Your Monthly Update

Dear Colleague

Welcome to the June 2009 newsletter from Pure Bio Ltd.

Did you know:

A recent study has shown that omega 3 can halve the damage to blood vessels in the retina – one of the main causes of age-related macular degeneration (AMD).

The chosen topic for this month is:

Wound healing

Protocol Summary

Ranking	Nutritional Supplements	Botanical Medicine
Primary	Bromelain Vitamin B-complex Vitamin C Zinc (oral and topical)	
Secondary	Chondroitin sulphate (topical) Copper Hyaluronic acid Ornithine alpha-ketoglutarate (OKG) Vitamin A Vitamin E	Aloe (topical) Chamomile (topical) Gotu kola (oral and topical) Honey (topical) Horse chestnut (topical)
Other	Arginine Carnosine Chondroitin sulphate (oral) Glucosamine sulphate (oral)	Arnica (topical) Bladderwrack (topical) Calendula (topical) Chaparral (topical) Comfrey (topical) Echinacea (topical) Horsetail (oral and topical) Plantain (topical) St. John's wort (topical) Tea tree oil (topical) Witch hazel (topical)
Primary – Reliable and relatively consistent scientific data showing a substantial health		

benefit.

Secondary – Contradictory, insufficient, or preliminary studies suggesting a health benefit or minimal health benefit.

Other – An herb is primarily supported by traditional use, or the herb or supplement has little scientific support and/or minimal health benefit.

Symptoms

Special care should be taken with deep cuts and puncture wounds, which are more susceptible to infection since they do not always bleed or allow oxygen to enter and eliminate infection. An infected wound can lead to lymphangitis, which inflames the blood vessels and is known for the red stripe that extends from the wound. Other signs of infection are local redness around the wound, heat, swelling, pus formation and tenderness. If left untreated, infection may lead to blood poisoning or gangrene.

Causes

Infections from cuts or puncture wounds are caused by bacteria that enter the wound. Tetanus spores and other bacteria enter through cuts from dirt-covered objects, while gardening for instance, and will cause infection if the wound is not well cleansed. Tetanus is a life-threatening condition because of the severe and painful muscle spasms it causes throughout the body (hence being known as lockjaw). Lymphangitis occurs when bacteria that have entered through a cut were not successfully eliminated by the body's immune system.

Dietary Modification

Building and repairing tissue requires adequate amounts of calories and protein to fuel the repair mechanisms, as the skin and underlying tissues are made of protein. While major wounds from extensive injuries or major surgery significantly raise protein and calorie requirements, optimal healing of minor wounds should not require changes from a typical, healthful diet. In a study of malnourished people with skin ulcers, those who were given a diet containing 24% protein showed a significant reduction in the size of the ulcer, whereas those given a diet containing 14% protein had no significant improvement. This study suggests an increase in dietary protein can improve wound healing in malnourished people. It is not known whether the same benefit would be observed in well-nourished people.

If a lot of blood has been lost, green, leafy vegetables, squash and fresh fruits should be included in the diet. Drink at least six to eight glasses of water daily to restore the vitamin, mineral and fluid balance in the body. Pumpkin seeds as a source of zinc will promote healing.

Nutritional Supplement Treatment Options

Supplementation with bromelain prior to and following a surgical procedure has been shown to reduce swelling, bruising, healing time and pain. Bromelain supplementation has also been shown to accelerate the healing of soft-tissue injuries in male boxers. The amount of bromelain used in these studies was 40 mg QID.

Thiamine (vitamin B1), pantothenic acid (vitamin B5), and other B vitamins have all been shown to play a role in promoting wound healing in animal studies.

Vitamin C is needed to make collagen that strengthens skin, muscles, and blood vessels and to ensure proper wound healing. Severe injury appears to increase vitamin C requirements, and vitamin C deficiency causes delayed healing. Preliminary human studies suggest that vitamin C supplementation in non-deficient people can speed healing of various types of wounds and trauma, including surgery, minor injuries, herniated intervertebral discs, and skin ulcers. A combination of 1–3 grams per day of vitamin C and 200–900 mg per day of pantothenic acid has produced minor improvements in the strength of healing skin tissue.

