

# Calcium

## Fact Sheet for Consumers



**Calcium-rich foods include milk, cheese, and yogurt; vegetables like kale, broccoli, and Chinese cabbage; and canned sardines and salmon with soft bones that you eat.**



**National Institutes of Health**  
*Office of Dietary Supplements*

# What is calcium and what does it do?

Calcium is a mineral found in many foods. The body needs calcium to maintain strong bones and to carry out many important functions. Almost all calcium is stored in bones and teeth, where it supports their structure and hardness.

The body also needs calcium for muscles to move and for nerves to carry messages between the brain and every body part. In addition, calcium is used to help blood vessels move blood throughout the body and to help release hormones and enzymes that affect almost every function in the human body.

## How much calcium do I need?

The amount of calcium you need each day depends on your age. Average daily recommended amounts for different ages are listed below and on the next page in milligrams (mg):

<b>Life Stage</b>	<b>Recommended Amount</b>
Birth to 6 months	200 mg
Infants 7–12 months	260 mg

## Life Stage

## Recommended Amount

Children 1–3 years

700 mg

Children 4–8 years

1,000 mg

Children 9–13 years

1,300 mg

Teens 14–18 years

1,300 mg

Adults 19–50 years

1,000 mg

Adult men 51–70 years

1,000 mg

Adult women 51–70 years

1,200 mg

Adults 71 years and older

1,200 mg

Pregnant and breastfeeding teens

1,300 mg

Pregnant and breastfeeding adults

1,000 mg

# What foods provide calcium?

Calcium is found in many foods. You can get recommended amounts of calcium by eating a variety of foods, including the following:

- Milk, yogurt, and cheese are the main food sources of calcium for the majority of people in the United States.
- Kale, broccoli, and Chinese cabbage are fine vegetable sources of calcium.
- Fish with soft bones that you eat, such as canned sardines and salmon, are fine animal sources of calcium.
- Most grains (such as breads, pastas, and unfortified cereals), while not rich in calcium, add significant amounts of calcium to the diet because people eat them often or in large amounts.
- Calcium is added to some breakfast cereals, fruit juices, soy and rice beverages, and tofu. To find out whether these foods have calcium, check the product labels.

# What kinds of calcium dietary supplements are available?

Calcium is found in many multivitamin-mineral supplements, though the amount varies by product. Dietary supplements that contain only calcium or calcium with other nutrients such as vitamin D are also available. Check the Supplement Facts label to determine the amount of calcium provided.

The two main forms of calcium dietary supplements are carbonate and citrate. Calcium carbonate is inexpensive, but is absorbed best when taken with food. Some over-the-counter antacid products, such as Tums<sup>®</sup> and Rolaids<sup>®</sup>, contain calcium carbonate. Each pill or chew provides 200–400 mg of calcium. Calcium citrate, a more expensive form of the supplement, is absorbed well on an empty or a full stomach. In addition, people with low levels of stomach acid (a condition more common in people older than 50) absorb calcium citrate more easily than calcium carbonate. Other forms of calcium in supplements and fortified foods include gluconate, lactate, and phosphate.

Calcium absorption is best when a person consumes no more than 500 mg at one time. So a person who takes 1,000 mg/day of calcium from supplements, for example, should split the dose rather than take it all at once.

Calcium supplements may cause gas, bloating, and constipation in some people. If any of these symptoms occur, try spreading out the calcium dose throughout the day, taking the supplement with meals, or changing the supplement brand or calcium form you take.

## Am I getting enough calcium?

Many people don't get recommended amounts of calcium from the foods they eat, including:

- Boys aged 9 to 13 years
- Girls aged 9 to 18 years
- Women older than 50 years
- Men older than 70 years

When total intakes from both food and supplements are considered, many people —particularly adolescent girls—still fall short of getting enough calcium, while some older women likely get more than the upper limit. See our *Health Professional Fact Sheet* on Calcium for more details.

