



“Integrating the Nutrition-Health connection”

Vol.1, #2, March-April 1994

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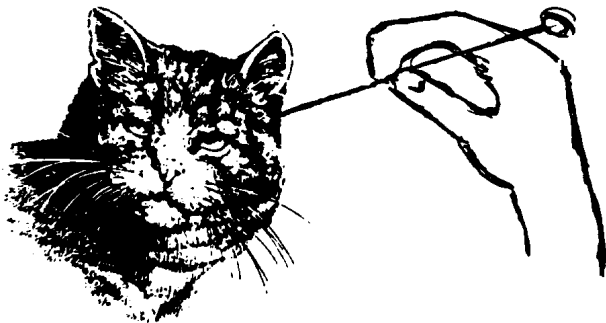
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### ***Sports Injury Tendon-cies***

Tendinitis, which is inflammation of the tendons (tough bands of tissue attaching muscle to bone), affects many athletes. Due to their inelasticity, tendons are more susceptible than muscles to inflammation from overuse. Common areas plagued by tendinitis are: hip, knee, shoulder, elbow and heel. **Injury Therapy:** The world of sports is recognizing alternative medicine. “To relieve injury, more athletes are turning to homeopathy (which) stimulates the body’s healing abilities” (Women’s Sp. & Fitness, 9-93, p34). Also, a realistic recovery requires time. Injured triathlete Lauren Alexander, for instance, was put on a progressive program by her sports chiropractor, slowly increasing resistance. Soon after, she went on to place fifth in the Nice triathlon (ibid, p.31).

### ***Choosing Alternatives***

It seems that the awareness of alternative medicine benefits is increasing. This year, American Western Life Insurance set an amazing precedent with Wellness I - a health insurance plan that covers alternative medicine therapies, such as acupuncture, biofeedback, homeopathy and naturopathy. Patients not following preventive strategies are forced to return to the traditional plan, costing 20% more (Shape, July 93). The benefits of alternative medicine aren’t restricted to humans... “Chiropractics, massage, vitamin treatments and homeopathy are becoming more and more popular with veterinarians who see room for Eastern methods in the treatment of animals” (Coloradoan, 1-18-94). Dr. Ann-si Li has used acupuncture and herbal/vitamin treatments on animals ranging from a turtle who wouldn’t eat, to a cancer ridden rat.



“Now, you’ll feel just a  
*little* pressure”

## ***Nature's Fascinations***

**Chamomile** is often used in hair products as a natural brightener to add highlights and sheen to light hair. To prepare your own "hair tonic", first gather the chamomile flowers and dry them. If you don't live in an area where chamomile grows outside, try growing a windowsill herb garden for a supply. Place the flowers in a pan with just enough water to cover (this is important!) and bring to a boil. Reduce heat, and simmer until the desired fragrance is reached (the nose knows!).

**Women's Sports and Fitness** (Sept. 93, p.34) recommends using **valerian** or **capsicum** to decrease the pain of sports injuries. Since many injuries are caused by muscle imbalances, they also recommend cross training with activities that require a different range of motion, such as cycling and in-line skating, which increase the resilience of tendons.

A team of researchers at Harvard Medical School gave collagen derived from **chicken cartilage** to sufferers of rheumatoid arthritis, and noticed a decrease in the number of swollen and tender joints. Four of the 28 had complete remission of the disease (Science, Sept. 24.). It is suspected that it works by triggering the release of cytokines, which temper the body's auto-immune response causing inflammation.

An extract of the **Kudzu root** (*Radix puerariae*), known from ancient Chinese herbology to have an "anti-drunkenness effect", led Harvard Medical researchers to test its effectiveness. After treating a variety of hamsters that prefer alcohol to water, their alcohol intake decreased by up to 80% (Proc Nat Acad Sci. 1993;90:10008).

## ***Coping with Inflammation***

Sometimes, the body is stressed by an injury to its tissues. Whether the cells are damaged by microbes, chemicals, or physical agents, the injury sets off an inflammatory response. It is characterized by **redness, pain, heat, swelling**, and possibly **loss of function**, depending on the extent of the injury. The healing process which occurs after inflammation places a great demand on the body's store of nutrients.



