Osteoporosis: Complementary and Alternative Treatments

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Osteoporosis is a serious condition. Without proper diagnosis and timely treatment, the consequences can be significant. Patients with osteoporosis may be unaware of the associated morbidity and mortality rates from its complications.

Today’s primary care physicians should educate their patients about adopting a holistic approach to managing osteoporosis, including prescription medication, weight-bearing exercise and a healthy lifestyle.

Patients often have questions about the myriad of readily available herbal and natural supplements that are touted as beneficial for bone health, and these patients may seek guidance from their osteopathic physicians. What follows is information on some common products, with an emphasis on interactions and side effects. Some aspects of an integrated approach to managing osteoporosis follow.

Taking a close look at botanicals

Phytoestrogens are substances that are similar in action to estrogen and are found in various plants and foods. There are conflicting data on phytoestrogens and their effects on bone mineral density (BMD). Some studies report that phytoestrogens are beneficial for bone resorption and BMD in postmenopausal women while other studies have reported no effect.1,6,8,13

There are three main types of phytoestrogens: lignans, coumestans and isoflavones. Lignans are found in flaxseed, lentils, grains, fruits and vegetables. Coumestans are found in bean sprouts, spinach, clover, and other plants. The most potent phytoestrogens—genistein and daidzein—are isoflavones, which are found in soybeans, chickpeas and lentils.2

Soybean (glycine soja)

Soy protein was shown to be mildly beneficial for increasing bone mineral content (BMC) in postmenopausal women in one randomized, double-blinded, placebo-controlled trial. However, no significant increase in BMD was shown.3

A significant decrease in urinary deoxypyridinoline and increased serum insulin-like growth factor I (IGF-I)—both indicators of decreased bone metabolism—were observed in individuals who received 40 grams of soy protein daily for three months.4

Soy protein had the greatest affect on women who were not on hormone therapy.5 It should be noted that the soy diet was not as effective as hormone therapy for increasing the markers of bone turnover.4

In another double-blinded trial, 40 grams of soy protein per day increased lumbar spine density in postmenopausal women. A supplement containing 56 milligrams of isoflavones per day did not have the same beneficial effect as getting the isoflavones from soy protein.4,6

One challenge to a patient’s desire to use soy protein rather than isoflavone supplements is the amount of soy that must be consumed—200 milligrams of isoflavones equal approximately 0.3 milligrams of conjugated estrogen. Soymilk contains about 20 milligrams of isoflavones per cup, and tofu contains 80 milligrams of isoflavones per cup. To obtain the equivalent of 0.3 milligrams of conjugated estrogen (the lowest recommended dose for therapy), a patient would need to consume two to three cups of tofu or drink 10 glasses of soymilk. Some studies conducted with large dietary intakes of soy revealed that a significant number of participants were unable to tolerate such a diet, as evidenced by the discontinuation rate.

A large, double-blinded, randomized one-year trial did not support the hypothesis that isoflavones from soy protein have beneficial effects on BMD (a surrogate endpoint),7 whereas another study reported a reduced fracture rate (the more important clinical outcome) in postmenopausal women who consumed soy.8 Much conflicting information exists with respect to
the use of soy isoflavones in the treatment of patients with osteoporosis. While it seems likely that soy isoflavones have many health benefits, the evidence for using soy as an alternative treatment for patients with osteoporosis remains inconclusive. Some potential interactions and recommendations are as follows:

**Levothyroxine**

Because decreased absorption of levothyroxine has been noted, soy should be avoided for at least two hours after the ingestion of levothyroxine, but clearer data are lacking about timing.

**Tamoxifen**

Effects of tamoxifen may be decreased with the use of soy. DOs should avoid concomitant use of soy until more information is available.

**Iron supplements**

Possible decreased absorption of iron with soy consumption. Iron supplements should be avoided within two hours of soy ingestion.

**Warfarin**

Warfarin effectiveness and changes in international normalized ratio (INR) may result from concomitant soy use. Monitor INR closely in patients on warfarin who are either beginning or stopping soy foods, milk, and supplements.

**Black cohosh (cimicifuga racemosa)**

One 12-week trial of postmenopausal women revealed that black cohosh extract increased levels of bone-specific alkaline phosphatase, a metabolic marker for bone formation (p=0.0358).

Women who received conjugated estrogen or a placebo did not show the same elevation in bone-specific alkaline phosphatase. This suggests that black cohosh may be beneficial in the treatment of patients with osteoporosis, but the lack of data on bone density and fracture risk makes this evidence inconclusive.