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. One controlled trial found the healing time of a surgical wound was reduced by 43% with oral supplementation of 50 mg of zinc TID.

Whether oral zinc helps tissue healing when no actual zinc deficiency exists is unclear, but practitioners may recommend 30 mg of zinc per day for four to six weeks to aid in the healing of wounds. Topical zinc-containing treatments, on the other hand, have improved healing of skin wounds even when there is no deficiency. Long-term oral zinc supplementation must be monitored and balanced with copper supplementation to prevent a zinc-induced copper deficiency.

Preliminary and controlled studies of people with severe burns and other types of injuries showed that supplementation with 10–30 grams of ornithine alpha-ketoglutarate (OKG) per day significantly improved wound healing and decreased the length of hospital stays. Improved healing from major trauma and surgery has also been demonstrated with oral supplements including several grams per day of glutamine.

Vitamin A plays a central role in wound healing. Vitamin A supplements have been shown to improve healing in animal studies, and may be especially useful in a topical ointment for skin injuries in people taking corticosteroid medications. Although there are no studies in humans, practitioners may recommend 25,000 IU of vitamin A per day, beginning two weeks prior to surgery and continuing for four weeks after surgery.

Animal studies have shown that supplementing with vitamin E can decrease the formation of unwanted adhesions following a surgical wound. In addition, wound healing was more rapid in animals fed a vitamin E-rich diet than in those fed a standard diet. Practitioners may recommend supplementing with both vitamins A and E in order to enhance wound healing and prevent adhesion formation. Typical amounts recommended are 25,000 IU of vitamin A per day and 400 IU of vitamin E per day, beginning two weeks prior to surgery and continuing for four weeks after surgery.

Topical application of vitamin E is sometimes recommended for preventing or treating post-injury scars.

Copper is a required cofactor for the enzyme lysyl oxidase, which plays a role in the cross-linking (and strengthening) of connective tissue. Practitioners may recommend a copper supplement as part of a comprehensive nutritional program to promote wound healing. A typical amount recommended is 2–4 mg per day, beginning two weeks prior to surgery and continuing for four weeks after surgery.

Other trace minerals, such as manganese and silicon, are known to be important in the biochemistry of tissue healing. However, there have been no controlled trials exploring the effect of oral supplementation of these minerals on the rate of healing.

Topical application of hyaluronic acid and related compounds is sometimes used in skin wound dressings to improve healing. One controlled trial found a hyaluronic acid compound helpful for healing skin ulcers associated with chronic venous insufficiency.

Glucosamine sulphate and chondroitin sulphate may both play a role in wound healing by providing the raw material needed by the body to manufacture connective tissue 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. One controlled trial in humans found that wounds healed with greater strength when they were treated topically with a chondroitin sulphate-containing powder.

Arginine supplementation increases protein synthesis and improves wound healing in animals. Two controlled trials have shown increased tissue synthesis in surgical wounds in people given 17–25 grams of oral arginine per day.

Botanical Treatment Options

While many herbs may be useful in wound healing, it is important that wounds be properly cleaned and dressed before any herbal preparations are applied. This will prevent infection.

In animal studies of skin inflammation, both topical and oral aloe vera have proven beneficial in decreasing inflammation and promoting cellular repair. Topical aloe vera has facilitated wound healing in controlled human research, as well.

One preliminary trial found that a gotu kola extract helped heal infected wounds (unless they had reached bone). A review of French studies suggests that topical gotu kola can help wounds. One study found gotu kola extract helpful for preventing and treating enlarged scars (keloids). Standardized extracts of gotu kola containing up to 100% total triterpenoids are generally taken, providing 60 mg QD or BID. Animal studies have shown that constituents in gotu kola, called asiaticosides, increase antioxidant levels during wound healing and facilitate repair of connective tissues.

Horse chestnut contains a compound called aescin that acts as an anti-inflammatory and reduces oedema following trauma - particularly sports injuries, surgery, and head injury.

A topical preparation of chamomile combined with corticosteroids and antihistamines has been used to speed wound healing in elderly people with stasis ulcers caused by inadequate circulation, as well as in people who had tattoos removed. Topical use of chamomile ointment was also found to successfully treat mild stasis ulcers in elderly bedridden patients.

