

The Power Of Five • Joint Supplements Proven in Research Studies

Fish Oil - Omega-3 fatty acids are being increasingly recognized as important dietary components for maintaining health. The strongest and most established body of science for marine omega-3 fatty acids (EPA & DHA) is in relation to cardiovascular health. The cardiovascular benefits of omega-3's has prompted the American Heart Association to recommend consumption of omega-3 fatty acids, which may in turn have fueled the search for the molecular and cellular mechanisms by which omega-3's affect health and disease. This work has led to a large body of scientific evidence which suggests that these dietary lipids modulate numerous processes, including brain and visual development, inflammatory reactions, thrombosis and carcinogenesis.

Both omega-3 and omega-6 fatty acids are essential to human health, and ideally there should be 2-4 times more omega-6 than omega-3 in the diet. The typical American diet tends to contain 14 - 25 times more omega-6 fatty acids than omega-3 fatty acids, and many researchers believe this imbalance is a significant factor in the rising rate of inflammatory disorders in the United States. Inflammation is part of the body's immediate response to infection or injury, but uncontrolled inflammation plays an important role in the pathology of diseases such as asthma, rheumatoid arthritis and atherosclerosis. When cells are stimulated, arachidonic acid is released from the cell membrane and is transformed into powerful cellular mediators of inflammation such as thromboxanes, prostaglandins and leukotrienes. Dietary omega-3's compete with omega-6 fatty acids for inclusion in cell membranes, and thus when present in ideal quantities, can diminish the release of arachidonic acid by external stimuli.

The modulating effects of omega-3's are not comparable to the effects of powerful pharmacologic agents, but create a gentle shift in inflammatory mediator production, toward a lessened reactivity against environmental stimuli.

Effects of dietary supplementation with fish oil on the in vivo production of inflammatory mediators in clinically normal dogs.

A recent study reported by LeBlanc et. al. in the Am. J. Vet. Res. showed that a fish oil enriched diet was associated with significant reductions in serum prostaglandins and leukotrienes. The results supported the use of EPA and DHA enriched diets as anti-inflammatory treatments in dogs with chronic inflammatory diseases.

Rose Hips - Rose hip powder is widely known as a source of Vitamin C, but only recently has its anti-inflammatory property been recognized as beneficial to the treatment of arthritic inflammation. The mechanism of action is believed to be a combination of anti-inflammatory and anti-oxidative processes attributable to the vitamins, carotenoids and galactolipids found in the product.

Clinical studies involving more than 400 participants, have demonstrated that rose hip powder is able to soothe joints and improve flexibility and mobility, with no known side effects. Studies conducted on a specific brand of rose hips claim a reduction in pain in more than 80% of participants after 3 weeks of use. The subjects continued use of painkillers and anti-inflammatory drugs was reported to decrease by 40 - 50%.

Fish Oil and Rose Hips

A U.S. Patent covering the use of formulations of fish oil and rose hips at relatively high concentrations, reported on the study of 54 subjects with X-ray verified osteoarthritis of the knee or hip. The treatment group declined in pain after 1 month of use, versus a group receiving fish oil and placebo. The study suggested a synergistic effect when fish oil and rose hips are combined.

Krill Oil - Krill, a shrimp-like crustacean found in all oceans, is arguably the most successful species on earth, having adapted itself to survive in the ultra-cold Antarctic Ocean. Recently, nutritional companies have discovered ways to extract pure oil from Antarctic krill, rich in phospholipids, omega-3 fatty acids, and anti-oxidants. Krill Oil provides the same benefits derived from fish oil supplements, but has the added advantage that the omega-3's are attached to the phospholipids, making them more bioavailable. Krill oil is also an excellent source of astaxanthin, a powerful antioxidant that inhibits inflammation by neutralizing free radicals.

Neptune krill oil helps reduce chronic inflammation and arthritic pain.

A recent study reported in the J. Am. College Nutrition, focused on one of the most useful markers of inflammation, C-reactive protein. In this double blind study, 90 patients with chronic inflammation were given 300 mg/day of krill oil for 14 days. CRP levels decreased by 29.6% while placebo group CRP was up 32.1%. The krill oil group also showed reduced pain (28.9%), stiffness (20.3%) and reduced functional impairment (22.8%).

BioCell Collagen Type II - BCII is a natural hydrolyzed type II collagen derived from chicken sternum collagen. It provides a complex matrix of elements that includes collagen type II proteins (60%), chondroitin sulfate (20%), and hyaluronic acid (10%). There are 14 different types of collagen found in the human body, but type II collagen is the most abundant in the joint matrix. Because BCII is hydrolyzed and denatured to low molecular weight compounds, it is better absorbed and more bioavailable after an oral dose. At peak absorption (6 hrs), BCII levels are 300% greater than type I collagen. In clinical studies on chronic OA patients, significant improvements in pain, stiffness, range of motion and overall quality of life were demonstrated.

Stimulation of type II collagen biosynthesis & secretion in bovine chondrocytes cultured with degraded collagen.

The functional integrity of articular cartilage is dependent on the maintenance of the extracellular matrix (ECM). In a study by Oesser and Seifert, it was demonstrated that collagen hydrolysate stimulated the production of type II collagen by bovine chondrocytes, while native collagens and collagen-free hydrolysates failed to stimulate the chondrocytes.

Pine Bark Extract - French maritime pink bark has been known for centuries for its healing properties, but only in the last 50 years has the key component, oligomeric proanthocyanidin (OPC), been identified and characterized as an aggressive anti-oxidant. Pine bark extract significantly lowers the inflammatory marker C-reactive protein, a substance produced by the liver that increases inflammation, by 72 % A study found that patients who took 100 milligrams of pine bark extract for three months decreased their arthritis symptoms by 56% and their use of painkillers decreased by 58%. Several clinical trials provide strong evidence that pine bark extract lowers joint pain.

 **Ethical**
Alternative Products

The Agency for Healthcare Research and Quality (AHRQ) Evidence Report 2007

- Glucosamine and chondroitin usually do not reduce pain or improve knee movement.
- Joint lubricant shots (not the same as cortisone shots) usually do not reduce pain or improve knee movement.
- Arthroscopic knee surgery usually does not reduce pain or improve knee movement.