

can be inhaled easily. Remember, though, that essential oils are for external use only. **Carminative herbs.** *Carminative* means "stomach-soothing." Carminatives are used mostly to treat indigestion and infant colic, but many respected herbalists also recommend them for nausea. The carminative herbs I like best include camomile, dill, fennel, lemon balm and any of the mints. I'd suggest trying a tea made with a few teaspoons of one or more of these.

Osteoporosis

Osteoporosis, as you probably know, is a disease caused by loss of the mineral calcium and involves a weakening of bone. It is one of the most common conditions associated with aging, and it affects many more women than men. About 25 percent of women over 65 show signs of osteoporosis, while the figure for elderly men is less than 10 percent. Thin, petite women are at greatest risk. (My wife, Peggy, who is under 65 and formerly thin, has been diagnosed with osteoporosis.) Osteoporosis causes a variety of possible symptoms: lower back pain, loss of height (up to several inches), stooped posture (dowager's hump) and increased risk of fractures, particularly of the hip. Currently, management of osteoporosis costs the United States some \$6 billion a year. Until quite recently, the Food and Drug Administration and most physicians told us that supplements, including calcium, were a waste of time and money. Now, very belatedly, they tell us that we're not getting enough calcium. According to the 1995 National Institutes of Health (NIH) Consensus Development Panel on Optimal Calcium Intake, Americans (especially women) should get 1,000 to 1,500 milligrams a day. Unfortunately, most get much less than that, and many don't get even half that amount.

Getting the Full Spectrum of Nutrients

Ironically, the very doctors and federal officials on the NIH panel who would have said "food over supplements" a few years ago now seem to be saying "supplements over food" when it comes to calcium.

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The panel did say that, ideally, people should get their calcium from foods such as low-fat dairy products, broccoli, tofu, kale, legumes, canned fish, nuts and seeds. But the panel's report also implied that this is impossible or at least impractical for the vast majority of Americans. The report spent a good deal of space telling people how to take calcium supplements—between meals, to minimize interference with iron absorption.

I have nothing against calcium supplements, but I firmly believe that everyone should get as much calcium as possible from foods. It's not only possible to do this, it's also better for your bones, because the mineral strength of bone depends on more than calcium. For calcium to actually strengthen bone, it must be consumed along with several other nutrients that few experts seem to talk about. Phosphorus is particularly important, but you also need magnesium, boron, zinc, vitamin D and vitamin A. You can get all of these nutrients from supplements, but I prefer to get them the way Nature intended—packaged all together in food.

The other news about osteoporosis that few people know is that high-protein diets leach calcium from bone. Nutrition experts I rely on suggest that people at risk for osteoporosis limit their protein intake to no more than one gram of protein per kilogram of body weight, which translates into around two to three ounces of protein—on the order of one chicken breast—daily for the average woman. Most Americans eat considerably more protein than this, thus running a risk of calcium loss even if they consume a lot of the mineral.

Green Pharmacy for Osteoporosis

If you're looking to consume less protein and more nutrients that help prevent osteoporosis, here are the plant foods I'd suggest.

❖❖❖ **Cabbage (*Brassica oleracea*).** Boron helps raise estrogen levels in the blood, and estrogen helps preserve bone. In my database, cabbage ranks highest in boron content among leafy veggies with 145 parts per million (ppm) on a dry-weight basis.

I eat a lot of coleslaw, and it's easy to combine cabbage with high-calcium broccoli, kale, beans and tofu in salads and steamed vegetable dishes. Cabbage is also a key ingredient in my Bone-Strengthening Broth.

❖❖❖ **Dandelion (*Taraxacum officinale*).** Speaking of boron, dandelion shoots run a close second to cabbage, with 125 ppm. Dandelion also has more than 20,000 ppm of calcium, meaning that just ten grams (just under seven tablespoons) of dried dandelion shoots could provide more than 1 milligram of boron and 200 milligrams of calcium.

Dandelion is also a fair source of silicon, which some studies suggest also

helps strengthen bone. I including it in my Bone-Strengthening Broth.

❖❖❖ **Pigweed (*Amaranthus* various species).** On a dry-weight basis, pigweed leaves are among the best vegetable sources of calcium, with 5.3 percent. This means that a 1/2-cup serving of steamed leaves (or 1/10 cup) provides a full milligram of calcium. Other plant sources of calcium, in descending order of potential, include lamb's-quarters, broad beans, cress, licorice, marjoram, clover shoots, thyme, Cabbage (bok choy), basil, dandelion and purslane.

❖❖ **Avocado (*Persea indica*).** As one reputed source of vitamin D (and the tastiest), avocado can help turn calcium into bone. Some people shun avocados because they're fairly high in fat, but avocados are generally low-fat, and even on a semi-vegetarian diet, there's not much harm in them, especially if you're at risk for osteoporosis. I suggest mashing an avocado with cottage cheese or yogurt to boost your calcium and some vitamin D at the same time. Avocados are also rich in heart-healthy vitamins.

