



SNS COLLEGE OF ALLIED HEALTH SCIENCES

SNS Kalvi Nagar, Coimbatore - 35

Affiliated to Dr MGR Medical University, Chennai



**DEPARTMENT : CARDIO PULMONARY PERFUSION CARE
TECHNOLOGY**

COURSE NAME : PHARMACOLOGY

UNIT : MAGNESIUM

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



MAGNESIUM



- Magnesium is an essential mineral that plays a vital role in various physiological processes, including muscle and nerve function, blood glucose control, and bone health.



MECHANISM OF ACTION



- **Cofactor for Enzymes:** Magnesium serves as a cofactor for numerous enzymes involved in energy metabolism, DNA synthesis, and protein synthesis.
- **Ion Transport:** It regulates the flow of ions across cell membranes, influencing nerve transmission and muscle contraction.
- **Bone Health:** Magnesium is a crucial component of bone structure.



PHARMACODYNAMICS



- Muscle and Nerve Function: Magnesium supports normal muscle and nerve function.
- Cardiovascular Effects: It plays a role in maintaining normal cardiac function.
- Electrolyte Balance: Magnesium is involved in the regulation of other electrolytes, such as potassium and calcium.



PHARMACOKINETICS



- Absorption: Absorbed in the small intestine.
- Distribution: Widely distributed in tissues, with the majority in bones.
- Metabolism: Excreted primarily by the kidneys.



INDICATIONS



- Magnesium Deficiency: Used to treat or prevent magnesium deficiency.
- Eclampsia/Pre-eclampsia: Magnesium sulfate is administered intravenously during pregnancy to prevent seizures.
- Arrhythmias: Magnesium may be used in the treatment of certain cardiac arrhythmias.



CONTRAINDICATIONS



- Renal Impairment: Caution is needed in patients with renal impairment, as magnesium excretion is dependent on renal function.
- Heart Block: Use with caution in patients with heart block.



SIDE EFFECTS



- Hypermagnesemia: Excessive magnesium intake can lead to symptoms such as muscle weakness, respiratory depression, and cardiac arrest.



TECHNICIAN ROLE



- **Serum Magnesium Levels:** Regular monitoring of serum magnesium levels is important, especially in patients receiving magnesium supplementation.
- **Renal Function:** Monitoring renal function is crucial, particularly in patients with renal impairment.
- **Cardiac Monitoring:** In cases where magnesium is used for arrhythmias, cardiac monitoring may be necessary.



ASSESSMENT



- What is the Role of Magnesium ?
- What is the Mechanism of Action of Magnesium ?