

CALCIUM

Calcium is one of the most abundant minerals in body. About 99% of the calcium in the body is in the bones and teeth and 1% is in the blood, muscles, and other soft tissues (such as the nerves, organs, etc.) This 1% plays a major role in our health- it acts in normal muscle contraction and relaxation, nerve functioning, blood clotting, blood pressure and immune defenses.

Functions of Calcium :

- Combines with phosphorus to form bones and teeth, making them hard and resistant to breaks and decay. Children need to get enough calcium for their bones and teeth to develop normally .
- Helps muscles to contract normally. A deficiency can cause muscle spasms and cramps.
- Helps blood to clot normally, when you get a cut or wound.
- Is essential for nerve messages to be passed along the nervous system from the brain to other parts of the body and vice versa.
- Helps regulate blood pressure.
- Calcium may help prevent colon cancer, one of the most common forms of cancer .
- Increasing calcium intake from dairy products, not supplements, may increase weight reduction

Food Sources of Calcium :

Milk, yogurt, and cheese are rich sources of calcium and are the major food contributors of this nutrient. Tofu, cottage cheese, orange juice, greens and legumes are also excellent sources of Calcium.

Symptoms of high calcium :

- Hypercalcemia (too much calcium)
- Brain: Headache, fatigue, apathy and confusion.
- Digestive tract: Constipation, abdominal pain and vomiting.
- Kidneys: Frequent need to pee, kidney stones and kidney failure.
- Heart: Arrhythmias, some of which can be severe.
- Skeletal: Pain in the bones and joints.

Symptoms of low calcium :

- Brain: Confusion and behavior changes.
- Muscles: Unusually strong reflexes and loss of muscle control, muscle twitching, spasms in the throat muscles making it hard to speak or breathe.

Procedure :

Pipette into clean dry test tubes labeled as blank (B) Standard (S) and Test (T):

Addition Sequence	Blank	Standard	Sample
Reagent 1	1000 μ L	1000 μ L	1000 μ L
Standard	-	20 μ L	-
Sample	-	-	20 μ L
Distilled water	20 μ L	-	-

Mix and incubate the tubes for 2 minutes at room temperature . Measure the absorbance of the Standard (Abs.S) and Test Sample (Abs.T) against the Blank on wavelength 630 nm .

Calculation

$$\text{Calcium mg/dl} = \frac{\text{Abs. } T}{\text{Abs. } S} \times 10$$

Reference value : 8.5 – 11.0 mg/dl