
Natural Relief for Inflammation of Sprains, Strains, and Arthritis

Chris D. Meletis, N.D.

Natural medicine can provide dramatic relief for patients who suffer from the aches and pains associated with sports-related injuries, other minor traumas, and chronic inflammatory conditions. The natural bounty of potential treatments runs the gamut from Lyprinol (a stabilized green-lipped mussel extract) (Tyler Encapsulations, Gresham, Oregon) to bromelain (a popular proteolytic enzyme derived from pineapple plants).

Regardless of how the pain arises, whether it be associated with sprains, strains, arthritis, or general inflammation, pain can be incapacitating. Without question, pain is one of the single greatest factors leading to diminished quality of life. Virtually every adult has sometime during the journey through life experienced some level of discomfort that has led to the use of an over-the-counter nonsteroidal anti-inflammatory drug (NSAID). Among the common uses for conventional anti-inflammatories include the treatment of conditions ending with the suffix "itis," denoting inflammation. Among the more common are arthritis, bursitis, tendonitis, sinusitis, and myositis.

Although brief utilization of NSAIDs is usually well tolerated with only occasional mild gastrointestinal (GI) disturbance, long-term use often leads to more serious side effects, including ulcer formation, GI irritation and bleeding, headaches, dizziness, and degeneration of cartilage. Indeed, studies have shown that NSAIDs actually inhibit cartilage formation and increase cartilage destruction.¹⁻³ With these potential side effects and the tens of millions of individuals that suffer daily, it is not surprising that the pursuit of natural sources of relief is an area of phenom-

enal interest and growth. In fact, there are some 40 million Americans with osteoarthritis alone, a number that does not even come close to encompassing the vast numbers of patients that battle with other forms of inflammation.

Prevention

Whether inflammation and pain has arisen from an acute or chronic condition, an ounce of prevention can really pay off. Acute athletic musculoskeletal injuries commonly arise from excessive strain on either tendons or bursae, leading respectively to tendonitis and bursitis. The best measures for avoiding overstrain that can lead to acute injury include proper conditioning, stretching prior to exercise, and working up to the moment of full exertion during a bout of exercise. Muscular injury can also be reduced by maintaining sufficient hydration and electrolyte status, to minimize the likelihood of muscle cramps, inflammation, and damage to muscle tissue.

Over the course of time, the occurrence of minor repetitive acute injuries can lead to the formation of chronic degenerative conditions. Cumulative damage to the joint cartilage and indirectly related bony structures are particularly common. One can help to protect oneself against the progression of these degenerative tendencies by avoiding undue impacts on the musculoskeletal system, wearing proper shoes for both daily and athletic pursuits, avoiding excessive repetitive motion, and minimizing activities on unyielding surfaces, such as concrete and asphalt.

It is also critical that proper gait and biomechanical form be maximized, which (for some individuals) entails the use of corrective shoe inserts to compensate for normal variants of lower limb structure. When it comes to protecting

patients against joint destruction and providing essential building blocks for main cartilage, glucosamine sulfate is unrivaled.

Glucosamine sulfate is a simple molecule, comprised of glucose and an amine, that stimulates the synthesis of glycosaminoglycans. Numerous double-blind studies have proven glucosamine sulfate to be more effective over the long term than NSAIDs in relieving pain and, indirectly inflammation caused by osteoarthritis.⁴⁻⁷ However, the main thing about glucosamine sulfate utilization is that it often takes 8 weeks for meaningful clinical results to be noted, thus leaving short-term inflammation unaddressed unless the supplement has been used as a preventative. What is more, glucosamine sulfate's primary benefits specifically for patients with osteoarthritis have been documented. The supplement has not been shown to alleviate inflammation from other causes.

Glucosamine sulfate is often used to illustrate the true nature of natural medicine because it accomplishes symptom relief including decreasing inflammation and pain, indirectly, by supporting the body's natural healing and regenerative processes. There are times, however, that direct anti-inflammatory properties are necessary to control local damage to tissues that can arise from unopposed inflammation, thus, what follows is an overview of a few direct natural anti-inflammatories.

