

Calcium

The hard fact behind coral reefs, marble statues, antlers, tusks and bones

LISA VAN DE GEYN

Got milk? If the only moo juice in your diet is the splash you put in your morning coffee, you may be lacking in the most abundant mineral in the human body—yet one that’s anything but abundant in many diets.

While calcium is celebrated for its role in building bones and teeth, it is, in fact, crucial to every cell in your body. It’s essential in nerve and brain function, hormone release, muscle contraction and your heart’s electrical pumping system. It also binds to and helps eliminate toxic by-products of digestion.

THE BASICS

Almost all — 99% — of the body’s calcium is found in the skeleton and teeth; the rest is located largely in blood, muscle and the fluid between cells. The best sources for keeping up your body’s critical calcium supply are food and drink, not supplements, says Dr. Robert Heaney, a researcher in calcium nutrition at Creighton University in Omaha, Neb. “For calcium to be effective in supporting bone health, it needs to be taken into the body with an adequate quantity of protein, phosphorus, vitamin D and a whole host of other nutrients.”

That’s because nutrients are like the instruments in a symphony orchestra: you need the complete complement working together to get the maximum effect. “Supplements should be used precisely as their name suggests — as adjuncts to an



otherwise good diet,” says Heaney.

Besides the calcium-rich dairy family, the white stuff can also be

found in leafy greens (kale, broccoli, bok choy), legumes (lentils, beans, peas), bone-in fish (canned salmon,

Tips for getting more calcium



Switch to calcium-fortified orange juice.

Sprinkle fat-free or low-fat cheese into salads, pasta and soup.

Make fruity breakfast smoothies with fat-free or low-fat yogourt.



Add fat-free or low-fat milk instead of water to soups, oatmeal and hot chocolate.

Snack on veggies with dips made of fat-free or low-fat yogourt,

Add calcium-set tofu to stir-fries and soups.

Toss a few almonds or pecans into salads and cereals.



Include seeds such as poppy, dill, celery and sunflower in your diet.

Sweeten your yogourt with a tablespoon (15 mL) of molasses.

Although the science is inconclusive regarding the impact of excess salt, caffeine, protein and alcohol on calcium excretion or absorption, take care that foods high in these components don't edge out important dairy, nut and vegetable sources of calcium.



sardines) and fortified orange juice and soy beverages. Seeds, almonds and pecans are decent sources, too.

Calcium is absorbed into the blood from the intestines with the crucial help of vitamin D, a fat-soluble vitamin found in fortified milk and fatty fish such as salmon, rainbow trout, Arctic char, mackerel, sardines, anchovies and tuna. Liver, egg yolk and lean beef also supply it.

Exposure to the sun's UV rays triggers the body to make vitamin D from a cholesterol-like substance in the skin. Vitamin D signals the intestines to increase the absorption of calcium as needed. Basically, notes Heaney, calcium is not easily absorbed by adults from the intestinal tract, and uptake declines with age. Net absorption from a typical calcium serving such as a glass of milk can be as little as 10% of the total calcium therein. "The reason absorption is poor is that there was a surfeit of this nutrient in the primitive environment in which human physiology evolved," he says. "Low absorption protected early humans against excess calcium in the diet." Unfortunately, these braking mechanisms are ill-suited to the modern age, and that's why

dairy products, which were not part of the calcium-rich primitive diet of leaves, seeds, nuts, roots and tubers, are so important for us today.

Calcium is excreted in urine, feces, sweat, skin, nails and hair. Although the studies are inconclusive, some research suggests that diets high in sodium, phosphorus, caffeine and protein and low in potassium can accelerate calcium excretion. Excess alcohol may hinder the absorption of calcium and interfere with vitamin D activation.

HOW MUCH?

Most people ages 18 to 50 should consume about 1,000 milligrams (mg) daily — which, according to *Canada's Food Guide*, translates to two to three dairy servings. The amount goes up to about 1,200 mg for pregnant or nursing women under age 18, as well as people over age 51. Some at-risk older women may require up to 1,500 mg.

While it's important to get the recommended amount daily, too much calcium can be harmful. "The tolerable upper limit for the intake of calcium is 2,500 mg a day," says Montreal-based registered dietitian

Kim Arrey. "It's only possible to have an intake of this magnitude if you consume supplements, drink litres of milk or eat mounds of cheese each day." In the days before modern antacid drugs, some ulcer sufferers developed hypercalcemia by doing just that! Elevated blood levels of calcium can leave damaging deposits in the kidneys and arteries, as well as block absorption of other minerals such as zinc, magnesium and iron.

SIGNS OF DEFICIENCY

Bad news: there's no easy way to tell if you're not getting enough. "Bone provides such a huge reserve of calcium that the only effect of low intake is a reduction in skeletal strength," says Heaney. And that might go unnoticed until a fracture announces osteoporosis. "In the short term, the only way to know if you're getting enough is by looking at what you're eating," says Arrey. Or by having a bone test. Your intake could be deficient if you're vegan, lactose-intolerant or post-menopausal.

For current Dietary Reference Intakes, go to www.canadian-health.ca. Click on Past Issues, September/October 2007,

"Calcium and Vitamin D."