



## *Your Monthly Update*

### *Dear Colleague*

Welcome to the April 2010 newsletter from Pure Bio Ltd.

### *Did you know:*

Dark chocolate appears to both increase HDL cholesterol and lower LDL cholesterol (Free Radic Biol Med 2004; 37: 1351-9, J Nutr, 2008; 138: 1671-6). It has also been shown to reduce platelet clumping (blood clots) (Circulation 2007; 116: 2376-82)

The chosen topic for this month is:

## **Sprains / Ligament Injuries**

### **Protocol Summary**

<b>Ranking</b>	<b>Nutritional Supplements</b>	<b>Botanical Medicine</b>
<b>Primary</b>	<a href="#">Enzymes</a> (chymotrypsin, trypsin)	
<b>Secondary</b>	<a href="#">Bromelain</a> <a href="#">L-carnitine</a> (for preventing exercise-related muscle injury) <a href="#">Vitamin A</a> (for deficiency only) <a href="#">Vitamin C</a> <a href="#">Zinc</a> (if deficient)	<a href="#">Comfrey</a> (topical) <a href="#">Horse chestnut</a> (topical)
<b>Other</b>	<a href="#">Chondroitin sulfate</a> <a href="#">Copper</a> <a href="#">DMSO</a> (topical) <a href="#">Enzymes</a> (papain) <a href="#">Glucosamine sulfate</a> <a href="#">Manganese</a>	<a href="#">Arnica</a> (topical)

	<p>Multiple vitamin-mineral Silicon Vitamin E (for exercise-related muscle strain)</p>	
<p><b>Primary</b> – Reliable and relatively consistent scientific data showing a substantial health benefit.</p> <p><b>Secondary</b> – Contradictory, insufficient, or preliminary studies suggesting a health benefit or minimal health benefit.</p> <p><b>Other</b> – An herb is primarily supported by traditional use, or the herb or supplement has little scientific support and/or minimal health benefit.</p>		

## Symptoms

Sprains occur when the ligaments supporting the affected joint are torn or stretched beyond their capacity. Mild sprains appear swollen and tender but, if the ligament is even partially torn, there is substantial swelling, bruising and great pain on using the affected limb. If the joint is unstable and impossible to use, the ligament is probably completely torn and will need surgical intervention. Ligaments heal slowly because they are poorly supplied with blood vessels, so proper rest is important. The ligaments of the knees are especially prone to sprains and tears. The muscles are also subject to injury from overuse. Strains cause the muscle fibres to overstretch and tear.

## Causes

Muscle strains occur most easily when the muscle is used without a proper warm-up. Warm-ups circulate blood, increasing the muscle's ability to stretch. Sudden, awkward movements, overexerting a muscle or a hard fall can result in a sprain. Injuries are more likely to happen when the body is fatigued due to excessive physical exercises. Once a joint is injured badly or is not given time to heal properly, it is susceptible to repeated injury. Sufficient rest from a sprain is absolutely necessary for a complete healing and to prevent long-term problems.

## Dietary Modification

Adequate amounts of calories and protein are required for the body to repair damaged connective tissue. This applies primarily to major injuries that require hospitalization, whilst minor sprains do **not** require changes from a typical, healthy diet.

Chromium-rich foods e.g. lobster, cheese and nutritional yeast help the body to utilise glucose more efficiently during exercise, preventing unnecessary strains and sprains. Wheat germ contains octacosanol, which increases muscle oxygenation and helps prevent strains. Wheat germ is also a good source of vitamin E, an essential vitamin for healing. Oats provide silicon, which supports connective tissue formation.

## Other therapies

Treatment of minor sprains and strains includes resting the affected area; applying cold packs or ice; wrapping the area with a compression bandage; and keeping the affected area elevated as much as possible. (“RICE”- which stands for rest, ice, compression, and elevation).

