INGREDIENTS
Glucosamine can be found naturally in the body as one of the building blocks of cartilage. Glucosamine sulfate is the sulfate derivative of the natural amino-monosaccharide glucosamine. Glucosamine, a normal constituent of glycosaminoglycans in cartilage matrix and synovial fluid, may have pharmacological actions in articular cartilage and joint tissues.7-9 Several clinical trials have shown the significant positive effects of glucosamine sulfate and its good safety profile.10 Glucosamine sulfate supplements have become a mainstay of joint and cartilage management due to their important structure-preserving and symptom-relieving effects, as well as their cost effectiveness.11 Glucosamine is widely used to improve bone and joint health.12

GreenGrown® Glucosamine Sulfate 2KCl is a new source of glucosamine that provides 100% vegetable source glucosamine and meets the highest levels of purity. GreenGrown® Glucosamine, manufactured using environmentally-friendly technology, offers a unique glucosamine dietary supplement free of shellfish allergens.

BENEFITS
- GreenGrown® Glucosamine Sulfate 2KCl may supply the body with building material for proteoglycans, a component of cartilage;
- GreenGrown® Glucosamine Sulfate 2KCl supports joint structure and function;
- GreenGrown® Glucosamine Sulfate 2KCl provides sulfur, the key element that helps maintain the structural strength of joint and cartilage;
- Non-GMO, Soy Free, Gluten Free, Shellfish Free

EXTENDED BENEFITS
GreenGrown® Glucosamine Sulfate 2KCl may supply the body with building material for proteoglycans, a component of cartilage.*

Cartilage, a “connective tissue,” is composed of cells (chondrocytes), protein fibers (chiefly collagen) and clusters of complex molecules called ‘proteoglycans.’ A proteoglycan consists of a long protein (polypeptide) with many side chains attached to it. The attached side chains are polysaccharides—chiefly chondroitin sulfate and keratin sulfate.6

Glucosamine is an amino-monosaccharide, biosynthesized endogenously in animals and man by amination of glucose in position 2. Glucosamine is structurally incorporated in glycosaminoglycans and proteoglycans, especially in articular cartilage and synovial fluid.2,8 Because glucosamine is one of the building blocks of glycosaminoglycans, early studies suggested that dietary glucosamine sulfate could stimulate their synthesis and thus the production of new cartilage matrix.9,10

GreenGrown® Glucosamine Sulfate 2KCI supports joint structure and function*
Glucosamine sulfate is used all over the world for its positive effects on joint and cartilage.9 Many years of research have produced unequivocal evidence that glucosamine sulfate supports cartilage metabolism and structure, thereby enhancing healthy joint function.6,11

The European Society for Clinical and Economic Aspects of Osteoporosis and Osteoarthritis (ESEO) recommends the intake of glucosamine sulfate as first-line for knee joint improvement, enhancing healthy joint function.12 Experimental studies and human clinical trials convincingly demonstrate that orally consumed glucosamine sulfate promotes healthy joint function.9,13,14,15,16

GreenGrown® Glucosamine Sulfate 2KCI provides sulfur, the key element that helps maintain the structural strength of joint and cartilage*
Sulfur, a body’s essential structural non-metallic chemical element, is

Other Ingredients:
Modified cellulose (vegetarian capsule), microcrystalline cellulose, silicon dioxide.

Suggested Adult Use: Take 2 capsules daily, with or without food, or as recommended by a nutritionally-informed physician.

Non-GMO / Gluten Free / Soy Free / Vegan
Store in a cool dry place.

GreenGrown® Glucosamine is a registered trademark of Ethical Naturals Inc.

* 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.
incorporated into the structure of glycosaminoglycans such as chondroitin sulfate and keratin sulfate and plays an important role in joint and cartilage structure.\textsuperscript{16,17}

**PHARMACOLOGICAL & CLINICAL STUDIES**

In a randomized, double-blind controlled-placebo trial where 212 participants were randomly assigned 1,500 mg oral glucosamine sulfate once daily, or placebo, the results support the view that glucosamine sulfate is efficient in supporting joint and cartilage health.\textsuperscript{18,19}

A randomized, placebo-controlled trial was conducted in 202 individuals. The participants were randomly received oral glucosamine sulfate, 1,500 mg once daily, or placebo, for a 3-year treatment. The results showed that the treated-group presented with better symptoms of joint pains compared to placebo-group. The study arrived to the conclusion that long-term administration of glucosamine sulfate may help maintain joint health.\textsuperscript{19,20}

A review of 3 different studies showed that a once-daily dosage of 1,500 mg of glucosamine sulfate is likely to be safe, effective and cost-effective approach to support joint structure and function.\textsuperscript{20}

In a clinical study on glucosamine sulfate versus combination of glucosamine sulfate and NSAIDs (Non-Steroidal anti-inflammatory drugs), the results showed the efficacy of glucosamine sulfate could improve the symptoms of joint pain and can improve joint function.\textsuperscript{21} The study included the possible synergy effect of glucosamine sulfate with NSAIDs.\textsuperscript{21} The same results were found in the PEGASus Study.\textsuperscript{22}

In a double-blind randomized placebo-controlled clinical trial, the intake of 1,500 mg of glucosamine sulfate daily in combination with 800 mg chondroitin sulfate demonstrate the positive effect on joint health compared to placebo.\textsuperscript{23}

In the PROOF Study, the impact of role of diet, exercise, and glucosamine sulfate supplements was studied over 2.5 years of research. The overall results showed the positive effect of glucosamine sulfate on joint health compared to diet and exercise.\textsuperscript{24}

**SCIENTIFIC REFERENCES**


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