Natural Anti-Inflammatories

Lyprinol

Lyprinol is a special stabilized extract of *Perna canaliculus* (green-lipped mussels). Green-lipped mussels have been consumed raw for centuries by native New Zealanders as an integral part of

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Nutritional Supplementation Guide

Lyprinol	100 mg, 2 times per day
Bromelain (1800–2400 MCU or GDU)	375–750 mg 3 times a day, not with meals
Citrus flavonoids	750–1000 mg 3 times per day
Curcumin	200–600 mg 2–3 times per day, not with meals if tolerated
Glucosamine sulfate	500 mg 3 times per day (4 times per day for individuals who weigh more than 200 lb.)
Grapeseed extract	100 mg 3 times per day

MCU = milk clotting units; GDU = gelatin-dissolving units.

their diets. Empirical evidence has demonstrated that fresh green-lipped mussels have potent anti-inflammatory properties. And although research had been conducted actively since the 1970s, consistent results were not achieved until a stabilized product was created that protected the active lipid constituents from degradation.^{7–10} Mussel extracts must be processed to prevent degradation and ensure that potency is maintained by the time the product reaches the consumer.

In a study that compared the therapeutic efficacy of stabilized and unstabilized mussel products, researchers illustrated the dramatic differences that exist between the two types of products, with a 90 percent effectiveness when a stabilized product was used compared to a 14 percent result with an unstabilized mussel product. Lyprinol, represents the preferred stabilized form of active lipid extract derived from green-lipped mussels.¹¹

Lyprinol's mechanism of action results from its inhibition of the 5-lipoxygenase pathway, thus making this supplement a particularly important therapeutic tool to break the cycle of inflammation that is commonly associated with arthritis, musculoskeletal injuries, allergic reactions,

and asthma. One of the most intriguing and enlightening studies demonstrated that Lyprinol benefited 76 percent of patients with rheumatoid arthritis and 70 percent of patients who had osteoarthritis. Symptom relief included reductions in pain, swelling, and stiffness, and improved functional index scores. The study also compared the effectiveness of Lyprinol with stabilized green-lipped mussel powder, and it was noted that subjects who consumed the Lyprinol extract achieved more rapid results.¹² Dosages used in the study also demonstrated that as little as 210 mg per day of Lyprinol provided therapeutic efficacy compared to 1150 mg per day of the stabilized green-lipped mussel powder illustrating the potency delivered by Lyprinol.

A study conducted by Whitehouse and colleagues demonstrated that Lyprinol had no gastrotoxic effects compared to NSAIDs.¹¹ In addition, the efficacy of the Lyprinol compared favorably to two of the most popular NSAIDs, ibuprofen and naproxen.¹¹

When Lyprinol was compared to other natural anti-inflammatory agents, on a dose-equivalent basis it was found to be more potent than many of the most popular oil preparations in controlling joint

swelling associated with arthritis.¹² (See box entitled Comparison of Lyprinol-Lipid-Extract Potency and Other Beneficial Oils)

Thus, clinically the use of 210 mg per day of Lyprinol "bioactive lipids" helps to modulate the lipoxygenase pathways and decreases inflammation without the side-effects that occur with NSAIDs.

Bromelain

This proteolytic enzyme is readily absorbed.¹³ Derived from the stem of the pineapple plant (*Ananas comusus*) it is comprised of a group of sulfur-containing enzymes. It should be noted that bromelain is also present in the fruit, yet this is not the typical form that is available commercially.

Several uncontrolled studies and single-blind studies have shown that bromelain can prove to be beneficial in alleviating the symptoms associated with inflammation, including swelling and pain, and can help to hasten the healing process.^{14–16} Other studies that measured the effects of oral absorption of bromelain on blood levels demonstrated that peak levels were achieved in dogs within 10 hours and the levels remained measurable for up to 48 hours.¹⁷ Intact absorption rates for bromelain are up to 40 percent.¹⁵

Numerous mechanisms of action have been proposed for the anti-inflammatory effects of bromelain. They include:^{18,19}

- Downregulation of proinflammatory prostaglandins
- Promotion of the prostaglandin E1 pathway
- Depletion of kininogen
- Fibrinolytic activity.

Thus, it appears that bromelain's activity arises from promoting the production of plasmin that, in turn, blocks the creation of proinflammatory compounds. Bromelain also reduces kininogen levels,

Clinically, flavonoids can be used preventively as well as after an injury.

thus, indirectly decreasing the production of kinins that otherwise lead to swelling, pain, and inflammation. Finally, bromelain helps to prevent injured areas of the body from getting walled off via inhibiting fibrin, thus, promoting improved drainage and decreased edema at the injury site, which contributes to improved healing outcomes. It is these properties of bromelain that make it a particularly good intervention for acute injuries such as sport injuries or minor trauma. The one precaution that should be noted is that, because bromelain is a proteolytic enzyme, it can aggravate digestive ulcers or esophagitis. Bromelain also has the ability to thin the blood and, thus, must not be recommended to individuals with bleeding disorders or to patients who take blood thinners, without very close supervision.