## Nutritional Supplement Treatment Options

Muscle and joint injuries heal better and more quickly when the proper nutrients are supplied. [Vitamin C](#) and bioflavonoids are essential for the repair of connective tissue and to reduce inflammation. [Evening primrose oil](#) contains gamma-linolenic acid (GLA), a building block for the anti-inflammatory prostaglandins. If a strong anti-inflammatory is necessary, the enzyme [bromelain](#) is recommended. When taken between meals, bromelain combats swelling and pain after an injury. [Vitamins E and A](#) are also important nutrients for connective tissue and cell repair. Vitamin E helps prevent internal scarring. In addition to taking supplements, a healthy diet is necessary for recovery.

Proteolytic enzymes, including bromelain, papain, trypsin, and chymotrypsin, (see [A.I. Enzymes](#)) may be helpful in healing minor injuries such as sprains and strains because they have anti-inflammatory activity and appear to promote tissue healing.

Several preliminary trials have reported reduced pain and swelling, and/or faster healing in people with a variety of conditions using either bromelain, papain from papaya, or a combination of trypsin and chymotrypsin. Double-blind trials have reported faster recovery from athletic injuries, including sprains and strains, and earlier return to activity using proteolytic enzymes.

Bromelain is measured in MCUs (milk clotting units) or GDUs (gelatin dissolving units). One GDU equals 1.5 MCU. A supplement containing 500 mg labeled “2,400 GDU per gram” would have 1,200 GDU of activity, because 500 mg is half a gram. Practitioners may recommend 2,000 – 2,500 GDU TID for several days, followed by 1,000 GDU TID. Some of the research, however, uses smaller amounts than this.

One controlled trial showed that people who supplement with 3 grams per day [L-carnitine](#) for three weeks before engaging in an exercise regimen are less likely to experience muscle soreness.

Antioxidant supplements, including [vitamin C](#) and [vitamin E](#), may help prevent exercise-related muscle injuries by neutralising free radicals produced during strenuous activities. Controlled research, some of it double-blind, has shown that 400–3,000 mg per day of vitamin C may reduce pain and speed up muscle strength recovery after intense exercise. Reductions in blood indicators of muscle damage and free radical activity have also been reported for supplementation with 400–1,200 IU per day of vitamin E in most studies.

Vitamin C is needed to make collagen, the “glue” that strengthens connective tissue. Injury, at least when severe, appears to increase vitamin C requirements, and vitamin C deficiency causes delayed healing from injury. Preliminary human studies

have suggested that vitamin C supplementation in non-deficient people can speed healing of various types of trauma, including musculoskeletal injuries.

[Zinc](#) is a component of many enzymes, including some that are needed to repair wounds. Even a mild deficiency of zinc can interfere with optimal recovery from everyday tissue damage as well as from more serious trauma. Trace minerals, such as [manganese](#), [copper](#), and silicon are also known to be important in the biochemistry of tissue healing.

Many vitamins and minerals have essential roles in tissue repair, and deficiencies of one or more of these nutrients have been demonstrated in animal studies to impair the healing process. This could argue for the use of [multiple vitamin-mineral](#) supplements by people with minor injuries who might have deficiencies due to poor diets or other problems.

[Glucosamine sulphate](#) and [chondroitin sulphate](#) may both play a role in wound healing by providing the raw material needed by the body to manufacture molecules called glycosaminoglycans found in skin, tendons, ligaments, and joints. *In vitro* and animal studies have found that these substances, and others like them, can promote improved tissue healing. Injectable forms of chondroitin sulphate have been used in Europe for various types of sports-related injuries to tendons and joints, and one preliminary trial reported reduced pain and good healing in young athletes with chondromalacia patella (cartilage softening in the knee) who were given 750–1,500 mg per day of oral glucosamine sulphate.

The use of DMSO, a colourless, oily liquid primarily used as an industrial solvent, for therapeutic applications is controversial. However, some evidence indicates that dilutions, when applied directly to the skin, have anti-inflammatory properties and inhibit the transmission of pain messages by nerves, and in this way might ease the pain of minor injuries such as sprains and strains. However no controlled research exists to confirm these effects in sprains and strains. DMSO comes in different strengths and different degrees of purity. In addition, certain precautions must be taken when applying DMSO. For those reasons, DMSO should be used only with the supervision of an experienced practitioner.

