

## Special Interest Articles:

- Menopause and Bioflavonoids
- Osteoporosis and Exercise
- Bone Health: More than Calcium & Vitamin D
- Flax Seeds and Menopause
- Osteoporosis & Lifestyle
- Coffee & Menopause
- Black Cohosh & Menopause

## Believe it or not, Women Need Testosterone

In addition to men experiencing low testosterone, women can also have low testosterone as well. Levels decline between the ages of 20 and 40. An article appearing in the journal, *Clinical Geriatric Medicine* (2003;19:605-616) reviewed the changes a woman goes through when testosterone levels decrease. When a woman receives estrogen for hormone replacement therapy after

menopause, there is an increase in sex hormone-binding globulin. The sex hormone-binding globulin binds to testosterone, further decreasing levels. Low testosterone is linked to a decrease in libido, as well as a decrease in muscle mass, fatigue, irritability, sleep disturbances, poor memory and cognition, headaches, and even depression.

## Can Osteoporosis Drugs Weaken Bone?

The *Journal of Orthopaedic Trauma* (May/June 2008, Volume 22, Issue 5) published a retrospective review of patients with femoral shaft fractures admitted to a Level 1 trauma center between January 2002 and March 2007. Seventy low-energy fractures were identified. These are leg fractures (thigh) that occurred with little or no trauma.

The researchers looked at 59 females and 11 males, averaging 74.7 years of age. Twenty-five (36%) were being treated with alendronate (a bisphosphonate, which is an osteoporosis drug). Nineteen (76%) of these 25 patients had a fractured femur (thigh bone). The fracture was demonstrated a

simple, transverse fracture with a unicortical beak in an area of cortical hypertrophy. This fracture pattern was seen in only one patient (2%) not being treated with alendronate.

Bone is living tissue. It is continually breaking down and rebuilding. In many women over 30, bone resorption occurs faster than rebuilding. Bisphosphonates, like Fosamax, Actonel and Boniva are designed to slow this process down. There is some evidence that microscopic fractures that occur normally in bone are not repaired when these drugs suppress the remodeling process. Another problem that can occur with these drugs is osteonecrosis, which is a painful condition where the bone literally dies and rots.

## Menopause and Bioflavonoids

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Bioflavonoids (also called flavonoids) are a class of water-soluble plant pigments found in fruits, vegetables, and certain beverages that have antioxidant effects. Antioxidants are compounds that protect cells against the damaging effects of reactive chemicals known as free radicals. Free radicals can cause oxidative stress, leading to cellular damage.

Oxidative stress has been linked to cancer, aging, atherosclerosis, ischemic injury, inflammation and neurodegenerative diseases (Parkinson's and Alzheimer's). Flavonoids may help provide protection against these diseases by contributing to the total antioxidant defense system of the human body. Studies have shown that flavonoid intake is inversely related to mortality from coronary heart disease and to the incidence of heart attacks.

Hesperidin is a bioflavonoid that is found in citrus fruit. It offers similar nutritional support to other bioflavonoids, like quercetin. It acts to support the vascular system by strengthening the capillaries and it also acts as an antioxidant. In research appearing in *Chicago Medicine* (March 7, 1964), 94 patients who had undergone menopause (36 surgically and 58 physiologically) were given a supplement containing 50 mg of hesperidin complex, 150 mg. of hesperidin methyl chalcone and 200 mg of vitamin C. The control group was given calcium carbonate, salicylamide and an estrogenic substance. The group receiving the vitamin C/bioflavonoid supplement experienced more relief from hot flashes than the control group. It is possible the mechanism for the vitamin C/bioflavonoid supplement in improving hot flashes involves strengthening the capillary bed and reducing vasodilation.

