



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 : SODIUM

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



SODIUM



- Sodium is an essential electrolyte and mineral that plays a main role in various physiological processes, including fluid balance, nerve function, muscle contraction, and maintenance of blood pressure.



MECHANISM OF ACTION



- **Fluid Balance:** Sodium is a primary determinant of extracellular fluid volume, influencing water distribution in the body.
- **Nerve Transmission:** Sodium ions play a key role in the generation and propagation of nerve impulses.
- **Muscle Contraction:** Sodium is involved in the regulation of muscle contraction.



PHARMACODYNAMICS



- **Electrolyte Balance:** Sodium is a major cation that contributes to maintaining the balance of electrolytes in the body.
- **Blood Pressure Regulation:** Sodium plays a crucial role in blood pressure regulation by influencing fluid balance and vascular tone.



PHARMACOKINETICS



- Absorption: Sodium is absorbed in the small intestine.
- Distribution: It is distributed throughout the extracellular fluid compartment.
- Excretion: Sodium is primarily excreted by the kidneys, with smaller amounts excreted in sweat.



INDICATIONS



- Hyponatremia: Intravenous saline solutions may be administered to correct sodium imbalances in cases of severe hyponatremia.
- Dehydration: Sodium-containing solutions are used for fluid replacement in conditions such as dehydration.
- Hyponatremic Encephalopathy: Correction of severe hyponatremia to prevent neurological complications.



CONTRAINDICATIONS



- **Hypernatremia:** Caution is needed in individuals with elevated sodium levels.
- **Congestive Heart Failure:** Sodium-containing solutions may exacerbate fluid retention and worsen heart failure.



SIDE EFFECTS



- **Hypernatremia:** Excessive sodium intake or impaired sodium excretion can lead to symptoms such as increased thirst, confusion, and seizures.



TECHNICIAN ROLE



- **Serum Sodium Levels:** Regular monitoring of serum sodium levels is essential, especially in patients receiving sodium-containing solutions.
- **Renal Function:** Monitoring renal function is crucial, particularly in patients with kidney disease.
- **Blood Pressure:** Regular blood pressure monitoring may be relevant, especially in individuals with hypertension or heart conditions.



ASSESSMENT



- What is the Pharmacodynamics of Sodium ?
- What all are the Indications of Sodium ?