

GLUCOSAMINE AND CHONDROITIN

Common Names: *glucosamine, shark chondroitin*

Scientific Names: *glucosamine sulfate, glucosamine hydrochloride, chondroitin 4- and 6-sulfate*

Effectiveness: Glucosamine and chondroitin may moderately improve pain and functionality in knee OA.

Safety: Glucosamine and chondroitin have been used safely in clinical trials. Adverse events reported are generally mild; however, the safety of long-term use is unknown.

What are glucosamine and chondroitin?

- Glucosamine is a naturally occurring amino sugar that is produced in humans. It is also found in seashells or could be made in the laboratory. Glucosamine supplements are commonly sold as glucosamine sulfate or glucosamine hydrochloride.
- Chondroitin is a substance that occurs naturally in the body. It is an important component of the cartilage around joints.

What it is it used for in people with rheumatic conditions?

- Glucosamine and chondroitin are often used alone or together for the management of osteoarthritis (OA) and joint pain from rheumatoid arthritis (RA).

How is it thought to work?

- Glucosamine is used by the body to make a “cushion” that surrounds the joints. This cushion becomes thinner and stiff in patients with osteoarthritis. Glucosamine might help to supply the material needed to rebuild the cushion. There is evidence to suggest that glucosamine may reduce the production of inflammatory mediators that cause joint and cartilage damage.
- Chondroitin is a major building block of the cartilage of the joint and may slow down the breakdown of joint cartilage by stopping certain enzymes from working.

Does it Work? What the Science Says:

Glucosamine sulfate 1500mg per day

Some studies have shown reduced pain and improved functionality in patients with mild-to-moderate OA, especially the knee. However, in the GAIT trial, use of glucosamine hydrochloride and chondroitin, alone or in combination, did not significantly reduce pain in patients with knee OA. Limited evidence suggests glucosamine may modestly improve pain and symptoms associated with RA. Glucosamine hydrochloride may not provide similar benefit in OA and RA.

Mixed results for OA
Weak evidence to suggest benefit in RA
May try 4-6 weeks for OA of the knee, since generally well tolerated

Chondroitin sulfate 200–400mg 2 to 3 times per day

May provide modest effect in reducing pain and improving joint function in patients with OA, especially the knee, after 8-12 weeks. However, some studies did not show any benefit in OA. In the STOPP trial, 800mg daily of chondroitin sulfate (standardized in some European countries as a prescription product containing 95% or more pure chondroitin sulfate) produced significant reduction in pain and slowed joint-space widening compared to placebo in patients with mild-moderate OA.

Mixed results for OA and limited evidence to suggest benefit in RA
Good evidence in STOPP trial for a prescription form but unknown if supplements have similar benefit
May try 4-6 weeks for OA of the knee, similar to glucosamine

Combination Products	It is unclear whether combining glucosamine and chondroitin provides additional benefit compared to the individual components. In the MOVES trial, a specific prescription product in Spain containing glucosamine hydrochloride/chondroitin sulfate 500/400mg three times daily demonstrated non-inferiority to celecoxib 200 mg daily in reducing pain from knee OA over 6 months.	Combination may not be better than single agent products Good evidence in MOVES trial but unknown if dietary supplements available in Canada have similar benefit
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What are possible side effects?

- Glucosamine and chondroitin are generally well tolerated. Side effects associated with glucosamine and chondroitin are generally mild in nature.
 - Glucosamine: nausea, stomach upset, heartburn, diarrhea, constipation. Drowsiness, headache, and skin reactions have also been reported.
 - Chondroitin: stomach upset and nausea, diarrhea, constipation, swelling of eyelid and lower limbs, and hair loss have also been reported.

Interactions

With drugs:

- Both glucosamine and chondroitin can interact with anticoagulant/antiplatelet drugs by increasing risk of bruising and/or bleeding.
 - Common antiplatelet and anticoagulant drugs may include: *warfarin (Coumadin)*, *ASA (Aspirin)*, and *clopidogrel (Plavix)*, *ticagrelor (Brilinta)*, *prasugrel (Effient)*, *enoxaparin (Lovenox)*, *dalteparin (Fragmin)*, *dabigatran (Pradaxa)*, *rivaroxaban (Xarelto)*, *apixaban (Eliquis)* and others.

For complete information about glucosamine or chondroitin, consult your physician and pharmacist.