Some potential interactions and recommendations are as follows:

**Antihypertensives**

Antihypertensives may be potentiated; avoid concomitant soy use.

**Tamoxifen**

Tamoxifen effects may be enhanced; use the combination of tamoxifen and soy with caution until more information is available.

**Iron**

Iron products may form insoluble complexes when taken with black cohosh. Iron should be avoided within two hours of ingesting black cohosh.

**Red clover (trifolium pratense L)**

In a randomized, double-blinded, placebo-controlled trial, treatment of postmenopausal women with a red clover-derived isoflavone supplement for 12 months showed a significant decrease in loss of BMD and lumbar bone mineral content (BMC) compared with placebo. An increase in a bone formation marker (bone specific alkaline phosphatase) was also demonstrated. These results are promising, but more trials are necessary to conclude that red clover is an effective alternative treatment for osteoporosis.

Some potential interactions and some recommendations follow:

**Anticoagulants**

Possible increased risks of bleeding. Concomitant soy use should be avoided.

**Contraceptives/Estrogen**

Possible decrease in contraceptive effectiveness or increase in side effects.

**Progesterone**

Possible decreased effectiveness of progesterone.

**Tamoxifen**

Decreased tamoxifen effectiveness in animal studies. Concomitant soy use should be avoided.

**Pregnancy and breastfeeding**

Avoid with pregnancy and breastfeeding and in patients with estrogen receptor positive neoplasia.

**Wild yam (dioscorea villosa)**

Wild yam (dioscorea villosa)—also known as China root, devil’s bones, and Mexican yam—is commonly sold in the United States for women’s health, including osteoporosis treatment. Yet there is no evidence that it is effective for osteoporosis.

Some potential interactions with wild yam are as follows:

**Indomethacin**

Possible decrease in plasma levels of indomethacin.

**Estrogen**

Possible additive estrogenic effect.

**Herba epimedii (HEP)**

Herba epimedii is a commonly used herb prescribed for the treatment of osteoporosis in China. HEP has been shown to significantly decrease urinary calcium excretion, suppress serum alkaline phosphatase activity, and increase osteoblastic activity in rats. HEP may be of promise in the future, if human trials can reproduce these results.
**Taking a holistic approach**

Exercise has been associated with improvements in BMD and a decreased risk of hip fractures. In a study of more than 61,000 postmenopausal women, those who walked four or more hours per week had a 41% lower risk of hip fracture than those who walked less than one hour per week.1

It is recommended that women should engage in at least 30 minutes of weight-bearing exercise—walking or jogging—three times per week. Some sources recommend 20 minutes per day, and an expert panel at the Institute of Medicine recently recommended at least one hour per day.10

There is no convincing evidence that high-intensity exercise such as running offers a greater benefit than lower-intensity exercises such as walking.

The positive benefits on bone density that exercise offers are quickly lost once the exercise is stopped, which is why it is very important for women to choose an activity that they enjoy and will maintain long term.1

Vitamins, minerals, tobacco and alcohol all affect bone formation. Supporting nutrients such as vitamin B6 (pyridoxine), vitamin B12, and vitamins C, D, E and K, magnesium, copper, boron, folic acid, manganese, selenium, silicon, strontium, zinc, are all needed for healthy bone formation, as is sufficient intake of calcium.10

Nicotine and nonnicotine tobacco components have been shown to depress osteoblastic activity in a number of in vivo and animal studies. Studies suggest that smoking may induce osteoblastic depression, either directly or via hormonal changes.11

Alcohol is a known risk factor for osteoporosis. In addition, animal studies have shown that reduced weight-bearing exercise increases the detrimental effects of alcohol on cortical bone by further inhibiting bone formation.12

As osteopathic physicians, our goal is to prevent disease. We can promote good health starting with well-child visits and talking with parents about the importance of a balanced diet. Healthy lifestyle issues need to be discussed, including exercise. In treating patients who have already progressed to either osteopenia or osteoporosis, it is important to discuss all aspects of treatment with them, not just prescription medications. In addition, patients are often reticent to bring up the subject of herbal products. Hence, osteopathic physicians should routinely ask patients about their use of these products and educate them about any potential side effects or interactions.

As further research is done on herbal and over-the-counter products, we will learn more about how these products can be used in the battle against osteoporosis.1

**References**


