

## Not just for bones, calcium is crucial for cardiac functioning too! Here's how to ensure you're never deficient

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Comments

Not just for bones, calcium is crucial for cardiac functioning too! Here's how to ensure you're never deficient

**This mineral is extremely important for many bodily functions. So make sure you consume it in the right quantities, writes Rashmi Ramesh.**

Calcium is important for not just healthy bones but also a number of bodily functions, such as those involving muscles and nerves, and maintaining a healthy heart.

While calcium is critical for bone health, it also helps in nerve transmission, muscle contraction, bloodclot formation, membrane permeability and signal transduction, said Nivedita Pavithran, chief dietician at Kochi-based Amrita Institute of Medical Sciences.

Calcium is rarely thought of as a nutrient crucial for cardiac functioning. However, in reality, it is. "Calcium is required by the heart so that it can contract and pump out blood to all our body parts. It is also needed for proper functioning of the electrical or conduction system of the heart, thus ensuring that it beats automatically," said Dr Rahul Chaudhary, consultant (cardiology) at Delhi's Aakash Healthcare Super Speciality Hospital.

So if you don't want your heart to skip a beat, make sure you get enough calcium every day.

Calcium is also necessary for many general metabolic functions in the body, said Arfa Samreen, senior dietician at Bengaluru-based Vikram Hospital. "Apart from being responsible for bone health, calcium regulates muscle contraction, including the beating of the heart muscle; it also regulates blood pressure and is necessary for blood clotting," she said.

As much as 99% of calcium in our body is stored in bones and teeth, said Dr Pradeep Sharma, head of Delhibased BLK Centre for Orthopaedics, Joint Reconstruction and Spine Surgery. "Calcium serves many functions in the body – its key function is to form the structures that give our bones and teeth their strength and shape," he said.

### SOURCES OF CALCIUM

Calcium is readily found in milk and milk products, but several fruits, vegetables and meat also contain a good amount of the mineral.



(Image: Thinkstock)

"Ragi, whole Bengal gram, soyabean, anchovies, oysters, leafy vegetables, especially agathi, amaranth, fenugreek, spinach and drumstick leaves, as well as chia and sesame seeds contain calcium," said Pavithran.

According to Samreen, calcium is found in greens such as broccoli, turnip greens and spinach; fish such as salmon and sardines, and fruits such as oranges and figs. "It is also found in nuts, oats, black beans and kidney beans. You can also get your calcium from calcium-fortified tofu, fruit juices, cereals, cereal bars and soy milk," she said.

### ENSURE ABSORPTION

Even if you ingest enough calcium, it needs to be absorbed into your bloodstream to perform its functions.

"Vitamin D is required for calcium absorption. The best source of vitamin D is sunshine for approximately 20 minutes per day. Magnesium is also vital for calcium absorption. A magnesium-rich diet can be helpful both for arthritis and for preventing osteoporosis. This consists of nuts, whole grains such as brown rice, millet, buckwheat, whole wheat and rye, and legumes including lentils, split peas and a variety of beans," said Samreen.

"Not all the calcium in the diet can be readily absorbed from the gut. The calcium that is most readily absorbed is found in dairy products and eggs," she said.

### IN CASE OF DEFICIENCY

Calcium deficiency can be caused due to inadequate calcium intake, poor calcium absorption or excessive calcium losses, or a combination of these factors, said Pavithran.

"Hypocalcemia results primarily from medical problems or treatments, including renal failure, surgical removal of the stomach and use of certain medications (such as diuretics)," said Samreen.

People with colon cancer, inflammatory bowel disease, type 2 diabetes and obesity, as well as post-menopausal women usually have calcium deficiency, said Pavithran.

"Menopause leads to bone loss as a decrease in estrogen production both increases bone resorption and decreases calcium absorption," said Samreen. "Women with amenorrhea — which is a condition in which periods stop or fail to initiate in women of child-bearing age — have reduced circulating estrogen levels, which can have a negative effect on calcium balance. Amenorrhic women with anorexia nervosa have decreased calcium absorption and higher urinary calcium excretion rates as well as a lower rate of bone formation than healthy women."

Having too little calcium has been linked with heart failure, low blood pressure (hypotension) and lifethreatening rhythm disorders of the heart, said Chaudhary.

"In 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," said Samreen.

As we get older, our bones (where calcium is stored) start to thin, so they become less dense and more brittle, which can cause osteoporosis, according to Sharma. "Children and teenagers are more prone to calcium deficiency in later stages if not provided with the required nourishment. With age, the body tends to lose the capacity to store calcium. Hence, it is advisable to consult a doctor and increase the consumption of calcium-rich foods or add supplements," he said.

### DIETARY INFLUENCES

Individuals with lactose intolerance, cow-milk allergy or those who are vegans are at risk of calcium inadequacy as they avoid dairy products, said Samreen.

"While cow-milk allergy is less common than lactose intolerance, people with both conditions are unable to consume any product containing cow's milk proteins and are therefore at a higher risk of obtaining insufficient calcium," she said.

Vegetarians may absorb less calcium than omnivores because they consume more plant products containing oxalic and phytic acids, which interfere with calcium absorption, said Samreen. Lacto-ovo vegetarians (who consume eggs and dairy) and nonvegetarians have similar calcium intakes. However, vegans, who eat no animal product and ovo-vegetarians (who eat eggs but no dairy products), might not obtain sufficient calcium because of their avoidance of dairy foods, she said.

### TOO MUCH OF CALCIUM

Most people using calcium supplements do not have serious side effects, but taking calcium supplements in large doses without medical supervision can cause hypercalcemia (high levels of calcium in the blood) leading to serious health issues, said Samreen.

Too much calcium can also lead to weakening of bones and cause kidney stones. "Excessively high levels of calcium in the blood, known as hypercalcemia, can cause renal insufficiency," said Sharma. "It can cause constipation and decreased intestinal absorption of several minerals like iron, magnesium and zinc, thereby reducing the bioavailability (the degree and rate at which an administered drug is absorbed by the body's circulatory system) of these essential nutrients."

Hypercalcemia can interfere with the way the brain works, resulting in confusion, lethargy and fatigue. "In most cases, the excess calcium in your blood is leached from your bones, which weakens them. This can cause bone pain, muscle weakness and depression," said Sharma.

"The right amount of calcium also ensures that the clotting system in your body works properly. (But) too much calcium can cause irregularities in the way your heart beats, resulting in transient loss of consciousness," said Chaudhary.

### CONTOVERSY

Doubts have been raised over calcium supplements and their effect on cardiac health. "Results from different clinical trials are conflicting and there is no conclusive relation between calcium supplements and increased risk of heart attack," said Chaudhary.