Curcumin

Curcumin is responsible for the yellow pigmentation of turmeric and is known in Latin as *Curcuma longa*. It is best known as one of the flavorful ingredients in curry. The root and stem have been used for centuries in India to help minimize swelling associated with sprains, strains, and arthritis. Some research has compared the effectiveness of curcumin to cortisone.^{20,21}

Curcumin has been shown to have the following level of relative potency as reflected in carrageenan-induced paw edema:¹⁷

Sodium curcuminat>Tetrahydrocurcumin> Curcumin > Cortisone > Phenylbutazone > Triethylcurcumin

A double-blind study also demonstrated that curcumin was more efficient in palliating postsurgical inflammation than phenylbutazone.²² Curcumin can be given orally as well as topically. When used topically, in the form of sodium cur-

cuminate or curcumin, this plant acts as a counterirritant and has the ability to deplete substance P (the substance that is responsible for the sensation of pain) thus, decreasing the sensation of pain.²³

The proposed mechanisms of anti-inflammatory action include:^{24,25}

- Stabilization of cell membranes
- Inhibition of neutrophil reactivity to stimuli
- Antiplatelet aggregation effect
- Inhibition of leukotrienes.

Flavonoids

Flavonoids, also often referred to as bioflavonoids, are comprised of a group of plant pigments that are most commonly associated with the coloration of many fruits and some vegetables. Double-blind placebo-controlled studies have shown that citrus bioflavonoids have shortened the recovery process from sports injuries by approximately 50 percent.^{26,27}

Other studies have shown that the anti-inflammatory properties imparted upon consuming citrus flavonoids can decrease swelling after injury markedly.^{28,29} Similar effects have been attributed also to the flavonoid complexes in grape seed and in pine bark extracts.

Proposed mechanisms of action for anti-inflammatory properties of flavonoids include:^{30,31}

- Quenching free-radical damage that arises from injury
- Inhibition of collagen breakdown by enzymes that are released when trauma occurs
- Reduction of blood vessel permeability, diminishing damage to tissues by caused by exposure to inflammatory products
- Strengthening of collagen connective tissues to increase resistance to damage.

Clinically, flavonoids can be used preventively as well as after an injury. An

Comparison of Lyprinol-Lipid-Extract Potency and Other Beneficial Oils

- 200 times more potent than eicosapentaenoic acid fish oil
- 250 times more potent than green-lipped mussel powder
- 350 times more potent than evening primrose oil
- 350 times more potent than salmon oil
- 400 times more potent than flaxseed oil

additional benefit of using bioflavonoids routinely is that they can also help protect against histamine release from mast cells, decreasing hayfever symptoms, thus, making outdoor exercise and sports more enjoyable and less painful. A note of caution is warranted though for patients who wish to drink their way to pain relief with grapefruit juice if they are taking conventional medication, because this juice can increase blood levels of some drugs, thus increasing side-effects. This interaction arises from the bioflavonoid naringin in grapefruit, which slows down the liver's ability to clear some drugs from the body.

A Review of Other Clinical Tips

In addition to the use of these powerful natural anti-inflammatories, the use of good physical medicine protocol can also prove to be priceless. Acute injuries are often best treated with the R.I.C.E. approach: Rest, Ice, Compress, and Elevate. Each step serves an important role in helping the body to cope with an injury. Rest allows the healing process to begin and prevents further injury and irritation. Ice is used to diminish swelling and bleeding if present and to minimize the accumulation of congestion in the region. Compression also helps to minimize bleeding, the extent of bruising, and

Glucosamine sulfate and other nutrients top the list of preventive steps to minimize effects of wear and tear.

swelling. Elevating the injured area helps to lessen the accumulation of fluid, and, thus, swelling, helping to decrease the deposition of metabolites that can slow or prevent optimal healing.

Summary

There is no better treatment approach when dealing with inflammation than prevention. The inflammatory process that presents with pain and swelling is a natural response to injury. With that said, there is no question that glucosamine sulfate and other nutrients that help to maintain the integrity of the musculoskeletal system top the list of preventive steps that can be taken to minimize the effects of wear and tear. These same nutrients are also critical for supporting the healing process. Regardless of the preventive measures that may have been taken, injury and degenerative processes can still arise and require immediate and strong anti-inflammatory agents. Among some of the most potent natural anti-inflammatories are Lyprinol (derived from *Perna canaliculus*), bromelain (derived from the pineapple plant), curcumin, and various flavonoids. Preventing and limiting inflammation can speed the process of healing from musculoskeletal injuries dramatically. □

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Chris D. Meletis, N.D., serves as the dean of clinical affairs/chief medical officer, National College of Naturopathic Medicine, Portland, Oregon.

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