

# Chondroitin & Glucosamine

Code: FE0305 – 60 vegetable capsules



CHONDROITIN & GLUCOSAMINE is a formula that helps preserve the integrity of cartilage by acting as a chondroprotector, stopping joint deterioration as a consequence of age or too much pressure on the joints from work or impact sports. With CHONDROITIN & GLUCOSAMINE, joint cartilage recovers flexibility, elasticity and shock-absorbing capacity while stopping the degradation response associated with degenerative joint processes.

**Ingredients:** glucosamine sulfate (from shellfish), chondroitin sulfate, anticaking agent: magnesium salts of fatty acids, vegetable capsule (glazing agent: hydroxypropylmethylcellulose; purified water).

<b>Nutritional information:</b>	<b>1 capsule (1 040 mg)</b>	<b>2 capsules (2 080 mg)</b>	<b>3 capsules (3 120 mg)</b>
Glucosamine sulfate	500 mg	1 000 mg	1 500 mg
Chondroitin sulfate	400 mg	800 mg	1 200 mg

**Contains no:** Preservatives, artificial flavour or colour, sugar, milk or milk products, starch, wheat, corn, soy, or yeast.

**Size and format:**  
60 vegetable capsules.

**Recommended daily dose:**  
1 to 3 capsules daily with food.  
Do not exceed the stated recommended daily dose.

## Indications and uses:

Different studies have shown that the ingredients in CHONDROITIN & GLUCOSAMINE can be of help for the following: Preventing and treating osteoarthritis, the recovery of joints damaged by trauma and maintaining joint flexibility and comfort.

## Cautions:

This should not be administered to children. There is a lack of data on its use during pregnancy and breastfeeding, so its use is not recommended during these stages. Glucosamine is extracted from the exoskeleton of crustaceans and should therefore not be taken in case of shellfish allergy. A possible interaction exists between glucosamine and oral anticoagulants (acenocoumarol, Warfarin) so special medical monitoring is recommended for patients receiving treatment with oral anticoagulants.

**GLUCOSAMINE SULFATE:** This is an endogenous amino saccharide that participates in the synthesis of glycosaminoglycans and proteoglycans by the chondrocytes, which make up joint cartilage. Chondrocytes synthesize these components of the extracellular matrix, which are responsible for providing cartilage its mechanical and elastic properties <sup>(1)</sup>. There are other glucosamine salts but most studies have been carried out on the sulfate group so there is no existing evidence on the efficacy of other salts. The sulfate group may also be important for the therapeutic effect of glucosamine upon forming part of the proteoglycans. Numerous studies back its chondro-modulating effect which favours chondrocyte anabolism. Long-term studies have shown an improvement in symptoms and progression of joint narrowing in people treated with glucosamine sulfate. The European Rheumatology Society approves the use of both glucosamine sulfate and chondroitin sulfate for the treatment of osteoarthritis. The activity of glucosamine sulfate has been related to its capacity to reduce or palliate the catabolic effects of pro-inflammatory molecules such as interleukin 1(IL-1), which is present in osteoarthritic cartilage. Additionally, it inhibits certain cartilage-destroying enzymes such as collagenase, aggrecanase and phospholipase A<sub>2</sub> and can reduce the formation of superoxide radicals by macrophages. Anti-inflammatory effects have been described, and in several clinical trials it has shown its capacity to decrease pain with the same efficacy as NSAIDs, with fewer side effects <sup>(2-4)</sup>. In moderate stages of knee osteoarthritis, the use of glucosamine sulfate (1.500mg/day) improved symptoms with a similar efficacy to NSAIDs and a lower incidence of side effects. It has also shown a positive effect on the evolution of osteoarthritis, with increased in joint space.

In general, the majority of the clinical trials carried out to assess the efficacy of glucosamine sulfate for the treatment of osteoarthritis have shown a reduction in pain, rigidity and inflammation, as well as an increase in mobility, even weeks after finishing treatment <sup>(5,6)</sup>.

**CHONDROITIN SULFATE:** This is a sulfated glycosaminoglycan that promotes the synthesis of proteoglycans in the cartilage matrix. It has a significant tropism for cartilage tissues, an anti-inflammatory effect and none of the classic toxic side effects of NSAIDs on the digestive or renal systems or on coagulation. Along with glucosamine sulfate, it is considered anti-osteoarthritic or chondroprotective, and clinical trials have been carried out to assess its efficacy alone and in combination with glucosamine. In cartilage, it reduces the catabolic activity of chondrocytes, inhibiting certain proteolytic enzymes such as collagenase, elastase, proteoglycanase, phospholipase A<sub>2</sub> and metalloproteinase (MMP-9, MMP-13), among others, and is also capable of reducing the synthesis of nitric oxide in human osteoarthritic joint chondrocytes. In the

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subchondral bone it has a positive effect on bone imbalance caused by osteoarthritis, and in the synovial membrane it increases the synthesis of endogenous hyaluronic acid. Its safety has been extensively proven so it can be administered as a chronic treatment <sup>(5,7)</sup>.

Chondroitin sulfate is effective at controlling pain and improving function in osteoarthritis patients. It reduces the need for analgesics or NSAIDs, its effect persists up to 2-3 months after stopping treatment and it allows for control over the radiologic progression of osteoarthritis of the knee and fingers. In a total of nine clinical trials, the effect of chondroitin sulfate was compared with placebo in patients with osteoarthritis of the knee and fingers who were treated for periods that oscillated between 3 and 36 months. The results of all of the clinical trials coincided in that it is effective at reducing spontaneous pain, increasing functional capacity and decreasing the intake of rescue medication <sup>(2,3,7)</sup>.

## References:

- 1) Ponce-Vargas A. Sulfato de glucosamina. De la condromodulación a la reducción sintomática y del progreso de la artrosis. *Seminarios de la Fundación Española de Reumatología*. 2006; 7(1):3-11.
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- 4) Mulero Mendoza J. Tratamiento farmacológico de la artrosis. Expectativas y realidades. *Revista Clínica Española*. 2005; 205(4): 168-171.
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- 7) Sawitzke AD, et al. Clinical efficacy and safety over two years use of glucosamine, chondroitin sulfate, their combination, celecoxib or placebo taken to treat osteoarthritis of the knee: a GAIT report. [Annals of the Rheumatic Diseases](#). 2010; 69(8): 1459–1464