## **Botanical Treatment Options**

[Horse chestnut](#) contains a compound called aescin that acts as an anti-inflammatory and reduces oedema (swelling with fluid) following trauma, particularly sports injuries, surgery, and head injury. A topical gel containing 2% of the compound aescin found in horse chestnut is widely used in Germany to treat minor sports injuries, including sprains and strains. The gel is typically applied to affected area every 2 hours until swelling begins to subside.

[Arnica](#) is considered by some practitioners to be among the most effective vulnerary herbs available. As a homeopathic remedy, arnica is often recommended as both an internal and topical means to treat minor injuries. Apply topically every one to two hours while symptoms are acute.

[Comfrey](#) is also widely used in traditional medicine as a topical application to help heal wounds. In a study of people with acute ankle sprains, topical application of an

ointment QID containing a comfrey extract was at least as effective as, and possibly more effective than, a topically applied anti-inflammatory drug ([diclofenac](#)). The comfrey ointment was a proprietary product that contained 35% comfrey extract.

Peppermint oil rubbed locally on the skin is a useful local anaesthetic.

St. John's wort oil can be applied to the affected area to relieve pain and relax muscles and nerves.

After twenty-four hours, apply hot, moist compresses with a calendula salve to absorb the blood from the bruised area.

[Curcumin](#) is a herbal extract of turmeric and is as effective as cortisone for anti-inflammatory needs but without the cortisone side-effects. Take 500 mg five times daily.

## Homeopathy

Homeopathy offers excellent treatment to speed recovery from sprains. Choose one of the below in a 6c strength, repeating every fifteen minutes for three doses, then three times daily until the injury has healed, or for ten days.

- [Arnica](#) is the first remedy to consider following a sprain or injury from overuse. The pain is worse when using the muscle. Strains and sprains with swelling, bruising and pain usually heal more quickly after several doses of Arnica. For mild strains or muscle soreness, use Arnica gel instead.
- If the injury needs rest and even small movements produce excruciating pain, use [Bryonia](#). The joint may also be quite swollen.
- [Rhus tox](#) is useful for sprains and muscle injuries that are painful and stiff on first moving, but limber up while moving about. The pain is also worse during rest and there is a constant need to move around.
- [Ruta](#) is another remedy for torn or overused ligaments and is most helpful after the initial inflammation and swelling have subsided somewhat but healing is still slow. It is often useful after Rhus tox if that remedy has helped but there is still some lingering stiffness, soreness and restlessness.

## Tissue Salts

For immediate relief of pain following an injury, take 4 tablets under the tongue every ten to fifteen minutes, then hourly. For less severe injuries, repeat hourly then three times daily.

- [Ferr phos](#) is the first remedy to be used immediately following an injury to reduce the swelling, bruising and pain of the inflammation.
- If the swelling is marked, however, use [Kali mur](#). Alternate with Ferr phos if the inflammation persists.
- For strains, [Calc fluor](#) will help restore elasticity and strength to the injured tissues.
- Use [Kali sulph](#) in the late stages of all inflammations.

## **Integrative Options**

Spinal manipulation by an osteopath or chiropractor has been shown to relieve pain and improve healing of sprains and strains. One preliminary trial tested a combination of chiropractic manipulation, muscle stretching, and “proprioceptive neurofacilitation” to people who had sprain/strain neck injuries that had not resolved with other treatment. Treatment was reported to help the majority of people, and over one-third reported that their symptoms were completely gone or only mildly bothersome. In a larger preliminary trial, people who were still suffering neck pain a year after whiplash-type accidents were treated with spinal manipulation for an average of four months. At the end of the treatments, 72% reported at least some benefit and nearly half reported significant benefit or complete recovery.

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