

What is the big deal about joint pain?

When we talk about joint pain, we are generally referring to osteoarthritis (OA), a progressive degenerative disease that affects the joint cartilage and bone below the cartilage. The knee and hip are the most common sites affected. The prevalence of OA increases with age ¹ with 18% of women and almost 10% of men over 60 years old complaining of symptoms ². One in ten people in the UK and over 30 million people in the USA are diagnosed with this condition ³ and in 1994, the OA-related cost in the USA was estimated to be \$15.5 billion ⁴, mostly as a result of loss of work. So, pain in the joints is not confined to the joints and its impact can be felt in many facets of our personal and public lives.

Can supplements make you suppler?

A variety of treatment modalities are being used to manage and improve the symptoms associated with OA. These include lifestyle changes such as exercise and weight reduction, pharmacological modalities such as the use of non-steroidal anti-inflammatory agents (NSAIDs) and the ever-growing popular use of dietary supplements. What follows is a brief summary of what research has uncovered about the benefits and risks associated with 5 commonly used supplements for the treatment of OA ⁵.

MSM (methylsulphonylmethane)

MSM is an organic form of sulfur, an important component of many biochemical processes within our bodies. It was discovered in the early 1980's and has become a very popular supplement. Three clinical trials have evaluated its effectiveness in treating OA of the knee ⁶⁻⁸. The results demonstrated that doses of 1.5, 3.375 and 6 grams/day of MSM, taken for 12 weeks, significantly improved knee pain when compared to placebo. Function also improved when the supplement was taken alone or combined with glucosamine. There was no difference in side effects between MSM and placebo groups and no adverse outcomes were reported.

SAM-e (S-adenosyl methionine)

SAM-e, a cofactor needed to activate enzymes, is required for a number of cellular functions and has been marketed as a dietary supplement for a number of medical conditions. Six trials have looked at SAM-e for the treatment of OA of the knee, hip and spine ⁵. Doses of 1200 mg/day were compared to different NSAIDs and placebo. All trials concluded that SAM-e was as effective as NSAIDs in reducing pain and improving function. In addition, patients taking SAM-e were less likely to report adverse events compared to those taking NSAIDs. Finally, there was a lower dropout rate among the SAM-e group compared to the placebo or NSAID group suggesting that it might be better tolerated.

Glucosamine and chondroitin sulfate

Glucosamine is a precursor of glycosaminoglycans, a major component of joint cartilage, and chondroitin is an important structural component of cartilage. They are among the most popular dietary supplements sold in the United States. However, in 2008, the American Academy of Orthopedic Surgeons (AAOS) published clinical practice guidelines recommending against the use of glucosamine and chondroitin sulfate⁹. Though a number of studies reported conflicting results surrounding the effectiveness of these supplements in OA, a comprehensive analysis of the literature presented results from a number of studies supporting their benefits¹⁰. Seven studies published between January 2007 and January 2011 demonstrated the effectiveness of glucosamine and chondroitin in relieving pain, improving function and possibly delaying the progression of the disease within the joint in OA, though the latter effects may not be evident for several years. In 2008, a study by the National Institutes of Health reported that glucosamine 1500 mg/day and chondroitin sulfate 1200 mg/day provided relief of pain in participants with moderate to severe knee OA pain (though there was little effect in those suffering from mild pain) <http://nccam.nih.gov/research/results/gait/qa.htm> - results. Because of the small size of the study, investigators recommended that more trials be carried out in order confirm their findings. Glucosamine and chondroitin have also been shown to be safe with rare and uncommon side effects¹¹. These observations support the view that there is no compelling evidence *not* to offer these supplements to patients who wish to use them.

Curcumin

Curcumin is the principal ingredient in the Indian spice turmeric which is a member of the ginger family, and has been shown to have anti-inflammatory and antioxidant properties. Much of the information on how curcumin works comes from *in vitro* studies (experiments performed in isolated cells)¹², and researchers have cautioned about applying these results to humans. It is still unclear how much of the active curcumin is actually absorbed through the gastrointestinal tract and what doses may lead to toxic blood levels. Nevertheless, a 6 week trial of curcumin has been found to be as effective as NSAIDs in decreasing pain and improving function in OA of the knee¹³ with similar benefits reported for rheumatoid arthritis¹⁴.

Boswellia serrata (B. serrata)

Indian Frankincense is a plant extract derived from *Boswellia serrata* tree and has been used for various medicinal purposes for thousands of years. Its use in treating AO has been evaluated in three randomized control trials¹⁵⁻¹⁷. All three showed significant improvement in pain, swelling and function in those receiving *B. serrata* compared to placebo or NSAIDs. The duration of treatment ranged

from 8 weeks to 6 months. In addition, improvement was maintained even after the treatment was discontinued and there were no adverse effects were reported.

In summary, there is a large volume of supplements available for consumption that is being marketed for the treatment of osteoarthritis. The five listed in this brief review appear to have scientific evidence to support their beneficial effects in relieving symptoms associated with OA.

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