

# The role of calcium in the body and consequences of deficiency.

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## Introduction

Calcium is an essential mineral that plays a vital role in several biological processes. It is necessary for building and maintaining strong bones and teeth, muscle function, nerve transmission, blood clotting, and several other critical functions. In this article, we will discuss the role of calcium in the body and the consequences of calcium deficiency.

## The role of calcium in the body

Calcium is a mineral that the body needs in significant amounts. It is essential for bone health, and about 99% of the body's calcium is stored in the bones and teeth. The remaining 1% is used for various essential functions throughout the body. Calcium is essential for muscle function, including the contraction and relaxation of muscles. It also helps with the transmission of nerve impulses, blood clotting, and the secretion of various hormones and enzymes. Calcium also plays a critical role in cell signaling and communication. It helps to regulate the heartbeat, maintain a healthy blood pressure, and keep the body's pH levels balanced [1].

## Consequences of calcium deficiency

Calcium deficiency can have severe consequences on the body. It can lead to a range of health problems, including:

**Osteoporosis:** Calcium deficiency can weaken the bones and increase the risk of fractures, leading to osteoporosis. This condition is characterized by decreased bone density and strength, making the bones fragile and susceptible to fractures.

**Dental problems:** Calcium deficiency can lead to dental problems, including tooth decay and gum disease.

**Muscle cramps and spasms:** Calcium plays a crucial role in muscle function, and a deficiency can cause muscle cramps and spasms.

**Numbness and tingling:** Calcium deficiency can cause tingling and numbness in the fingers and toes, known as paresthesia.

**Fatigue:** Low calcium levels can lead to fatigue and weakness.

**Increased risk of heart disease:** Calcium is essential for maintaining a healthy heart, and a deficiency can increase the risk of cardiovascular disease.

**Mood changes:** Calcium deficiency can affect mood, leading to anxiety and depression [2].

## Causes of calcium deficiency

Several factors can contribute to calcium deficiency, including:

**Inadequate dietary intake:** The most common cause of calcium deficiency is inadequate dietary intake. The body cannot produce calcium, and it needs to be obtained through the diet.

**Vitamin D deficiency:** Vitamin D helps the body absorb calcium, and a deficiency can lead to calcium deficiency.

**Malabsorption:** Certain medical conditions can affect the body's ability to absorb calcium, leading to deficiency.

**Medications:** Certain medications, including antacids and corticosteroids, can interfere with calcium absorption.

**Ageing:** As we age, our bodies become less efficient at absorbing calcium, increasing the risk of deficiency.

**Pregnancy and breastfeeding:** During pregnancy and breastfeeding, the body requires more calcium to support fetal development and milk production [3].

## Treatment for calcium deficiency

The treatment for calcium deficiency depends on the cause and severity of the deficiency. In most cases, increasing calcium intake through diet or supplements is the first step. Foods that are high in calcium include dairy products, leafy green vegetables, and fortified cereals. Calcium supplements are also an option for those who do not consume enough calcium through their diet. However, it is essential to speak to a healthcare provider before taking any supplements, as excessive calcium intake can lead to kidney stones and other health problems. In cases where malabsorption or other medical conditions are causing the deficiency, treating the underlying condition is necessary. In severe cases, calcium supplementation may be required through intravenous therapy [4].

## Prevention of calcium deficiency

Prevention is key when it comes to calcium deficiency. A balanced diet that includes calcium-rich foods is essential. Vitamin D is also necessary for calcium absorption, and it can be obtained through sun exposure and dietary sources such as fatty fish, egg yolks, and fortified foods. Regular physical activity, particularly weight-bearing exercises, can also help maintain bone density and prevent calcium deficiency. It is

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essential to be mindful of certain lifestyle factors that can affect calcium absorption. Consuming excessive amounts of caffeine and alcohol can interfere with calcium absorption, as can smoking. Regular check-ups with a healthcare provider can help identify and address calcium deficiency before it becomes severe [5].

## Conclusion

Calcium is a critical mineral that plays a vital role in several biological processes, including bone health, muscle function, and nerve transmission. Calcium deficiency can lead to severe health problems, including osteoporosis, dental problems, and heart disease. It is essential to consume adequate amounts of calcium through a balanced diet and take steps to prevent calcium deficiency. In cases of deficiency, treatment options include increasing calcium intake through diet or supplements and addressing any underlying medical conditions that may be contributing to the deficiency.

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