



Osteoporosis Canada

Ostéoporose Canada



COPING

A newsletter from COPN

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Remember: You can live well with osteoporosis!

If you have received this newsletter from the Canadian Osteoporosis Patient Network (COPN)

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Does Excess Body Acidity Contribute to Bone Loss?

One of the controversial issues around good nutrition for healthy bones is the question of whether or not too much protein causes bone loss, and the related question of whether dairy products are a good source of calcium. These questions arise from a body of research suggesting that body acidity is an important determinant of bone health. As dietary protein is a contributor to body acidity, and animal protein sources do so to a greater extent than plant proteins, then this relates to recommending dairy as a source of calcium.

Protein is an essential macronutrient that is necessary for building and repairing all body tissue. Bone is made up primarily of protein, in the form of collagen (about 50% of bone tissue is protein) and calcium. The protein foods (meat, fish, poultry, eggs, dairy, legumes and nuts) contain amino acids that are the building blocks for repair and maintenance. As well, protein foods contain vitamins and minerals that are essential for good health. Many studies have shown that a diet low in protein can adversely affect bone.

When protein intake is very high, this causes an excess of acid production in the body; thus, an excess protein intake is considered "acid-forming." Body chemistry is very sensitive to what is called pH, or the acid/base relationship. The body's chemistry cannot work well unless the pH balance is maintained within very strict limits. What this means is that if what you eat is acidic or

generates acidity, then your body has to neutralize the blood to keep the pH balance where it needs to be. Calcium is used to neutralize the extra acid that is formed in the body, and this calcium is coming out of your bones: when blood is too acidic, calcium inside the bones is released into circulation to neutralize the excess acidity and to maintain a healthy pH level. When calcium intake is not adequate, a high-acid diet can lead to bone loss over time.

The basis of the assertion that “drinking milk can cause osteoporosis” is derived from the logic that if animal proteins contribute to body acidity, then surely milk, which contains animal protein, must cause calcium to be leached from the bones, as discussed above. Groups such as PETA (People for the Ethical Treatment of Animals) claim that North Americans, with a diet high in dairy products, are at greater risk of osteoporosis and osteoporotic fractures than people who live in countries where dairy products are not a large part of the diet. What is not taken into account by this seemingly logical conclusion is that a typical North American diet does not meet the calcium intake requirements recommended by Osteoporosis Canada, and that many people are not consuming dairy products. Thus the occurrence of osteoporosis in countries such as Canada is not caused by drinking milk, and there are no studies in which drinking milk has been linked to bone loss.

This argument also ignores the fact that osteoporosis is a "multifactorial disease." Calcium and vitamin D are by no means the only factors that contribute to protection against bone loss and osteoporosis. Other factors include genetics, physical activity, agility, and other dietary factors that may influence the absorption and retention of calcium in the body. The "acid load" of a diet may influence how much calcium is retained in the body versus how much is lost in the urine. In general, diets with more fruits and vegetables tend to have a lower "acid load." But if a diet is deficient in calcium, having a diet with a low "acid load" can't make up for that – we cannot synthesize calcium, and have to obtain it in our diet.

To return to the point that osteoporosis is a multifactorial disease, one of the biggest problems with studies that compare osteoporosis rates in different countries is that frequently other variables (in addition to calcium and vitamin D) are different. So, for example, a country with higher rates of habitual physical activity, more vitamin D exposure through sunshine, and without a snowy/icy winter (with the associated risk of falls that lead to fractures) could have a lower fracture rate than a country like Canada with less physical activity, less sunshine, and a snowy/icy winter – even if calcium intakes are higher here.

The question arises: how much protein is too much? There is no true consensus as to what constitutes an optimal intake of protein. Studies show that women and seniors do not consume enough protein daily. In fact, in the elderly, protein deficiency may be an important problem for bone health. Excessive amounts of protein are not a concern for most people and will only cause bone loss if calcium intake is inadequate.

- *Canada's Food Guide* recommends two to three servings per day of 2-3 oz. (57 grams – 85 grams) of meat or meat alternatives.
- The DASH diet (Dietary Approaches to Stop Hypertension), although designed for hypertension, is also good for bone health. It recommends about 75 grams of protein per day (pretty much in line with Canada's Food Guide).
- Dairy products provide 8 grams of protein per serving.

Dairy products are also a good source of calcium that is readily bioavailable. An eight-ounce glass of milk – whole, 2%, 1%, skim or chocolate - will provide about 300 mg of calcium. Milk is also fortified with a small amount of vitamin D, as are some yogurts. A glass of milk provides about 100 IU vitamin D, which can increase the absorption of calcium 30% or more. Meta-

analyses - in which the results of all available studies are considered in their entirety - have demonstrated that calcium and vitamin D have a small but potentially important effect on reducing fracture risk and the risk of falling in older adults. The benefits are observed at intakes that are consistent with those recommended by Osteoporosis Canada – 1500 mg calcium and at least 800 IU vitamin D daily from all sources.

There are many factors that contribute to developing and maintaining healthy bones:

- A balanced diet with adequate calcium and vitamin D
- Physical activity, particularly weight-bearing and weight-resistant activities
- A lifestyle that avoids practices that deplete calcium from the bones, such as:
 - Smoking
 - Excess sodium
 - Excess caffeine
 - Excess alcohol
 - Lack of fruit and vegetables.

Paying attention to all of these factors is the best way to reduce the risk of osteoporosis and osteoporotic fractures.

Funny bone

Two elderly ladies had been friends for many decades. Over the years they had shared all kinds of activities and adventures. Lately, their activities had been limited to meeting a few times a week to play cards. One day they were playing cards when one looked at the other and said, "Now don't get mad at me.....I know we've been friends for a long time but I just can't think of your name! I've thought and thought but I can't remember it. Please tell me what your name is."

Her friend stared at her. For at least three minutes she just stared. Finally she said, "How soon do you need to know?"

Notices/references

i. Remember, it is important for you to eat a healthy diet, get some appropriate exercise, and take your calcium and vitamin D. If your doctor has prescribed a medication don't forget to take it as directed.

ii. Your regular **COPING** newsletter will now be taking a summer break and will return in September. If any important news occurs in that time we will send out a special issue. Don't forget that you can also visit www.osteoporosis.ca for up-to-date information.

iii. Have a wonderful summer!

iv. The material contained in this newsletter is provided for general information only. It should not be relied on to suggest a course of treatment for a particular individual or as a substitute for consultation with qualified health professionals who are familiar with your individual medical needs. Should you have any health care related questions or concerns, you should contact your physician. You should never

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