

## Common Questions Concerning Calcium and Bone Loss - Part II

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Last month we discussed common questions regarding calcium supplementation and bone loss. This month we will conclude that discussion.

### 1. Can diet affect your calcium balance?

Answer: Last month we discussed that one gram of protein, 50 milligrams of sodium, and 15 milligrams of caffeine each cause approximately one milligram of calcium to be excreted in the urine. Although these amounts appear trivial, consider the following example: If a person eats out or consumes canned or frozen food, it is easy to ingest 5,000 mg of sodium per day. Add in two cups of coffee for breakfast, a cola for lunch, iced tea for dinner, and maybe an Excedrin or an Anacin for an ache or pain, and you now have between 300 and 400 mg of caffeine. If this person consumes 75 gm of protein, the total calcium loss will be 200 to 225 mg for the day. The breakdown is: sodium (100 mg), caffeine (20 to 25 mg), and protein (75 to 100 mg). Small daily losses of calcium can be significant over time. This is especially important for people with borderline bone density and/or borderline calcium intake.

### 2. If a woman takes estrogen, does she still need calcium?

Answer: Yes. She also needs vitamin D, magnesium, zinc, manganese, copper, silicon, boron, and vitamins C and K. Although, estrogen promotes bone formation and prevents bone loss, it cannot do this if there are inadequate raw materials available.

### 3. How much calcium is too much?

Answer: There is no reason to consume more than 2,000 to 2,500 mg of calcium per day. Most adults 20 to 50 will do fine on 1,000 to 1,200 mg per day. People over 50 need 1,200 to 1,600 mg per day. Excessive calcium can impair the absorption of magnesium, iron, zinc, and manganese. Excessive calcium can also lead to constipation, kidney stones, and calcium deposition in soft tissues. Calcium is quite safe and well tolerated in the vast majority of people.

### 4. I heard that calcium carbonate is no good? What is the best form of calcium?

Answer: In my opinion calcium carbonate has been given a bad rap by the supplement industry. The reason is that other forms of calcium are more profitable. Calcium carbonate is one of the least expensive forms of calcium. It has a higher percentage of elemental calcium than any other form. Thus, compared to other types of calcium, you can take fewer pills to meet your requirements. It is true that there are types of calcium that have higher absorption profiles. The best forms are citrate-malate, citrate, and microcrystalline hydroxyapatite (MCHC). Other well absorbed forms include calcium ascorbate, aspartate and phosphate. For persons who have digestive problems or active bone disease, I will recommend formulas that contain multiple sources of calcium. However, the average person does well on calcium carbonate.

In a very interesting two-year study 60 postmenopausal women without osteoporosis were divided into three groups. Group one consumed a placebo supplement and had a mean intake of 683 mg of calcium per day. The second group followed their regular diet along with four glasses of milk daily, for an average daily calcium intake of 1,028 mg. The third group received a calcium carbonate supplement of 1,000 mg per day, and had a mean intake of 1,633 mg. After two years, group one lost three percent of the bone mineral density at their greater trochanter. The second group had minimal bone loss. The third group, which supplemented with 1,000 mg of calcium carbonate, had a significant bone mineral density increase, both in their spines and femurs. The next time a vitamin representative tells you that your grandmother will not absorb calcium carbonate, show them this study.

Another very interesting finding in this study was that bone loss was significantly greater during the two winters. Researchers felt that because of less sun exposure and weaker rays, vitamin D synthesis was depressed.<sup>1</sup>

5. Is there any way to tell if I am absorbing the calcium product I use?

Answer: Yes. By getting regular bone density studies you will be able to tell if the type and form of calcium that you are using is being absorbed. Calcium that comes in chewable form, capsule form, or powder form will generally not have an absorption problem in the duodenum and proximal ileum where maximum calcium absorption takes place. However, some tablets do not completely dissolve. No matter what type of calcium is in your tablet, if it cannot dissolve, it cannot be absorbed. An easy way to see if your tablet of calcium is breaking down can be done by taking an eight-ounce glass of warm water and stirring in one teaspoon of vinegar. Then drop in your calcium tablet, wait five minutes and stir. Wait five more minutes, stir again, and check. If the water is not cloudy and you don't notice significant breakdown of the tablet, I recommend that you change brands.

6. Is there anything else that helps calcium absorption?

Answer: There is a recently developed product called ipriflavone, a synthetic bioflavonoid with a structure similar to isoflavones. In a study of 56 newly postmenopausal women with decreased bone mineral density, one group received 1,000 mg of calcium per day and a placebo; the second group received 1,000 mg of calcium per day with 600 mg of ipriflavone in divided doses. After two years, the calcium only group sustained losses in bone mineral density. The group that took calcium with Ipriflavone maintained their bone mass.

### References

1. Storm D et al. Calcium supplementation prevents seasonable bone loss and changes in biochemical markers of bone turnover in elderly New England women. A randomized placebo controlled trial. *J Clin Endocrinol Metab*, 1999;83, (11):3817-3825.
2. C. Gennari et al. Effect of ipriflavone - a synthetic derivative of natural isoflavone - on bone mass loss in the early years after menopause. *Journal of the North American Menopause Society*, 1998;(1): 9-15.

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