THE CLINICAL USE OF NATURAL ANTI-INFLAMMATORY HERBS AND SUPPLEMENTS

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As reported by Gottlieb in 1997, the management of osteoarthritis should include specific dietary and supplementation practices, in addition to other natural treatments such as joint mobilization, manipulation, muscle therapy, acupuncture and exercise.(1) In this regard glucosamine sulfate has demonstrated the ability to halt joint cartilage destruction and help regenerate new cartilage in osteoarthritis cases. However, there is also substantial clinical and experimental evidence to suggest that the inflammatory aspect of many forms of arthritis and joint inflammatory conditions can be treated effectively with the use of certain supplements, which demonstrate anti-inflammatory properties. In fact, small clinical trials indicate that many of these natural agents provide similar efficacy as conventional anti-inflammatory drugs, and are safer to use with respect to reported adverse side effects. Although compelling evidence exists, the medical profession as a whole has not adopted the use of these natural anti-inflammatory agents for use in joint inflammatory problems.(2) This situation may require some corrective action as it is well documented that non steroidal anti-inflammatory drugs, known as NSAIDS, produce intestinal tract ulcers (with potential internal bleeding) in 10-30% of long term users and erosions of the stomach lining and intestinal tract in 30-50% of cases.(3) As a result of these and other side effects NSAIDS use is associated with 10,000 – 20,000 deaths per year in the U.S.(4) Even the new COX-2 inhibitor drugs have only been reported to reduce intestinal tract damage by 50% and their toxicity to the liver and kidneys is still under review.(5) Anti-inflammatory drugs have been shown to accelerate damage and erosion of joint cartilage, advancing the osteoarthritic process. Conventional NSAIDS are also known to cause liver and kidney damage with long term use.(6) These and other statistics have lead certain esteemed investigators to conclude, "the epidemiological data highlight the importance of implementing ASA/NSAID therapy only when strictly necessary." (7) Thus, if natural anti-inflammatory herbs and accessory nutrients can reduce inflammation without these noted side effects, it would be in the best interest of the patient and the health care system to adopt their use, even if it were possible to only reduce reliance (dosage and/or frequency) on more harmful synthetic drugs.

PHYSIOLOGICAL ACTION OF NATURAL ANTI-INFLAMMATORIES

Experimental research reveals that the efficacy of many natural anti-inflammatory agents stems largely from their ability to modulate the activity of the enzymes, cyclooxygenase and/or 5-lipoxygenase.(8) The pathophysiology of joint inflammatory conditions involves the conversion of arachidonic acid to prostaglandin series–2 (PG-2) by the cyclooxygenase enzyme. PG-2 synthesis is known to produce a pro-inflammatory effect, exacerbating joint inflammatory conditions. Accordingly, the conversion of arachidonic acid to leukotriene B4 (LTB-4), by the 5-lipoxygenase enzyme within white blood cells, is also known to contribute to the inflammatory process. White blood cell count in normal synovial fluid is less than 100ml on average, however, cellular response rises to 800ml or more in osteoarthritis and much higher than this in rheumatoid diseases; implicating white blood cells in the T-cell mediated inflammatory response in inflammatory joint conditions.(9) As is the case with many synthetic anti-inflammatory drugs, the active constituents of anti-inflammatory herbs have been shown to block the activity of the cyclooxygenase and lipoxygenase enzymes, inhibiting the synthesis of pro-inflammatory eicosanaoids of the PG-2 and LTB-4 series. As such, these natural substances have been shown to reduce inflammation and pain associated with various types of arthritis and traumatic joint injuries. Unlike their synthetic counter parts, they have not been shown to cause erosion injury to the intestinal tract, accelerate cartilage destruction or produce liver and kidney toxicity. (8) For these reasons, the following herbal agents can be considered viable alternatives to the

use of conventional anti-inflammatory drugs in a large percentage of arthritic patients and those suffering from other joint inflammatory conditions.

ANTI-INFLAMMATORY SUPPLEMENTS

Curcumin − is the active anti-inflammatory agent found in the spice turmeric. It has been shown to inhibit the activity of the 5-lipoxygenase and cyclooxygenase enzymes, blocking the synthesis of pro-inflammatory eicosanoids (PG-2, LTB-4). A large double-blind study demonstrated that curcumin was as effective as the powerful anti-inflammatory drug, phenylbutazone in reducing pain, swelling and stiffness in rheumatoid arthritis patients. It has also been shown to be effective in the treatment of post-surgical inflammation. Other studies indicate that curcumin can lower histamine levels and is a potent antioxidant. These factors may also contribute to its anti-inflammatory capabilities. For best results practitioners should consider using a 95% standardized extract of curcumin derived from turmeric. As a singular agent the daily dosage to consider is 400-600mg, taken one to three times per day. (Lower doses can be used if part of a combination formula containing other anti-inflammatory agents). Side effects are rare, but primarily include heartburn and esophageal reflux. As curcumin inhibits the cyclooxygenase enzyme system it may reduce platelet aggregation and thus, may potentiate the effects of anti-coagulant drugs. To date, no bleeding disorders have been reported with curcumin supplementation, but its concurrent use with warfarin or coumadin should be considered a contraindication.[2,8,10,11,12,13,14]

