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'A NEWSLETTER FROM COPN'

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Remember: You can live well with osteoporosis!

Thought for today: A discarded pop can will last forever; a \$40,000 car, properly cared for, rusts out in 3-4 years.

This is the second part of a three-part series on:

Calcium Absorption and Bone Health, Part II

By Ina Ilse

Calcium is absorbed by the intestines and moved into the bloodstream for ready use. Typical calcium absorption from meals ranges from 25 – 35% in adults. The amount that will be absorbed is determined by many factors:

1. Quantity and form of calcium ingested.
2. The composition of the diet, in other words, what type of food is eaten.
3. The calcium and Vitamin D status of the consuming individual.
4. The age, stomach acid secretion and intestinal transit time of the individual.
(Transit time means the length of time it takes for the food to move through the gut.)

How do we know if we are getting enough calcium? How is calcium absorption measured?

Because there is always a certain amount of circulating calcium in the blood, it is difficult to measure the amount of calcium absorbed from foods only. So to get accurate absorption data from ingested calcium, scientists used food that had been labeled with a specific type of marker. The individuals who participated in the study consumed this food and then, for a period of time (from 4 hours after the meal to about 48 hours after the meal), all feces and urine were collected by the participants. Because it was known how much labeled calcium the individuals ingested, all the labeled calcium excreted or put out in the urine was measured. The investigators would then do a simple calculation by which they could show how much calcium had been absorbed.

There are many good food sources of calcium: dairy products (the most abundant), leafy green vegetables, legumes, fish, e.g., salmon and sardines with the bones also consumed, calcium-fortified tofu, almonds, dried figs and even oranges, plus a variety of grain products.

Because many people have become concerned about the number of calories they consume, getting enough calcium in their diet has become quite a challenge. Dairy products contain high levels of readily absorbable calcium. From one cup of skim milk, one gets 300mg of calcium and the caloric value is low.

Green leafy vegetables, for the most part, are rich in calcium; however, not all the calcium in these plant foods is available for absorption by the intestinal tract. Spinach is very rich in calcium, but spinach contains high levels of oxalic acid, which forms very strong bonds with the calcium and so it will not yield much of its calcium content (only 5%). Kale, however, also a leafy green vegetable, has very low quantities of oxalic acid; thus, calcium absorption from kale can be as much as 41%. When calcium is bound to large molecules such as proteins and carbohydrates, calcium absorption in the intestines will be slowed down, but digestion reduces these molecules to absorbable sizes and, depending on how fast the food moves through the system, some will be absorbed.

Another very interesting discovery was the fact that, even though the spinach does not give up its calcium very readily, in combination with a dairy product, it will yield up to 14% of its calcium. At the same time, some of the calcium absorption in the dairy products was slightly inhibited. This finding led the authors to believe that in the presence of certain substances, spinach will yield some of its calcium without much compromise to the calcium from the other substances. In other words, there will not be a negative calcium effect due to the presence of spinach or other high oxalic-acid-containing foods when taken in combination with other foods. Now, despite the inhibitory effects of many dietary components such as phytates, fibre, phosphates and fats, the bioavailability of calcium from these foods is remarkably uniform in most healthy individuals.

Watch for more information about calcium in an up-coming issue of
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Funny Bone: A flashlight is a case for holding dead batteries.

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

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