



Calcium



Calcium is the most abundant mineral in the body. It is found in some foods (particularly dairy) and can be added or supplemented to other 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.

Your body needs different amounts of calcium at different stages of your life. Like when you are pregnancy, you need more calcium or when you are older, to help keep your bones strong.



Adults need at least 3 serves of dairy foods every day to get enough calcium.

One serve is: 1 cup milk
30g cheese
200g (tub) yoghurt

Sources of Calcium

Milk, yogurt, and cheese are rich natural sources of calcium and are the major food contributors of this nutrient to people in the United States. Nondairy sources include vegetables, such as Chinese cabbage, kale, broccoli, okra and dried fish. Spinach provides calcium, but it is hard for the body to absorb, so its not a good source. Most grains do not have high amounts of calcium unless they are fortified; however, they contribute calcium to the diet because they contain small amounts of calcium and people consume them frequently.



Yoghurt, soymilk, cow's milk, tofu and dried fish (particularly with edible bones) have the highest amount of calcium (between 200-400mg). Having one serve of one of these dishes (which is 250mls for yoghurt, soymilk and cow's milk or ½ cup Tofu, or 35g Dried Fish), will give you half your daily requirement for calcium. Cheese is also a really good source of calcium. Turnip greens, kale, Chinese cabbage or bok choy, and okra are also good sources of calcium and should be added to meals as much as possible.

Calcium Deficiency:

Inadequate intakes of dietary calcium from food and supplements produce no obvious symptoms in the short term. Circulating blood levels of calcium are tightly regulated. Hypocalcemia results primarily from medical problems or treatments, including renal failure, surgical removal of the stomach, and use of certain medications (such as diuretics).

Symptoms of low calcium include:

1. numbness and tingling in the fingers,
2. muscle cramps,
3. convulsions (like seizures),
4. lethargy (extreme tiredness),
5. poor appetite, and
6. abnormal heart rhythms.



Over the long term, inadequate calcium intake causes osteopenia which if untreated can lead to osteoporosis. The risk of bone fractures also increases, especially in older individuals. Calcium deficiency can also cause rickets, though it is more commonly associated with vitamin D deficiency. Although frank calcium deficiency is uncommon, dietary intakes of the nutrient below recommended levels might have negative health consequences over the long term.

There are certain groups who are more at risk of developing calcium deficiencies. These include:

1. postmenopausal women because decreases in estrogen production increase bone reabsorption and decrease calcium absorption.
2. Women whose menstrual periods stop or fail to initiate in women of childbearing age for whatever reason (including anorexia, female athletes) are also at risk of calcium deficiency
3. Individuals with lactose intolerance or cow's milk allergy
4. Vegetarians/vegans – vegetarians might absorb less calcium because they consume more plant products containing oxalic and phytic acids.
5. Vegans who eat no animal products might not obtain sufficient calcium.

Symptoms of lactose intolerance are bloating, flatulence and diarrhea. It has been suggested that 85% of Asians have a limited ability to digest lactose. This could mean that people avoid cow's milk and dairy products because they feel sick when they eat them, which means they would be getting enough calcium. Soymilk and soy based products are a very good alternative for people who are lactose intolerant.

Humans absorb about 30% of the calcium in foods, but this varies depending upon the type of food consumed. Other factors also affect calcium absorption including the following:

1. Amount consumed: the efficiency of absorption decreases as calcium intake increases
2. Age and life stage: net calcium absorption is as high as 60% in infants and young children, who need substantial amounts of the mineral to build bone. Absorption decreases to 15%–20% in adulthood (though it is increased during pregnancy) and continues to decrease as people age;
3. Vitamin D intake: this nutrient, obtained from food and produced by skin when exposed to sunlight of sufficient intensity, improves calcium absorption
4. Other components in food: phytic acid and oxalic acid, found naturally in some plants, bind to calcium and can inhibit its absorption. Foods with high levels of oxalic acid include spinach, collard greens, sweet potatoes, rhubarb, and beans. Among the foods high in phytic acid are fiber-containing whole-grain products and wheat bran, beans, seeds, nuts, and soy isolates. The extent to which these compounds affect calcium absorption varies.

What to do if you are deficient in Calcium:

If you get diagnosed with having a calcium deficiency, there are a few things you can do. Because there are lots of causes of calcium deficiency, it would be good to figure out why you are calcium deficient.

1. If you are not getting enough calcium in your diet – start eating more dairy, or soy products and vegetables that contain calcium (see the above section “Sources of Calcium”).
2. If you are getting enough calcium, but are not absorbing it –
 - a. you might not be getting enough Vitamin D. The easiest way to get Vitamin D is from the sun.
 - b. you might be taking medicine that restricts absorption of calcium, like diuretics.

You should always try to correct nutritional imbalances with diet first, rather than going straight to supplements. But, if you have tried the above steps, and are still calcium deficient, it might be a good idea to start supplements. If the problem is that you are not getting enough Vitamin D, you should start by taking just vitamin D supplements, and trying to get the right amount of calcium from your food. There is another handout on Vitamin D. If you are still having problems with calcium deficiency after all of these steps, you should return to your doctor. There are some very rare diseases, such as cancer, that can cause calcium deficiency. DON'T BE ALARMED, these are very rare!

Osteoporosis:

Osteoporosis is a disorder characterized by porous and fragile bones. It occurs most commonly in older women, but it can occur in men too. When calcium intake is low or ingested calcium is poorly absorbed, bone breakdown occurs as the body uses its stored calcium to maintain normal biological functions. Bone loss also occurs as part of the normal aging process, particularly in postmenopausal women due to decreased amounts of estrogen. Many factors increase the risk of developing osteoporosis, including being female, thin, inactive, or of advanced age; smoking cigarettes; drinking excessive amounts of alcohol; and having a family history of osteoporosis

Too Much Calcium:

Excessively high levels of calcium can cause renal insufficiency, vascular and soft tissue calcification, hypercalciuria (high levels of calcium in the urine) and kidney stone. High calcium intake can cause constipation. It might also interfere with the absorption of iron and zinc, though this effect is not well established. High intake of calcium from supplements, but not foods, has been associated with increased risk of kidney stones.