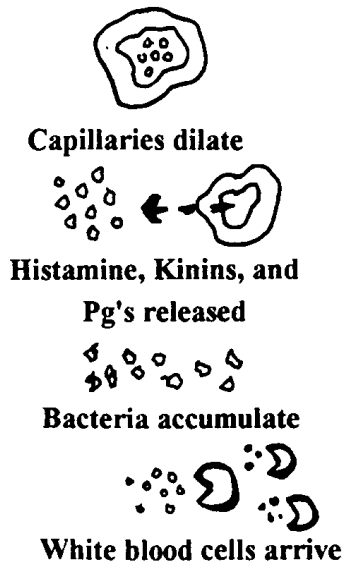
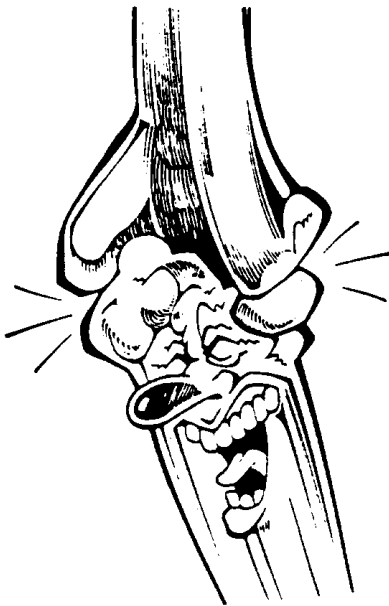
## ***What is the Inflammatory Response?***

The inflammatory response is an internal system of defense against injury. It serves a protective role, in the sense that neutralizing and destroying toxins at the site of injury is an attempt to prevent their spread to other tissues. In an effort to restore balance to the system, a sequence of "adjustments" takes place:

**BLOOD VESSELS DILATE** - The blood vessel size increases, and they become more permeable, which means that substances normally contained in blood can now travel out of the blood and into tissues. The vessel dilation brings more blood to the site of injury, to remove toxins and dead cells. The increased permeability allows the defensive white blood cells and clot-forming chemicals to enter the damaged area. This response is caused by the release of chemicals from damaged cells. These chemicals include **histamine, kinins, and prostaglandins (pg's)**. The increased circulation and leakiness of capillaries (small blood vessels) produce heat, redness, and swelling within minutes of injury. Pain results from damage to nerve fibers, toxin irritation, and/or pressure from the swelling. **Pg's** magnify and prolong the pain associated with inflammation. **Kinins** can also affect nerve endings and create pain.

**MIGRATION OF PHAGOCYTES** - After the inflammatory process has been started, phagocytes (bacteria-eating cells) come to the rescue to prevent infection. The various white blood cells squeeze through the capillaries to reach injured tissue, and the neutrophils, "**the warehouses of proteolytic enzymes**", clear toxic debris.

**NUTRIENT RELEASE** - Nutrients which have been stored in the body are utilized to support the defensive cells. They are also needed for the cells under attack, because their metabolism rapidly increases.



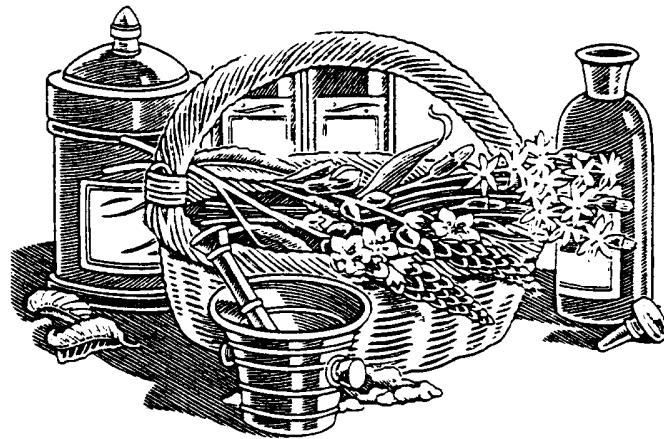
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**Proteolytic enzymes**  
**Calcium**  
**Magnesium**  
**Manganese**  
**White willow bark**  
**Passion flower**  
**Chamomile**  
**Skullcap**