## Prevent Osteoporosis: Exercise

According to research appearing in the *British Journal of Sports Medicine* (2005;39:282-287), exercise may prevent osteoporosis. The study looked at 300 elite athletes and compared them to 300 controls who were not athletes. The sample was gleaned from 938 athletes and 900 non-athletic controls. The study was completed by 186 of the athletes and 145 of the controls. It was found that bone mineral density was higher in the athletes (1.21

g/cm<sup>2</sup>) than in the controls (1.18 g/cm<sup>2</sup>). Participants in high-impact sports tended to have greater bone density than those participating in low-impact sports. Low bone mineral density is 2- to 3-times more common in non-athletic premenopausal women than in elite athletes. Female elite athletes have between 3%-20% greater bone density than non-athletes.

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## Bone Health: More than Just Calcium and Vitamin D

When you search the literature, you will find a large number of studies that demonstrate the benefit of vitamin D and calcium for bone health. It is important to notice that there are also studies that show the importance of other nutrients for the development of healthy bone. One nutrient, vitamin K, has been studied and shown to be of value in preventing osteoporosis. An analysis of earlier studies that appeared in the *Archives of Internal Medicine* (June 26, 2006;166(12):1256-61) came to the conclusion that vitamin K increases bone strength. Vitamin K is important for matrix GLA protein, found in bone. A commercially prepared form of vitamin K1 and vitamin K2 may be useful for preventing and treating osteoporosis. The article points out that several studies, both animal and human, have shown that vitamin K can help to increase bone mass and reduce bone loss. Studies show that the combination of vitamin K and vitamin D can significantly reduce bone loss. In a study that appeared in the *Journal of Obstetric and Gynaecologic Research* (2006 Apr;32(2):230-4), 63 postmenopausal women with osteoporosis were randomly assigned to receive either 1500 mg of calcium carbonate along with 45 mg of vitamin K2 or 1500 mg of calcium carbonate along with a placebo. After 48 weeks, the group receiving the vitamin K had a significantly higher lumbar bone mineral density when compared to the placebo group. Research appearing in the *Journal of Bone and*

*Mineral Research* (2000 Mar;15(3):515-21) looked at the effect vitamin K2 supplementation had on 241 osteoporotic patients over a period of two years. The subjects were given either 45 mg of vitamin K2 per day or a placebo. The group receiving K2 had fewer new fractures.

Other nutrients are important as well. One study, published in *Osteoporosis International* (Volume 20, Number 2, 335-340), found a link between high dietary potassium and a healthy bone mineral density. Research in the *Journal of Bone and Mineral Research* (2005 Jan;20(1):152-8) found a connection between low vitamin B<sub>12</sub> levels and poor bone mineral density. Research appearing in the *Journal of Internal Medical Research* (2007; 35(5): 692-5) found that women with osteoporosis tend to have lower magnesium, zinc and copper levels than women with healthy bone mineralization. Vitamin C supplementation has been shown to reduce the incidence of fractures, according to a study published in *Osteoporosis International* (Volume 20, Number 11, 1853-1861). The point is that there are many nutrients that are important for healthy bone, and good bone health involves more than just calcium and vitamin D.

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## Flax Seeds and Menopause

Several studies looked at the consumption of flax seeds and its effect on menopausal symptoms. One study published in the *Journal for the Society for Integrative Oncology* (2007 Summer; 5(3): 106-12) involved 30 women having at least 14 hot flashes each week. The subjects were given 40 grams of crushed flax seeds each day. Over a six week period, the women experienced a mean 57% decrease in the number of hot flashes. Subjects receiving the flax seed also experienced less joint and muscle pain, a reduction in sweating and chills, and a general improvement in the quality of life. Another study, appearing in *Family Practice News* (February 1, 2005:48), was double-blind and placebo controlled. It involved 85 women who were experiencing at least 5 episodes of either hot flashes or night sweats per day. They were randomly assigned to receive either 40 grams per day of flax seed or a placebo for three months. After the initial three month therapy, the subjects switched roles, with the placebo group receiving therapy and the initial therapy group receiving a placebo (crossover). There was a 38% decline in the median number of hot flashes when a group was receiving the flax seed. Occurring with the decline in symptoms was an increase in enterodiol, enterolactone and other lignans found in the urine. Other

research appearing in *Cancer Epidemiology Biomarkers Preview* (October 2000;9:1113-1118) also found an increase in urinary lignans when women were supplemented with flax seed. The flax seeds may affect estrogen levels. A study that appeared in *Cancer Epidemiology Biomarkers Preview* (July 2000;9:719-725) found that supplementation with flax seed increased the ratio of the urinary excretion of 2-hydroxyestrogen and 16 alpha-hydroxyesterone.