Certain groups of people are more likely than others to have trouble getting enough calcium:

- Postmenopausal women because they experience greater bone loss and do not absorb calcium as well. Sufficient calcium intake from food, and supplements if needed, can slow the rate of bone loss.
- Women of childbearing age whose menstrual periods stop (amenorrhea) because they exercise heavily, eat too little, or both. They need sufficient calcium to cope with the resulting decreased calcium absorption, increased calcium losses in the urine, and slowdown in the formation of new bone.
- People with lactose intolerance cannot digest this natural sugar found in milk and experience symptoms like bloating, gas, and diarrhea when they drink more than small amounts at a time. They usually can eat other calcium-rich dairy products that are low in lactose, such as yogurt and many cheeses, and drink lactose-reduced or lactose-free milk.
- Vegans (vegetarians who eat no animal products), and ovo-vegetarians (vegetarians who eat eggs but no dairy products), because they avoid the dairy products that are a major source of calcium in other people's diets.

Many factors can affect the amount of calcium absorbed from the digestive tract, including:

- Age. Efficiency of calcium absorption decreases as people age. Recommended calcium intakes are higher for people over age 70.
- Vitamin D intake. This vitamin, present in some foods and produced in the body when skin is exposed to sunlight, increases calcium absorption.
- Other components in food. Both oxalic acid (in some vegetables and beans) and phytic acid (in whole grains) can reduce calcium absorption. People who eat a variety of foods don't have to consider these factors. They are accounted for in the calcium recommended intakes, which take absorption into account.

Many factors can also affect how much calcium the body eliminates in urine, feces, and sweat. These include consumption of alcohol- and caffeine-containing beverages as well as intake of other nutrients (protein, sodium, potassium, and phosphorus). In most people, these factors have little effect on calcium status.



# What happens if I don't get enough calcium?

Insufficient intakes of calcium do not produce obvious symptoms in the short term because the body maintains calcium levels in the blood by taking it from bone. Over the long term, intakes of calcium below recommended levels have health consequences, such as causing low bone mass (osteopenia) and increasing the risks of osteoporosis and bone fractures.

Symptoms of serious calcium deficiency include numbness and tingling in the fingers, convulsions, and abnormal heart rhythms that can lead to death if not corrected. These symptoms occur almost always in people with serious health problems or who are undergoing certain medical treatments.

# What are some effects of calcium on health?

Scientists are studying calcium to understand how it affects health. Here are several examples of what this research has shown:

## **Bone health and osteoporosis**

Bones need plenty of calcium and vitamin D throughout childhood and adolescence to reach their peak strength and calcium content by about age 30. After that, bones slowly lose calcium, but people can help reduce these losses by getting recommended amounts of calcium throughout adulthood and by having a healthy, active lifestyle that includes weightbearing physical activity (such as walking and running).

Osteoporosis is a disease of the bones in older adults (especially women) in which the bones become porous, fragile, and more prone to fracture.

Osteoporosis is a serious public health problem for more than 10 million adults over the age of 50 in the United States. Adequate calcium and vitamin D intakes as well as regular exercise are essential to keep bones healthy throughout life.

Taking calcium and vitamin D supplements reduce the risk of breaking a bone and the risk of falling in frail, elderly adults who live in nursing homes and

similar facilities. But it's not clear if the supplements help prevent bone fractures and falls in older people who live at home.

## **Cancer**

Studies have examined whether calcium supplements or diets high in calcium might lower the risks of developing cancer of the colon or rectum, or increase the risk of prostate cancer. The research to date provides no clear answers. Given that cancer develops over many years, longer term studies are needed.

## **Cardiovascular Disease**

Some studies show that getting enough calcium might decrease the risk of heart disease and stroke. Other studies find that high amounts of calcium, particularly from supplements, might increase the risk of heart disease. But when all the studies are considered together, scientists have concluded that as long as intakes are not above the upper limit, calcium from food or supplements will not increase or decrease the risk of having a heart attack or stroke.

## **High blood pressure**

Some studies have found that getting recommended intakes of calcium can reduce the risk of developing high blood pressure (hypertension). One large study in particular found that eating a diet high in fat-free and low-fat dairy products, vegetables, and fruits lowered blood pressure.

## **Preeclampsia**

Preeclampsia is a serious medical condition in which a pregnant woman develops high blood pressure and kidney problems that cause protein to spill into the urine. It is a leading cause of sickness and death in pregnant women and their newborn babies. For women who get less than about 900 mg of calcium a day, taking calcium supplements during pregnancy (1,000 mg a day or more) reduces the risk of preeclampsia. But most women in the United States who become pregnant get enough calcium from their diets.