Topical application of honey has been used since antiquity to accelerate skin wound healing. Honey has been shown to inhibit the growth of several organisms responsible for wound infections. In one preliminary study, nine infants with large, open infected wounds that failed to heal with conventional treatment were treated successfully with topical application of honey. Fresh unprocessed honey was applied to wounds in amounts of 5–10 ml BID for a period of 21 days. All infants showed marked clinical improvement after 5 days, and the wounds were closed and free of infection by 21 days. Honey used should be raw and unprocessed. Extensive research has shown the value of Manuka honey in the topical treatment of wounds and ulcers, with a UMF of 15 and above proving most effective.

Used topically, some practitioners consider arnica to be among the best vulnerary herbs available. Topical use of arnica is approved by the German government for improving wound healing.

Calendula (marigold) flowers were historically considered beneficial for wound healing, reducing inflammation and fighting infection as a natural antiseptic. Like echinacea, calendula is approved in Germany for use in treating poorly healing wounds. Generally 1 tablespoon (15 grams) of calendula flowers is steeped in hot water for 15 minutes, then cloths are dipped into the liquid to make compresses. Such compresses should be applied for at least 15 minutes, initially several times per day, then tapering off as the wound improves.

Traditional herbalists sometimes recommend the topical use of herbs such as St. John's wort, calendula, chamomile, and plantain, either alone or in combination, to speed wound healing.

Echinacea is used among European practitioners of herbal medicine to promote wound healing and is approved by the German government for this use. Creams or ointments are applied several times a day to minor wounds.

Comfrey has anti-inflammatory properties that may decrease bruising when the herb is applied topically. Comfrey is also widely used in traditional medicine as a topical application to help heal wounds. Witch hazel can also be used topically to decrease inflammation and to stop bleeding. Native Americans used poultices of witch hazel leaves and bark to treat wounds, insect bites, and ulcers. Horsetail can be used both internally and topically to decrease inflammation and promote wound healing.

Chaparral has been used topically to decrease inflammation, and pain, and promote healing of minor wounds. For topical use, cloths can be soaked in oil preparations or tea of chaparral and applied several times per day (with heat if helpful) over the affected area.

Alginic acid is one of the main constituents in bladderwrack (***Fucus vesiculosus***), a type of brown algae (seaweed).

Australian Aboriginals used the leaves of tea tree to treat cuts and skin infections, crushing and applying them to the affected area. Modern herbalists recommend tea tree oil (at a strength of 70–100%) applied moderately in small areas at least BID to the affected areas of skin. For a variety of reasons, some researchers have suggested that tea tree oil should not be used to treat burns.

Apply herbal compresses for:

- **Open wound:** Camomile, marjoram, calendula or horsetail.
- **Inflamed wound:** St. John's wort, camomile, lavender, rosemary or thyme.
- **Pus-filled wound:** Plantain, comfrey, St. John's wort, sage or tormentil.
- **Slow-healing wound:** Calendula, rosemary, horsetail or plantain.

After using a compress, dab off moisture with a dry cotton gauze and apply a calendula cream, which is especially good for slow-healing wounds. Add 1 tsp. of honey to the cream for its antibacterial, anti-inflammatory and healing properties.

Homeopathy

Choose one of the remedies below in a 6c strength, repeating four times daily for several days as necessary. Dissolve 2 tablets under the tongue.

- For deep, painful puncture wounds, **Ledum** is recommended and will help when other remedies are not indicated. There are often signs of inflammation with redness and swelling, but the injured area is cold to the touch and feels better from applying cold compresses.
- If the pain shoots up the limb after a puncture wound or injured nerve, use **Hypericum**.
- **Arnica** is useful to quench the bleeding and promote the healing of most other wounds.

Tissue Salts

Take 4 tablets under the tongue three times daily.

- Take *Ferr phos* every ten minutes until the bleeding stops.
- Use *Kali mur* for any swelling, repeating four times daily, until the swelling reduces.
- *Calc sulph* will help relieve infected wounds which are slow to heal, since it aids in blood cleansing and speeds the healing process.
- *Silicea* helps treat wounds with festering and thick yellow pus.

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