



# **SNS COLLEGE OF ALLIED HEALTH SCIENCES**

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**DEPARTMENT : CARDIO PULMONARY PERFUSION CARE  
TECHNOLOGY**

**COURSE NAME : PHARMACOLOGY**

**UNIT : CALCIUM**

**TOPICS : DEFINITION, MECHANISM OF ACTION,  
PHARMACODYNAMICS, PHARMACOKINETICS,  
INDICATIONS, CONTRAINDICATIONS, SIDE EFFECTS**



# CALCIUM



- Calcium is a vital mineral that plays a main role in various physiological functions, including bone and teeth formation, blood clotting, muscle contraction, nerve transmission, and cellular signaling.



## MECHANISM OF ACTION



- **Bone Health:** Calcium is a key component of bones and teeth, providing structural support.
- **Blood Clotting:** Calcium is essential for the clotting of blood, playing a role in various coagulation processes.
- **Muscle Contraction:** Calcium ions are involved in initiating and regulating muscle contraction.
- **Cell Signaling:** Calcium serves as a signaling molecule in various cellular processes.



# PHARMACODYNAMICS



- Cardiovascular Effects: Calcium plays a role in maintaining normal cardiac function.
- Neuromuscular Function: Essential for proper neuromuscular function, including nerve transmission and muscle contraction.



# PHARMACOKINETICS



- Absorption: Calcium absorption occurs primarily in the small intestine.
- Distribution: The majority of calcium is found in bones and teeth.
- Excretion: Calcium is excreted through urine and feces.



## INDICATIONS



- **Calcium Deficiency:** Used to treat or prevent calcium deficiency, particularly in conditions like osteoporosis.
- **Hypocalcemia:** Intravenous calcium may be administered for the treatment of severe hypocalcemia.
- **Antacid Use:** Calcium carbonate is commonly used as an antacid to neutralize stomach acid.



## CONTRAINDICATIONS



- **Hypercalcemia:** Calcium supplementation is contraindicated in individuals with elevated calcium levels.
- **Kidney Stones:** Use caution in individuals with a history of kidney stones, as excessive calcium intake may contribute to stone formation.



## SIDE EFFECTS



- **Hypercalcemia:** Excessive calcium intake or impaired calcium excretion can lead to symptoms such as nausea, vomiting, and kidney stones.
- **Constipation:** Calcium supplements may cause constipation in some individuals.
- **Interference with Iron Absorption:** High doses of calcium may interfere with the absorption of iron.





## TECHNICIAN ROLE



- Serum Calcium Levels: Regular monitoring of serum calcium levels is important, especially in individuals receiving calcium supplementation.
- Renal Function: Monitoring renal function is crucial, particularly in patients with kidney disease.
- Vitamin D Levels: Adequate levels of vitamin D are essential for proper calcium absorption, and monitoring vitamin D levels may be relevant in calcium management.



# ASSESSMENT



- What is the Role of Calcium ?
- What all are the Side effects of Calcium ?