## **Kidney stones**

Most kidney stones are rich in calcium oxalate. Some studies have found that higher intakes of calcium from dietary supplements are linked to a greater risk of kidney stones, especially among older adults. But calcium from foods does not appear to cause kidney stones. For most people, other factors (such as not drinking enough fluids) probably have a larger effect on the risk of kidney stones than calcium intake.

## **Weight loss**

Although several studies have shown that getting more calcium helps lower body weight or reduce weight gain over time, most studies have found that calcium—from foods or dietary supplements—has little if any effect on body weight and amount of body fat.

## Can calcium be harmful?

Getting too much calcium can cause constipation. It might also interfere with the body's ability to absorb iron and zinc, but this effect is not well established. In adults, too much calcium (from dietary supplements but not food) might increase the risk of kidney stones. Some studies show that people who consume high amounts of calcium might have increased risks of prostate cancer and heart disease, but more research is needed to understand these possible links.

The upper limits for calcium are listed below. Most people do not get amounts above the upper limits from food alone; excess intakes usually come from the use of calcium supplements. Surveys show that some older women in the United States probably get amounts somewhat above the upper limit since the use of calcium supplements is common among these women.

### Life Stage

### Upper Limit

Birth to 6 months

1,000 mg

Infants 7–12 months

1,500 mg

Children 1–8 years

2,500 mg

Children 9–18 years

3,000 mg

## Life Stage

## Upper Limit

Adults 19–50 years

2,500 mg

Adults 51 years and older

2,000 mg

Pregnant and breastfeeding teens

3,000 mg

Pregnant and breastfeeding adults

2,500 mg

## Are there any interactions with calcium that I should know about?

Calcium dietary supplements can interact or interfere with certain medicines that you take, and some medicines can lower or raise calcium levels in the body. Here are some examples:

- Calcium can reduce the absorption of these drugs when taken together:
  - Bisphosphonates (to treat osteoporosis)
  - Antibiotics of the fluoroquinolone and tetracycline families
  - Levothyroxine (to treat low thyroid activity)

- Phenytoin (an anticonvulsant)
- Tiludronate disodium (to treat Paget's disease)
- Diuretics differ in their effects. Thiazide-type diuretics (such as Diuril<sup>®</sup> and Lozol<sup>®</sup>) reduce calcium excretion by the kidneys which in turn can raise blood calcium levels too high. But loop diuretics (such as Lasix<sup>®</sup> and Bumex<sup>®</sup>) increase calcium excretion and thereby lower blood calcium levels.
- Antacids containing aluminum or magnesium increase calcium loss in the urine
- Mineral oil and stimulant laxatives reduce calcium absorption
- Glucocorticoids (such as prednisone) can cause calcium depletion and eventually osteoporosis when people use them for months at a time

Tell your doctor, pharmacist, and other health care providers about any dietary supplements and medicines you take. They can tell you if those dietary supplements might interact or interfere with your prescription or over-the-counter medicines or if the medicines might interfere with how your body absorbs, uses, or breaks down nutrients.

# Calcium and healthful eating

People should get most of their nutrients from food, advises the federal government's *Dietary Guidelines for Americans*. Foods contain vitamins, minerals, dietary fiber and other substances that benefit health. In some cases, fortified foods and dietary supplements may provide nutrients that otherwise may be consumed in less-than-recommended amounts. For more information about building a healthy diet, refer to the *Dietary Guidelines for Americans* and the U.S. Department of Agriculture's MyPlate.

## Where can I find out more about calcium?

### **For general information on calcium:**

- Office of Dietary Supplements Health Professional Fact Sheet on Calcium
- Calcium and Calcium in diet, MedlinePlus®

### **For more information on food sources of calcium:**

- ODS Health Professional Fact Sheet on Calcium
- U.S. Department of Agriculture's (USDA) National Nutrient Database
- Nutrient List for calcium listed by food or by calcium content, USDA



## For more advice on buying dietary supplements:

- Office of Dietary Supplements Frequently Asked Questions: Which brand(s) of dietary supplements should I purchase?

## For information about building a healthy diet:

- MyPlate
- *Dietary Guidelines for Americans*

## Disclaimer

This fact sheet by the Office of Dietary Supplements provides information that should not take the place of medical advice. We encourage you to talk to your health care providers (doctor, registered dietitian, pharmacist, etc.) about your interest in, questions about, or use of dietary supplements and what may be best for your overall health. Any mention in this publication of a specific brand name is not an endorsement of the product.



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