Boswellia − In clinical studies, the gum resin of the boswellia tree (yielding 70% boswellic acids) has been shown to improve symptoms in patients with osteoarthritis, and rheumatoid arthritis.[12,13] Research indicates that boswellic acids inhibit the 5-lipoxygenase enzyme in white blood cells. As a singular agent the usual dosage is 150mg, taken one to three times per day. (Lower doses are effective when combined with other natural anti-inflammatory agents.) Boswellia appears to have no important side effects or drug-nutrient interactions of concern.[15,16]

White Willow Bark Extract − provides anti-inflammatory phenolic glycosides, such as salicin, which have been shown to be effective in the treatment of arthritis, back pain, and other joint inflammatory conditions. These phenolic glycosides are known to inhibit cyclooxygenase, blocking the production of PG-2 and exert a mild analgesic effect. Unlike ASA (synthetic acetylsalicylic acid), naturally occurring salicin (salicylic acid) does not irreversibly inhibit platelet aggregation, reducing the potential for a bleeding disorder. White willow extract has been shown to be slower acting than ASA, but of longer duration in effectiveness. The usual dosage is 20- 40 mg of salicin, one to three times per day. (Note that 100mg of white willow extract at a 15% standardized extract of salicin content, yields 15mg of salicin per dosage.) (A lower dosage can be used if part of a combination formula containing other anti-inflammatory agents.) Side effects are rare, but primarily include nausea, headache and digestive upset. Contraindications may include conditions where ASA is contraindicated, including gout, diabetes, haemophilia, kidney disease, active peptic ulcer, glucose-6-phosphate dehydrogenase deficiency, and possibly asthma. However, the salicin content in a single dosage of white willow extract is very low compared to the acetylsalicylic acid content of ASA (e.g., 15mg vs. 320mg); thus, these conditions may not be absolute contraindications for the use of white willow bark extract. It is important to realize that besides salicin, white willow extract contains other phenolic glycosides, which are also known to possess anti-inflammatory properties.[8,17,18,19]

Ginger Root Extract − contains oleo-resins that have shown clinical benefit in the management of various arthritic and muscle inflammation problems, including rheumatoid

arthritis, osteoarthritis, and myalgias. The active constituents in this regard have been shown to be gingerols (oleo-resins), which inhibit the cyclooxygenase and lipoxygenase enzymes. The usual dosage is 500mg, one to three times daily, standardized to 5% gingerol content. (A lower dosage can be used if part of a combination formula containing other anti-inflammatory agents.) Side effects are rare, but include heartburn and digestive upset. It should not be given to patients with gallstones. It may also induce a mild anticoagulant effect (by inhibiting cyclooxygenase enzyme in platelets), therefore it should not be taken concurrently with warfarin of coumadin. However, there are no reports of bleeding disorders with ginger supplementation and no adverse drug –nutrient interactions have been reported in the scientific literature to date. [2,8,14,20,21]

Bromelain − contains anti-inflammatory enzymes that have proven ability to suppress the inflammation and pain of rheumatoid and osteoarthritis, sports injuries, and other joint inflammatory conditions. Bromelain has been shown to inhibit the cyclooxygenase enzyme, inhibiting the synthesis of PG-2. Bromelain also helps to break down fibrin (fibrinolytic), thereby minimizing local swelling. The usual dosage is 400mg, one to three times per day. (A lower dosage can be used as part of a combination anti-inflammatory formulation.) Bromelain may inhibit platelet clotting and is a known for its fibrinolytic properties. Therefore, it may potentiate the effects of anticoagulant drugs such as warfarin and coumadin and should not be recommended in these cases. [2,8,14,22,23,24]

Quercetin − is a bioflavonoid compound that blocks the release of histamine and other anti-inflammatory enzymes at supplemented doses (minimum 100-1500 mg per day). Although human studies with arthritic patients are lacking at this time, anecdotal evidence is strong for this application as is experimental research investigation. There are no well-known side effects or drug-nutrient interactions for Quercetin. [14,25,26,27]

Devil's Claw − contains the anti-inflammatory agent harpogoside. Devil's claw has demonstrated efficacy in the management of low back pain and is used traditionally as an anti-inflammatory by numerous southern African tribes. The usual dosage is 100-400 mg, one to three times per day. (A lower dosage can be used if part of a combination anti-inflammatory formula.) The only consistently reported side effect is mild digestive upset on rare occasions. It is contraindicated in patients with active gastric ulcers (may increase gastric acid secretion) and in patients taking warfarin or coumadin (due to its anticoagulant effects).[8,14,28,29]

CLINICAL APPLICATION

The body of evidence supports the use of natural anti-inflammatory agents as viable alternatives to synthetic drugs or as a means to help patients lower their requirements for conventional anti-inflammatory pharmaceutical agents. A number of single and combination natural anti-inflammatory supplement products are available that meet the above dosage and standardized grade criteria. Along with these alternatives to synthetic anti-inflammatory drugs, dietary changes to lower arachidonic concentrations, the use of glucosamine sulfate to support joint cartilage synthesis and supplementation with a combination of flaxseed, borage seed and fish oil to promote the formation of anti-inflammatory eicosanoids (e.g. PG-1 and PG-3), should also be included in the biochemical management of these cases. Holistically-oriented practitioners interested in natural, safe and effective interventions to help manage joint inflammatory conditions should consider the inclusion of anti-inflammatory herbal and accessory nutrients as an adjunct to the management of arthritis and other inflammatory joint conditions.

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