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Accurate Education

Plant-based Nutrients (Phytonutrients) for Pain

Plant-based nutrients, or phytonutrients, are natural compounds found in fruits, vegetables, dark chocolate, coffee, and tea. These phytonutrients have anti-inflammatory properties that may help reduce pain and inflammation in conditions like arthritis and antioxidant properties that may help with migraines and nerve pain (sciatica, neuropathy, MS, spinal cord, brain injury and stroke).

Also, they are very important in reducing systemic inflammation and oxidative stress, the driving forces that increase chronic pain intensity over time and increase risk for diabetes, heart disease and stroke.

Phytonutrient-rich foods or supplements are important components of the anti-inflammatory diet. It is always recommended that one obtain these compounds by eating the natural foods that contain them. Combining them in one's diet also provides synergistic benefits when ingested together. Dietary phytonutrient supplements may be recommended by your doctor.

Curcumin, found in turmeric, is the most powerful anti-inflammatory compound along with the omega-3 fatty acids EPA and DHA. Strong evidence shows it may offer up to 30% pain reduction and improved joint function in arthritis.

- **Dietary:** Because curcumin has very low bioavailability due to poor solubility (<1%) and rapid metabolism in the gut and liver, dietary intake is inadequate to gain benefits.
- **Dosing:** 500 mg/day, increasing up to 1,500 mg/day..
- **Suggested Supplements:** Liposomal and Nanoparticle-based products offer superior absorption: Thorne *Meriva* and Life Extension *Super Bio-Curcumin*

EGCG is one of the most powerful dietary antioxidants with good evidence for reducing systemic inflammation and oxidative stress.

- **Food Sources:** Green tea and matcha green tea (100–150 mg/100 mL), Black tea, white tea, and oolong tea also contain significant EGCG, (though generally less than green tea); unsweetened cocoa powder, carob powder and blackberries are also excellent sources.
- **Dosing:** 300–800 mg/day (supplements); 2–3 cups green tea
- **Enhancement Strategies:** Don't add to boiling water, it will destroy the EGCG. Drinking tea between meals or on an empty stomach may improve bioavailability, EGCG binds to proteins and minerals in food, reducing its absorption. Opt for high-quality brewed teas: avoid bottled, sweetened and premixed teas, they are lower in antioxidants and may be high in sugar.
- **Suggested Supplements:** Use liposomal EGCG
- **Synergies:** Combines with Omega-3s (1–2 g/day) for enhanced anti-inflammatory effects. Pairs with berries (cyanidin) and turmeric (curcumin) for antioxidant synergy

Quercetin may reduce joint pain and stiffness in rheumatoid arthritis and may help in sciatica, peripheral neuropathy, MS and stroke by protecting nerves from oxidative damage,

- **Food Sources:** Red onions (25 mg/100 g), kale (20mg/100 gm; Consume with dietary fats (e.g., olive oil, nuts) to enhance absorption. Foods with Vitamin C may stabilize quercetin
- **Dosing:** 500 mg/day, increasing up to 1,000 mg/day..
- **Suggested Supplements:** Liposomal formulations; Thorne *Vitamin C with Quercetin* or Life Extension
- **Synergies:** Combines with vitamin C (500–1,000 mg/day) to enhance antioxidant effects. Pairs with omega-3s or berries (cyanidin) for anti-inflammatory and neuroprotective benefits

Resveratrol has moderate evidence for reducing pain in arthritis, and may help nerve pain.

- **Food Sources:** Red grapes (1–2 mg/100 g; 1 cup ~1–2 mg); red wine (1–10 mg/L; 150 mL glass ~1–1.5 mg); blueberries (~0.5–1 mg/100 gm).
- **Bioavailability:** Low (~1–5%) due to rapid gut/liver metabolism
- **Dosing:** 100–500 mg/day
- **Suggested Supplements:** Liposomal formulations: Thorne *Trans Lipo-resveratrol*
- **Synergies:** Combines with omega-3s and with berries (anthocyanins) for antioxidant synergy

Anthocyanins are flavonoid plant pigments known for their antioxidant and anti-inflammatory properties. In general, berries have much higher contents of anthocyanins than vegetables.

- **Food Sources:** Found in 100g (= 0.71 cups) of red, purple and blue fruits and vegetables, **Up to:** Pomegranate (2000 mg); Elderberries (580 mg); Blueberries (550 mg); Black Currant (475 mg); Sweet cherries (450 mg); Blackberries (325 mg), Red onions (outer layers 350 mg) Red cabbage (300 mg). Black Rice (500 mg); These anthocyanins contents may vary widely.
- **Recommended Daily Intake:** 100 mg/day; (1 cup blackberries or blueberries)
- **Enhancement Strategies:** Eat with dietary fats to enhance absorption.
- **Supplement Recommendations:** Use standardized berry extracts (20–30% anthocyanins) or Liposomal or Microencapsulated anthocyanin extracts for stability and absorption
- **Suggested Products:** Vitacost Bilberry Extract, Life Extension Blueberry Extract
- **Special Considerations:** Rare allergic reactions. Limited safety data for doses >200 mg/day

Kaempferol has antioxidant, anti-inflammatory, and anticancer properties

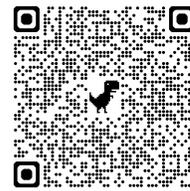
- **Food Sources:** Kale (1 cup 20–50 mg), spinach (1 cup 20–30 mg), broccoli,
- **Dosing:** 50–100 mg/day (1 cup kale or spinach);
- **Bioavailability:** Low (~2–5%)
- **Enhancement Strategies:** Eat with dietary fats (e.g., olive oil, nuts) to improve absorption
- **Suggested Supplements:** Liposomal or Nanoparticle; Life Extension Kale Extract; Vitacost Spinach Extract.
- **Special Considerations:** Limited safety data for doses >200 mg/day.



Phytonutrients for Pain
(By Compound)



Phytonutrients for Pain
(By Diagnosis)



Nutraceuticals
Comparisms