

# Are glucosamine and chondroitin natural remedies for osteoarthritis?

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## Clinical question

Do glucosamine (GA) and chondroitin (CD) improve pain for patients with osteoarthritis?

## Bottom line

Higher-quality, larger, or publicly funded studies generally do not find GA or CD effective. If studies at higher risk of bias are included, 45% to 55% of patients will have meaningful reduction in pain (ie,  $\geq 30\%$  reduced pain) with either treatment compared with 35% to 45% receiving placebo.

## Evidence

Results are statistically significant unless indicated.

- From 11 systematic reviews<sup>1</sup> of GA 1500 mg/day versus placebo (2 to 25 RCTs; 414 to 4963 patients), a meta-analysis (9 RCTs; N=1643) showed 47% of patients treated with GA and 37% treated with placebo attained meaningful pain reduction after 4 to 156 weeks (number needed to treat of 11).<sup>2</sup>
  - Another meta-analysis had similar findings.<sup>3</sup>
  - On a 100-point pain scale (meta-analysis<sup>4</sup> rerun by PEER) with baseline pain of 52, placebo reduced pain roughly 13 points. In larger RCTs, pain reduction with GA was the same as placebo. In smaller RCTs, GA reduced pain by roughly 12 points more than placebo.
- From 11 systematic reviews<sup>1</sup> of CD 800 to 1200 mg/day versus placebo (6 to 18 RCTs; 362 to 4044 patients), a meta-analysis (9 RCTs; N=2477) showed 57% of patients treated with CD and 45% of patients receiving placebo attained meaningful pain reduction after 12 to 48 weeks (number needed to treat of 9).<sup>2</sup> Another meta-analysis found no difference (1 RCT; N=330).<sup>5</sup>
  - On a 100-point pain scale (meta-analysis<sup>4</sup> rerun by PEER) with baseline pain of 56, placebo reduced pain roughly 19 points, and CD reduced pain roughly 4 points more than placebo in larger RCTs and roughly 12 points more than placebo in smaller RCTs.
- In 6 systematic reviews<sup>1</sup> of combined GA and CD versus placebo, only 1 RCT examined meaningful pain reduction and found the combined effect similar to that of the components alone.<sup>5</sup> The change on a 100-point pain scale found combined effect not different from placebo.<sup>4,6</sup>
- Limitations: mostly knee osteoarthritis studies.<sup>2</sup>

-There was no benefit of GA or CD compared with placebo in publicly funded,<sup>2</sup> higher-quality, or larger RCTs.<sup>3,7,8</sup>

## Context

- Many meta-analyses report “standard mean differences,” which are difficult to apply clinically and are not reported here.<sup>1</sup> Adverse events were infrequently reported.

## Implementation

Interpreting pain studies is tricky: various pain scales, cut-offs, and time points are used, and results are reported differently. We focused on the proportion of patients with meaningful improvement in pain, as patients understand this best.<sup>9</sup> Knowing the change on common pain scales (eg, visual analogue scale) is helpful to evaluate research. Clinicians can use these to ascertain the reliability of effects and explain the benefits of treatment to patients. The online pain calculator<sup>10</sup> or PEER decision aids can help.<sup>11</sup>

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## Competing interests

None declared

The opinions expressed in Tools for Practice articles are those of the authors and do not necessarily mirror the perspective and policy of the Alberta College of Family Physicians.

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