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**Inflammation Relief**

### ***Inflammation Relief***



**Proteolytic Enzymes:** “Lysis” means degradation, and proteolytic means the degradation of proteins. During inflammation, toxic proteinaceous material is released which can foster disease unless it is removed. Neutrophils release proteolytic enzymes when they arrive at the scene, to solubilize this material and prevent infection. Topical solutions of proteolytic enzymes have been utilized to decrease inflammation and increase healing. For instance, one of these enzymes, **trypsin**, in a recent study, increased the ability of the skin layer to form new cells, and accounts in part for, “the healing acceleration due to proteolytic enzymes” (Tsitologija. 1992; 34:70-3). **Bromelain**, another of these enzymes, “has therapeutic effects in the treatment of inflammation and soft tissue injuries”, and was found to reduce skeletal muscle injury (Med. Sci. Sports Ex. 1992;24:20-5). Researchers discovered that **Chymotrypsin**, another proteolytic enzyme, normalized the functions of the hypophyseoadrenal systems in the incidences of inflammation studied (Vestn Dermatol. Venerol. 1989;(8):46-8).

**Calcium** helps transport essential minerals to the site of inflammation. After periods of trauma, the system tends to be alkaline, and it is important for an acid-calcium to deliver healing nutrients to binding sites. An acid environment solubilizes and ionizes the insoluble calcium salts in the body (calcium has to be ionized in the intestines in order to be absorbed). **Magnesium** increases the solubility and retention of calcium.

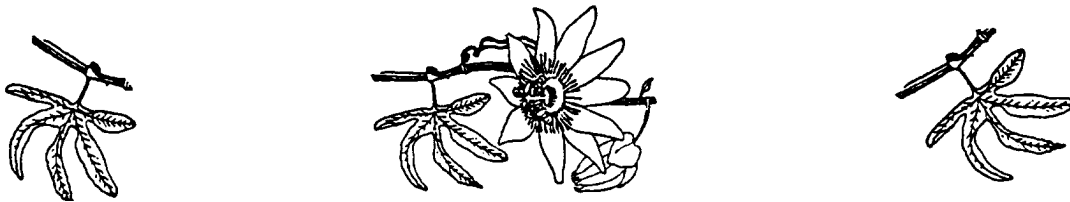
**Magnesium** gets depleted in conditions of inflammation, and is integral to the healing process. Magnesium **decreases swelling**, and, “is effective in the treatment of inflammatory skin diseases” (Hautarzt. 1990;41:602-5). When levels of magnesium were reduced, researchers noted a profound increase of inflammatory cytokines present, along with increased levels of histamine (Am J Physiol. 1992;263:R734-7). Very important in preventing infection after trauma, “Recent findings regarding roles for magnesium in immunocompetence confirm and extend previous knowledge of its participation in natural and adaptive immunity” (Mag Res. 1992;5:281-93).

**Manganese** is an important component of Manganese Superoxide Dismutase (MnSOD), which battles the damaging free radicals that cause swelling. Immediately after trauma, the body starts coding for more MnSOD to be produced (J Biol Chem. 1992;267: 10625-30). Repletion of manganese after inflammatory trauma is necessary to keep up the free radical defense system. Recent research has shown MnSOD to be an efficient anti-inflammatory agent in models of acute and chronic inflammation; administration has decreased swelling up to 50-70% (Free Rad Res Comm. 1991;15:297-301). In another study, “MnSOD at 5 micrograms produced a significant suppression (44%  $p < 0.05$ ) in knee joint swelling at 24 hours., “these findings support a therapeutic potential of MnSOD in inflammatory disorders...” (Free Rad Res Comm. 1993;18:291-8). Manganese also functions in protein metabolism, essential for rebuilding after injury. It is also important for healthy nerves, along with the growth and reproduction of bones.