A study appearing in *Gynecology and Obstetrics Investigation* (2007; 64(4): 204-207) looked at the effect vitamin E supplementation had on hot flashes. The double-blind, placebo-controlled study involved 51 female subjects who were given either 400 IU of vitamin E or a placebo for a period of four weeks. They were taken off of the supplement for a week and given it again for another four weeks. The vitamin E supplementation produced statistically significant reduction in the number of hot flashes experienced by the group receiving the therapy.

## Osteoporosis and Lifestyle

Even though supplements are available to improve bone health, it is important to realize that lifestyle also plays an important role in the development of osteoporosis. One study, published in the *American Journal of Clinical Nutrition* (2006; 84(4): 936-42), concluded the obvious; finding that high consumption of colas was associated with lower bone mineral density. Women who consumed colas daily had between 3.7% and 5% lower bone mineral density values when compared to women who consumed one cola or less per month. A study that was published in the *Journal of Orthopedic Science* (2007; 12(4): 317-20) looked at lifestyle choices and the development of osteoporosis in 632 Japanese women over the age of 60. It found that drinking green tea and being physically active lowered the chance of developing osteoporosis. Oddly enough, alcohol consumption was also related to better bone

density, while smoking and cheese consumption were associated with lower bone mineral density. Another study, published in the *Annals of Nutritional Metabolism* (2005; 49(5): 312-8) looked at 8,178 female subjects participating in the European Prospective Investigation into Cancer and Nutrition (EPIC) Potsdam Study. The relationship between dietary intake of protein and calcium, and bone structure was examined. Bone density was evaluated using broadband ultrasound attenuation and diet was assessed by food frequency questionnaires. High intake of animal protein was associated with lower bone density, however, a high intake of vegetable protein was associated with higher bone density values. Calcium intake had a positive effect on bone density, but it was less pronounced in subjects with a high intake of animal protein.

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## Coffee and Osteoporosis

A cohort study appearing in *Osteoporosis International* (Volume 17, Number 7 / July, 2006) looked at the relationship between coffee consumption and osteoporosis in 31,527 Swedish women. Coffee, tea and caffeine intake were determined by food frequency questionnaires. The subjects were monitored for a little

more than 10 years. During that time there were 3,279 reported instances of osteoporotic fracture. Increased coffee intake was associated with a greater risk of fracture--especially if calcium intake was low.

## Menopause and Black Cohosh

*"We can't solve problems by using the same kind of thinking we used when we created them."*

Einstein

There are a number of natural products that have been shown to offer relief from the various symptoms of menopause. A study that appeared in the *Obstetrics and Gynecology* (2005; 105(5 Pt 1): 1074-83) looked at the effect black cohosh extract had on anxiety symptoms during menopause. The subjects of the study, 304 menopausal women, were given either a placebo or pharmaceutical-grade black cohosh extract for a period of 12 weeks. At the end of the 12 weeks, the group receiving the supplement had improvements in symptoms including hot flashes, as measured by the Menopause Rating Scale. A meta-analysis published in the *Journal of Women's Health* (1998 Jun;7(5):525-9) found that black cohosh was safe and effective for alleviating the symptoms of menopause.

An article appearing in the *Journal of the American Pharmaceutical Association* (40(2):234-242, 2000) looked at research involving herbs used for women's health. The author, Mary L. Hardy, MD is the medical director at Cedars-Sinai Integrative Medicine Medical Group, Cedars-Sinai Hospital, and associate clinical professor of medicine, University of Southern California, Los Angeles. Dr. Hardy cites a number of research articles that demonstrate the effectiveness and safety of black cohosh for menopausal symptoms. Research appearing in the *Journal of Bone and Mineral Research* (2005; 20(11):2036-43) suggests that black cohosh may have a positive effect on bone mineralization.