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**FILE: ■ Bone Health
■ Osteoporosis**

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RE: Traditional Herbs Associated with Bone Health and Joint Pain

Khalsa KPS. Herbs for bone health. *The Herb Quarterly* 2003 Summer:43-49.

This article, part one of a two-part series, provides information on how bones are formed and maintained and recommendations for maintaining bone health. Khalsa explains the process of bone loss, and the consequences of failing to maintain a positive balance in one's "bone account." Osteoporosis (abnormal thinning of the bone from mineral loss and poor protein matrix [connective tissue]) threatens up to 44 million Americans and is the underlying cause of 1.5 million fractures annually in the U.S. One in six women suffers hip fractures during their lives. For women over 80, the percentage reaches one-third and for men over 80, one-sixth. A woman's lifetime risk of hip fracture is greater than her risk of breast, uterine, and ovarian cancer combined. Major risk factors include aging, menopause, chronic corticosteroid use, maternal history of osteoporosis, and obesity.

While calcium is the best-known nutrient for bone health, calcium intake alone cannot prevent osteoporosis. Americans have twice as many hip fractures per capita as the Japanese, although calcium consumption in Japan is very low. In the Netherlands, high calcium intake does not prevent a high rate of osteoporosis. Zinc, potassium, and fiber all contribute to strong bones. The ratio of calcium to phosphorous and magnesium is critical to their absorption into bones, as is vitamin D. Khalsa says, "[w]e don't know much about a crucial factor in the calcium-osteoporosis connection: inefficient absorption and high calcium loss through urination. In...studies, calcium absorption in postmenopausal women varied by as much as 61 percent." At least seven types of calcium are now on the market in addition to common calcium carbonate. Of these, calcium citrate malate appears to be the most soluble and absorbable. A chart shows recommended calcium intake by age group. Another mineral, boron, may reduce urinary excretion of calcium and magnesium.

Khalsa suggests herbs to maximize hormone activity after menopause. Since the liver processes estrogen, liver-supporting herbs such as burdock root (*Arctium lappa*), which also has estrogenic effects; dandelion (*Taraxacum officinale*); and yellow dock (*Rumex crispus*) may be useful. Other herbs with purported estrogenic effects include dong quai (*Angelica sinensis*); blue cohosh

(*Caulophyllum thalictroides*); black cohosh (*Actaea racemosa*); achyranthes (Chinese ox knee root; *Achyranthes bidentata*); Chinese 3-edge root; sage (*Salvia officinalis*); alfalfa (*Medicago sativa*), which also enhances mineralization; and motherwort (*Leonurus cardiaca*). No scientific evidence is given to support these recommended herbs. Some studies support use of isoflavone extracts of red clover (*Trifolium pratense*) for both menopausal symptoms and osteoporosis. Soy (*Glycine max*), also high in isoflavones, has shown positive results, especially in strengthening the lumbar spine. While Khalsa mentions concerns that taking isolated isoflavones may lower lymphocytes, and may have a negative interaction with some drugs, he does not discuss concerns, so far unproven, that these and other phytoestrogens may increase risks of estrogen-dependent cancers.

According to the author, herbs which may enhance bone mineralization include stinging nettle (*Urtica dioica*), slippery elm (*Ulmus rubra*), oat (*Avena sativa*), and horsetail (*Equisetum arvense*). In a randomized trial involving 122 women, those taking a horsetail extract or a horsetail-calcium combination had statistically significant improvements in bone density over the placebo group.

Horsetail is also traditionally used to support joint health. While Khalsa does not discuss osteoarthritis (OA) in as much detail as osteoporosis, he mentions ashwagandha (*Withania somnifera*) root, an Ayurvedic tonic, which showed significant reduction of pain and disability in a double-blind, placebo-controlled, crossover study of 42 patients with OA; guggul (*Commiphora mukul*) another traditional Ayurvedic anti-arthritis with antiinflammatory effects; turmeric (*Curcuma longa*) root, an antiinflammatory, also an Ayurvedic bone treatment, used as a spice in curries; willow bark (*Salix alba*), whose salicylates, predecessors to aspirin, reduce pain, fever, and inflammation; and St. John's wort (*Hypericum perforatum*), used by North American and European herbalists for many mildly painful conditions, including OA. Sulfur compounds such as glucosamine, MSM (methylsulfonylmethane) and S-adenosylmethionine; see HC 030434.240) rebuild joint cartilage and otherwise benefit OA sufferers.

Some risk factors for osteoporosis also apply to OA. Vigorous daily exercise; a diet high in fresh fruits, vegetables, beans, and nuts; limiting sugars and highly processed foods; and not smoking tobacco or drinking excessive alcohol may benefit both conditions.

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