### Healing Herbs



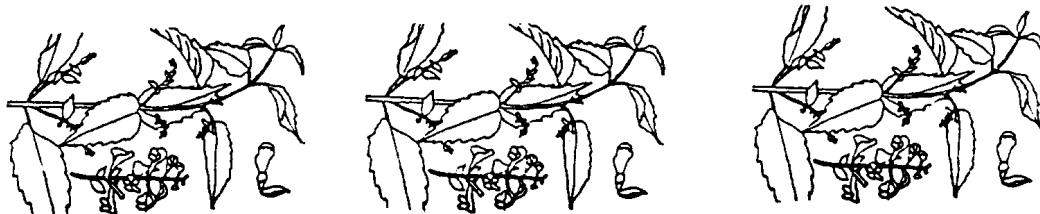
**White Willow Bark**, or Salicin, is the forerunner of aspirin, which is technically known as acetylsalicylic acid. In ancient times, chewing on pieces of this bark were known to alleviate pain and symptoms of inflammation. However white willow bark does not involve the side effects of aspirin, such as stomach upset and cartilage destruction. It is suggested that aspirin can cause significant bronchoconstriction in asthma patients (Yonsei Med. J. 1989;30:339-45). Other anti-inflammatory drugs, such as ibuprofen and indomethacin, can cause headaches and dizziness.



**Passion Flower**, or Passiflora incarnata/coerulea, is known for its sedative effects. It contains many flavonoids, which contribute to its medicinal properties. Chrysin, one of the flavonoids isolated in Passiflora, was found in a recent study to prevent expression of tonic-clonic seizures in mice, and demonstrated a, “myorelaxant action of the flavonoid” (Biochem Pharmacol. 1990;40:2227-31). Its beneficial effects are useful after muscle injury when spasms are known to occur. Passiflora is also helpful in stimulating the uptake of amino acids into cells, which assists in the regeneration of tissue (Biochem Biophys Res Comm. 1990;171:1199-204).



**Chamomile** is the major ingredient we find in relaxing, sleep-inducing herbal teas. While it has had long reputed fame as a soothing relaxant, chamomile also has effective anti-inflammatory activity, which has proven effectiveness in treating patients (Eur J Clin Pharmacol. 1993;44:315-8). Chamomile also has antiviral activity, which makes it effective against the infections resulting from trauma/inflammation (Vopr Virusol. 1991;36:18-21). In addition to all the many therapeutic qualities chamomile possesses, researchers have recently discovered that chamomile even has the ability to increase positive images, shifting all mood ratings and frequency judgements in a more positive direction (Br J Med Psychol. 1992,65:197-9).



**Skullcap**, or Scutellaria, exhibits a wide variety of properties, including anti-viral, anti-inflammatory, antispastic, anti-pyretic (fever-reducing), analgesic and sedative (Chung Kuo Chung Yao Tsa Chih. 1990;115:115-7). All of these properties make Skullcap an excellent herbal treatment for the maladies persistent with muscle trauma and inflammation. In addition, skullcap, “produced a normalizing effect on platelet-mediated hemostasis”, which is important for red blood cells as they return to normal function, and the release of all their “inflammatory chemical signals” subsides (Vopr Onkol. 1989;35:331-5).

## **Healing News**

**Medicine and Science in Sports and Exercise** (1992;24(1):20-25) reports a study on **bromelain**, one of the proteolytic enzymes that has, “therapeutic effects in the treatment of inflammation and soft tissue injuries”. Following injury, an application of bromelain twice daily significantly increased the maximum muscle force in the treated group, indicating that bromelain can be helpful for a quick recovery from injury. Also, the use of electrical stimulation in applying the enzymes may increase healing time. Recently, the **Journal of Cell Biochemistry** (1993, April;51(4):404-9) reported that, “low-intensity electrical stimulation is equivalent to various growth factors”, and that, “...electromagnetic fields provide evidence for the enhancement of regeneration following nerve injury”. The authors proposed that tissue integrity could be restored by applying the electrical and/or mechanical energy to the area of injury. Dr. Fred Lemer, PhD, DC, successfully used proteolytic gels, in an aloe vera base, on Olympic athletes in 1984, when anti-inflammatory drugs were banned. The good news is that after injury, we can speed recovery to an active state once more.

### **The best vitamin for friendship? – B1**

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