



### It takes more than calcium to build bones

Our last article explained the importance of consuming adequate calcium for maintaining healthy bones. Even though calcium intake is a major factor in bone health, there are many other nutritional and lifestyle aspects involved.

Our last article reported that a cup of cooked choy sum contains about the same amount of absorbable calcium as a cup of milk. This data is from a research paper that analyzed hydroponically grown choy sum and the calcium absorption was measured from cooked choy sum which was pureed prior to eating. Locally grown choy sum may or may not be comparable. Also, calcium absorption could be less if you don't chew your food well.

Dietary protein is another interesting factor in bone health. Protein is part of bone structure and adequate protein intake is important for the maintenance of healthy bones. However, too much protein in the diet can be detrimental since it causes increased losses of calcium in the urine. If someone consuming a high protein diet does not also consume a high amount of calcium, then bone calcium is gradually lost.

As a general rule of thumb, a bone-healthy diet should have about 16 milligrams of calcium for each gram of protein. Milk has about 38 milligrams of calcium for each gram of protein. Tofu can range from 7 to about 30 milligrams, depending on how it is made.

Some people claim that only animal protein increases calcium loss due to its higher sulfur content. This is not entirely true. Grain, seed, and nut proteins are generally higher in sulfur than milk protein. And soy protein in tofu contains about the same amount of sulfur as milk protein. Only about 45 percent of the calcium lost in the urine due to protein is related to the sulfur content.

Just like protein, sodium is required in the diet. Most people get plenty of sodium from salt, MSG, soy sauce, baking soda, soy protein "amino acid" seasonings and medications.

A high sodium diet also increases calcium lost in the urine. The sodium in a teaspoon of salt can increase dietary calcium needs by about 200 milligrams. If you don't get that extra calcium in your diet, it will be drawn from your bones.

Another factor often blamed for bone thinning is caffeine because it also increases calcium loss in the urine. However the calcium loss is small. The caffeine in a typical cup of coffee will result in the loss of about 2-3 milligrams of calcium. Half a tablespoon of milk in a cup of coffee will make up for this loss. A latte will put you well ahead in calcium.

Bones are more than just calcium and protein. For example, magnesium is found in bones in significant amounts and it is thought that an adequate intake of this mineral is important for bone health. Foods high in magnesium include beans, whole grains, nuts, and green leafy vegetables.

Vitamin K is also important for bone health since some of the proteins in bone are dependent on this vitamin for formation. Green vegetables are especially high in vitamin K.

Nondietary factors that increase thinning of bones are some medications like the aluminum-based antacids, excessive alcohol consumption and smoking.

Finally, bones are like muscles in the "use-em or loose-em" sense. Regular exercise helps to maintain healthy bones.

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