



Osteoarthritis (OA)

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Nutraceuticals OA

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Accurate Education

Complementary and Alternative Medicine (CAM)

Nutraceuticals for Osteoarthritis

Osteoarthritis (OA) is a common “wear and tear” joint condition that causes pain, stiffness, and reduced range of motion. A number of supplements offer potential benefit in the management of OA, including not only for pain but also for reducing the damage associated with the disease. While as yet there are no magic bullets, the compounds below offer alternative treatment options for the management of arthritis.

While both conventional and CAM treatment of OA generally focus on reducing pain, CAM treatment may also offer additional benefits directed at the driving forces behind the pain. As OA pain continues over time, changes occur in the nervous system that contribute to maintaining pain, conditions including peripheral and central pain sensitization. Treating these conditions as well is important for managing OA.

- **Peripheral Sensitization (PS):** Injury or inflammation in OA joints triggers the release of inflammatory compounds that lower the pain threshold of pain receptors, making joints more sensitive to movement or pressure, even with mild stimulation.
- **Central Sensitization (CS):** Persistent pain signals from the joints to the spinal cord and brain alters pain processing, increasing pain perception (hyperalgesia) and causing pain even from non-painful stimulation (allodynia). For example, this is seen in 30–40% of knee OA patients.
- **Transition from Acute to Chronic Pain:** Acute joint injury with peripheral sensitization contributes to central sensitization within weeks to months post-injury, leading to chronic pain associated with OA.

Palmitoylethanolamide (PEA) is a compound manufactured by the body that is emerging as a new agent in the treatment of pain and inflammation. As an compound also found in eggs and milk, no serious side effects or drug–drug interactions with PEA have been identified. Recent research suggests PEA is effective for arthritic pain and may also slow the progress of joint deterioration.

- **Role in Sensitization:** Highly effective for both peripheral and central sensitization
- **Supplements:** Micronized PEA formulations enhances absorption
- **Recommended dose:** 600 mg/day
- **Cost:** \$20–30/month
- **Additive / Synergy Benefits:** with Low-Dose Naltrexone (LDN), omega 3's (EPA and DHA), resveratrol and capsaicin.

Curcumin, the yellow pigment found in turmeric, is a powerful anti-inflammatory shown to reduce the pain of OA, especially with joint flares, and may suppress enzymes that break down cartilage.

- **Role in Sensitization:** due to its anti-inflammatory and other mechanisms, it likely suppresses peripheral and central sensitization
- **Supplements:** Curcumin, poorly absorbed orally, can be markedly improved with the use of liposomal or nanoformulation such as Meriva,[®] and somewhat less so when taken with black pepper (pipeline)
- **Recommended dose:** 500 mg 2x/day after meals
- **Cost:** \$20–30/month
- **Additive / Synergy Benefits:** with Low-Dose Naltrexone (LDN), omega 3's (EPA and DHA), resveratrol and capsaicin.

Glucosamine & Chondroitin usually taken together, they both help build and protect cartilage while evidence for pain relief is mixed. Glucosamine sulfate appears more effective for knee OA than hip or hand OA, and may reduce pain in acute knee OA flares.

- **Role in Sensitization:** Chondroitin may reduce peripheral sensitization via anti-inflammatory effects. and benefits may be indirect via cartilage support.
- **Supplements:** No special recommendations
- **Recommended dose:** Glucosamine (sulfate preferred): 1,500 mg/day. Chondroitin: 800–1,200 mg/day
- **Cost:** \$10–30/month
- **Additive / Synergy Benefits:** with omega 3's (EPA and DHA); hyaluronic acid (HA) also has beneficial properties on the joints by improving the mechanical properties of the synovial fluid. HA is usually given in local joint injections but oral use of HA may also be effective.

Boswellia Serrata (Frankincense): is a plant extract with strong anti-inflammatory benefits that improves pain, stiffness, function and walking distance in OA and rheumatoid arthritis.

- **Role in Sensitization:** Reduces peripheral sensitization with suppresses spinal microglial activity, that potentially reduces central sensitization (preclinical only).
- **Supplements:** Use standardized extracts (e.g., 5-Loxin®).
- **Recommended dose:** Glucosamine (sulfate preferred): 1,500 mg/day. Chondroitin: 800–1,200 mg/day
- **Cost:** \$10–30/month
- **Additive / Synergy Benefits:** with PEA, Low-Dose Naltrexone (LDN), with omega 3's (EPA and DHA); and hyaluronic acid (HA) HA also has beneficial properties on the joints by improving the mechanical properties of the synovial fluid. HA is usually given in local joint injections but oral use of HA may also be effective.

Ginger: has been used for centuries to reduce inflammation and some clinical trials demonstrate dose-dependent improvements in pain for knee OA.

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- **Supplements:** Use standardized extracts (e.g., 5-Loxin®).
- **Recommended dose:** Glucosamine (sulfate preferred): 1,500 mg/day. Chondroitin: 800–1,200 mg/day
- **Cost:** \$10–30/month
- **Additive / Synergy Benefits:** with PEA, Low-Dose Naltrexone (LDN), with omega 3's (EPA and DHA); and capsaicin.

Collagen: Oral collagen has anti-inflammatory and cartilage protective (chondroprotective) effects that provide significant improvements in pain and function for OA.

- **Role in Sensitization:** While collagen's anti-inflammatory and chondroprotective effects may indirectly reduce peripheral sensitization, there is no direct clinical evidence for effects on central sensitization.
- **Supplements:** Benefits are similar with hydrolyzed and undenatured collagen formulations,
- **Recommended dose:** Typical doses range from 2.5–10 g/day for hydrolyzed collagen and 40 mg/day for UC-II orally for 8–24 weeks. Both hydrolyzed and un-denatured forms are used; hydrolyzed collagen is more widely studied for OA,
- **Cost:** \$20–\$60 per month
- **Additive / Synergy Benefits:** with PEA, Low-Dose Naltrexone (LDN), with omega 3's (EPA and DHA); and capsaicin.

— **Other compounds** useful for OA covered elsewhere: Vitamin D, Omega-3

— **Topical Analgesics:** Additive or synergistic benefits may be obtained with simultaneous application of topical creams, gels, or essential oils containing diclofenac, lidocaine, capsaicin, CBD, CBG, THC, palmitoylethanolamide (PEA) and/or the terpenes: beta-caryophyllene (BCP), linalool and limonene.

— **Exercise** is also very important, especially for knee OA.