabolism in cultured synovial cells. *J Clin Chem Clin Biochem*. 1987 Mar;25(3):151-60. [PMID: 2439645]
- Chan PS, Caron JP, Rosa GJ, et al. Glucosamine and chondroitin sulfate regulate gene expression and synthesis of nitric oxide and prostaglandin E (2) in articular cartilage explants. *Osteoarthritis Cartilage*. 2005 May;13(5):387-94. [PMID: 15882562]
- Campo GM, Avenoso A, Campo S, et al. Chondroitin-4-sulphate inhibits NF-kB translocation and caspase activation in collagen-induced arthritis in mice. *Osteoarthritis Cartilage*. 2008 Dec;16(12):1474-83. [PMID: 18501644]
- Parcell S. Sulfur in human nutrition and applications in medicine. *Altern Med Rev*. 2002 Feb;7(1):22-44. [PMID: 11896744]
- Beilke MA, Collins-Lech C, Sohnle PG. Effects of dimethyl sulfoxide on the oxidative function of human neutrophils. *J Lab Clin Med*. 1987 Jul;110(1):91-96. [PMID: 3598341]
- Methylsulfonylmethane (MSM). Monograph. *Altern Med Rev*. 2003 Nov; 8(4): 438-41. [PMID: 14653770]
- Kim LS, Axelrod LJ, Howard P, et al. Efficacy of methylsulfonylmethane (MSM) in osteoarthritis pain of the knee: a pilot clinical trial. *Osteoarthritis Cartilage*. 2006 Mar;14(3):286-94. Epub 2005 Nov 23. [PMID: 16309928]

Additional references available upon request

All XYMOGEN® Formulas Meet or Exceed cGMP Quality Standards.

*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.