
• **FACT SHEET No. 8**

# Alternative Treatment Options for Osteoarthritis: Facts and Evidence on Glucosamines and Chondroitin

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Glucosamines and chondroitin are constituents of joint cartilage. Their oral administration in patients with osteoarthritis is thought to make up for the apparent cartilage loss in affected joints. Therefore, they are commonly used as dietary supplements that are claimed to reduce the symptoms of osteoarthritis and delay its progression. [1]

Glucosamine is an amino sugar that is a building block for the glycosaminoglycans that are part of the structure of cartilage. Glucosamine can be taken as a pill or sometimes as an injection. It can come in combination with other supplements (such as chondroitin) or by itself in the form of glucosamine hydrochloride or sulphate. [2] Chondroitin is a highly hydrophilic, gel-forming polysaccharide macromolecule, which conveys much of the compressive resistance of cartilage. It is mainly available in the form of chondroitin sulfate. [3] Ingested chondroitin and glucosamine are both partially absorbed in the intestine, and it has been suggested that some of the ingested amount reaches the joints.

Until recently, the research evidence has suffered from being small scale and poor in quality; several reviews have highlighted the need for larger and better quality studies [4, 5], and some have recently been published.

In a network meta-analysis that included ten large trials in 3,803 patients available up to June 2010, the overall difference in pain intensity on a 10 cm visual analog scale compared with placebo was −0.4 cm (95 percent confidence interval −0.7 to −0.1 cm) for glucosamine, −0.3 cm (−0.7 to 0.0 cm) for

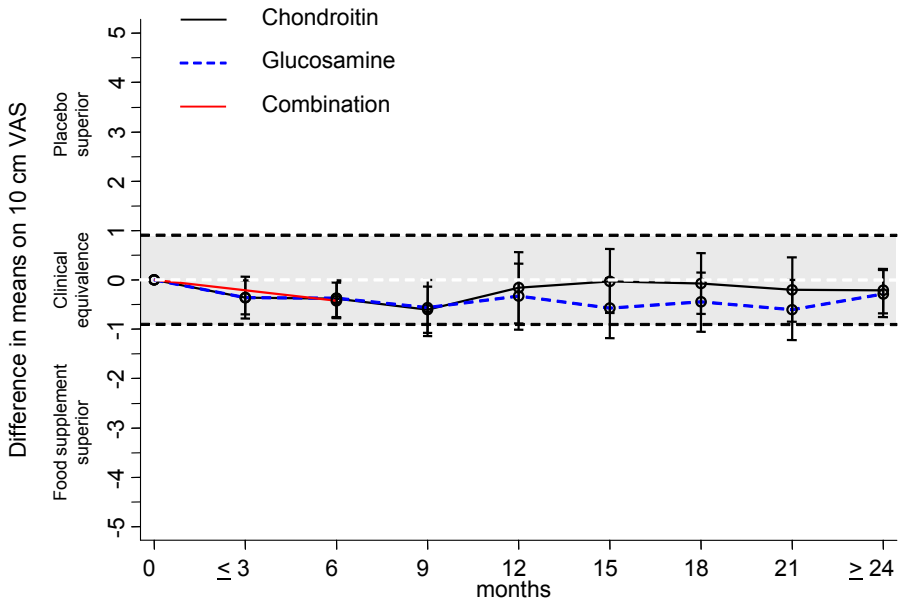
chondroitin, and −0.5 cm (−0.9 to 0.0 cm) for the combination.[6] None of these differences reached clinical relevance, as none of them reached the minimal clinically important difference of 0.9 cm.

The figure below presents pooled estimates across different time points. The variation across time points was not over and above what would be expected by chance. Industry independent trials showed systematically smaller effects than commercially funded trials.

The differences in changes in minimal width of joint space were all minute, with 95 percent confidence intervals all overlapping zero. The difference was −0.2mm (−0.3 to 0.0 mm) in favor of glucosamine, −0.1 mm (−0.3 to 0.1 mm) in favor of chondroitin, and 0.0mm (−0.2 to 0.2 mm) for the combination. Results of the network meta-analysis did not indicate that the use of these supplements is unsafe, but given the scarcity of information and wide 95 percent confidence intervals of estimates, evidence is inconclusive.

One large trial has become available since publication of the network meta-analysis. The LEGS trial published in 2015 [7] randomized 605 patients to glucosamine sulfate, chondroitin sulfate, both dietary supplements, or matching placebo capsules. Results were also concordant with the network meta-analysis, with no relevant effect of either of the supplements or their combination on pain or joint space width.

Compared with placebo, glucosamine, chondroitin, and their combination do not reduce joint pain or have an impact on narrowing of joint space. The likely industry-sponsorship of the majority of trials may have led to an overestimation of treatment benefits.[6, 8] Health authorities and health insurers should not cover the costs of these preparations, and new prescriptions to patients who have not received treatment should be discouraged.[6]




*Differences in pain intensity measured on visual analog scale (VAS) between experimental interventions and placebo over time. The darker shading between -0.9 and +0.9 cm represents area of clinical equivalence. Negative values indicate benefit of experimental interventions compared with placebo. Pain reductions of -0.9cm or more are deemed clinically relevant, smaller differences are not. Adapted from Wandel et al.[6]*

## References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