❖❖ **Soybean (*Glycine max*) and other beans.** Vegetarian Japanese women have lower rates of osteoporosis than Western or meat-eating women. M.D., of the University

Bone-Strengthening Broth

Here's a recipe that will appeal to the economy-minded woman who is eager to explore every possible avenue for preventing osteoporosis. Both the fish bones and the veggies provide generous amounts of calcium and other nutrients that prevent this debilitating disease.

In a large pot, place some leftover fish bones in a few quarts of water. (If the bones are really tiny, you might want to tie them in a cheesecloth bag to make it easier to retrieve them later.) Bring to a boil, then cover and simmer for 30 minutes. Add a couple of handfuls each of finely chopped cabbage, dandelion greens, stinging nettle greens, parsley, pigweed and purslane. (You'll need to wear gloves when harvesting stinging nettle greens, but the leaves lose their sting when the plant is cooked.) Simmer until the greens soften slightly. Season to taste with salt and pepper and any other seasonings that appeal to you. Remove the fish bones before serving. Serve as a vegetable/herb soup topped with avocado slices and black pepper. Or use it as a stock for even heartier bean soups.

Properly prepared, a generous serving of my Bone-Strengthening Broth could easily contain generous amounts of calcium, magnesium, boron, beta-carotene (plus other vitamin A-like carotenoids) and vitamin C, as well as some vitamin D, fluo-

rine and silicon.

Japanese women have a lower incidence of osteoporosis and fractures than Western or meat-eating women. The reason, according to James Anderson, M.D., of the University of Kentucky College of Medicine in Lexington, appears

helps strengthen bone. I recommend including it in my Bone-Strengthening Broth.

Figweed (Amaranthus, various species). On a dry-weight basis, pigweed leaves are one of our best vegetable sources of calcium, at 5.3 percent. This means that a small serving of steamed leaves (1/3 ounce or 1/10 cup) provides a hearty 500 milligrams of calcium. Other good plant sources of calcium, in descending order of potency, include lamb's-quarters, broad beans, water-cress, licorice, marjoram, savory, red clover shoots, thyme, Chinese cabbage (bok choy), basil, celery seed, dandelion and purslane.

Avocado (Persea americana). As one reputed vegetable source of vitamin D (and the tastiest), avocado can help the body turn calcium into bone. Some people shun avocados because they are fairly high in fat, but if you eat a generally low-fat, vegetarian or semi-vegetarian diet, I don't see much harm in them, especially if you're at risk for osteoporosis. I suggest mashing an avocado into nonfat cottage cheese or yogurt so you get your calcium and some vitamin D at the same time. Avocados are also rich in heart-healthy vitamin E.

Soybean (Glycine max) and other beans. Vegetarian and

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to be that Western-diet meat-eaters excrete more calcium in their urine.

Beans are a good source of protein, but they cause less calcium loss in the urine than meat. In addition, soybeans and other beans contain genistein, a plant estrogen (phytoestrogen) that acts like the female sex hormone in the body.

Pharmaceutical estrogen replacement helps preserve bone and prevent heart disease, but it also increases the risk of breast cancer. Genistein from beans has never been shown to increase cancer risk, and I'd be willing to bet that a diet rich in beans would strengthen bone and prevent heart disease almost as well as, or equally as well as, estrogen pills.

✎ **Black pepper (*Piper nigrum*).** According to my database, black pepper contains four anti-osteoporosis compounds. If you like pepper, you might consider sprinkling it generously on your avocado or bean soup or salad, assuming that every little bit helps.

✎ **Horsetail (*Equisetum arvense*).** French research suggests that silicon helps prevent osteoporosis and can be used to treat bone fractures. Horsetail is among the richest plant sources of this mineral, in the form of the compound monosilicic acid, which the body can readily use.

Aging and low estrogen levels decrease the body's ability to absorb silicon. Some people recommend up to nine 350-milligram capsules a day. You should use this herb only in consultation with a holistic practitioner. If you're advised to use horsetail tea, add a teaspoon of sugar to the water along with the dried herb. (The sugar will pull more silicon out of the plant.) Bring it to a boil, then let it simmer for about three hours. Strain out the leaves, then let the tea cool before drinking.

✎ **Parsley (*Petroselinum crispum*).** That dark green garnish, which is so often thrown away instead of eaten, is generously endowed with boron. It would take about three ounces of dried parsley to provide the three milligrams deemed useful in raising estrogen levels. That's more than most people want to consume, but every sprig helps.

In my database, parsley is also among the highest food sources of fluorine, another bone strengthener. Freshen your breath while you save your bones by routinely eating every sprig of parsley garnish placed on your plate in restaurants.

Overweight

I've always liked this letter:

"Please, please, please!!! I know how busy you must be, Dr. Duke, but I hope I'm not being too presumptuous asking for the recipe for those Lean

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vate my serotonin!!

"I never had a weight
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