



**SNS COLLEGE OF NURSING**  
**Saravanampatti (po), Coimbatore.**

**DEPARTMENT OF NURSING**  
**COURSE NAME : BSC (NURSING) I YEAR**  
**SUBJECT : NUTRITION**  
**UNIT: III: VITAMINS AND MINERALS**  
**TOPIC : MINERALS**



# INTRODUCTION



More than 50 chemical elements are found in the human body, which are required for growth, repair and regulation of vital body functions.

Minerals form only a small portion of total body weight. They form only 7% of the composition of human body.





# CLASSIFICATION



## 1. PRINCIPLE ELEMENTS/ MACRO NUTRIENTS:

These elements occur in living tissues in comparatively large amounts. required in amounts greater than 100mg/day.



## 2. TRACE ELEMENTS/ MICRO NUTRIENTS: These

elements occur in living tissues in small amounts.

Required less than 20mg/day



# FUNCTIONS

- ✓ As a constituents of bones and teeth
- ✓ As a constituents of soft tissue
- ✓ As soluble salts that give to body fluid and cell content, their composition and stability that are essential for life





# SPECIFIC FUNCTIONS

- ❖ Formation of Hemoglobin – Fe
- ❖ Formation of thyroxine – Iodine
- ❖ Constitution of enzymes and hormones – Zn in carbonic anhydrase and insulin
- ❖ Cobalt – Constituent of Vit B12.





# MAJOR MINERALS

- Calcium
- Phosphorus
- Sodium
- Potassium
- Magnesium



# MICRO NUTRIENTS

- Iron
- Iodine
- Fluorine
- Zinc
- Copper
- Cobalt
- Chromium
- Manganese
- Molybdenum
- Selenium





# CALCIUM

- Macro mineral, constitutes 1.5 – 2% of the body weight of an adult.
- Calcium in blood : 10mg/dl, developing of fetus requires about 30g of ca.
- Sources: milk and milk products, egg and fish, green leafy vegetables, millets and cereals





# PHOSPHORUS

- It makes up about 0.65 – 1.1% of the adult body.
- Exist in 2 forms : As Inorganic salts and in combination with organic compounds.
- Sources : milk, egg, meat, fish, vegetables, cereals, pulses, nuts and oil seeds.



# MAGNESIUM

- Adult human body contains 25gm of Mg.
- 50% present in bones in combination with phosphorus and carbonate. 1/ 5<sup>th</sup> of Mg is present in soft tissue
- Sources: sesame seeds, mint, watermelon, pumpkin seeds, basil, broccoli, okra, flex seeds.





# SODIUM CHLORIDE

- Adult human body contains about 100g of sodium ions.
- Adult requirement is about 5gm / day. Depletion of NaCl cause muscular cramps.





# POTASSIUM

- Adult human body contains about 259g of potassium
- Potassium supplements lower blood pressure, although the response is slow.
- Potassium is vasoactive, increases blood flow and sustain metabolic needs of the tissue.





# IRON

- The adult human body contains between 3 – 4 g of iron, of which about 60 – 70 % in the blood as circulating iron, and the rest as storage iron. each gram of hemoglobin contains about 3.34mg of iron.
- Sources: Liver, meat, poultry and fish, green leafy vegetable, legumes, nut, oilseeds.





# IODINE

- Essential trace elements.
- The adult human body contains about 50mg of iodine and the blood level is about 8 – 12mg/dl.
- Sources: Sea foods, and cod liver oil, milk, meat, vegetable, cereals, Iodized salts.



# FLOURINE

- 96% of the fluoride in the body is found in bones and teeth.
- Required for mineralization of bones and enamel formation.
- Sources: water, sea food
- Requirement: 0.5 – 0.8mg/L.



# COPPER

- Adult body contain about 100 – 150 mg Cu.
- Blood contains: 0.11gmg/100ml
- Required for bone development, Elastine formation, cytochrome, oxidase function, iron absorption.





# ZINC

- Component of >300 enzymes
- It is active in the metabolism of glucides and proteins, required for synthesis of insulin by the pancreas and for the immunity function.
- Zinc plasma level is about 96mcg/100ml for healthy adults, and 89mcg/ 100ml healthy children.



# COBALT

- A part of the vitamin b12 molecule
- No evidence of its deficiency
- Recently cobalt deficiency and cobalt iodine ratio in the soil have shown to produce goiter in humans.



# CONCLUSION

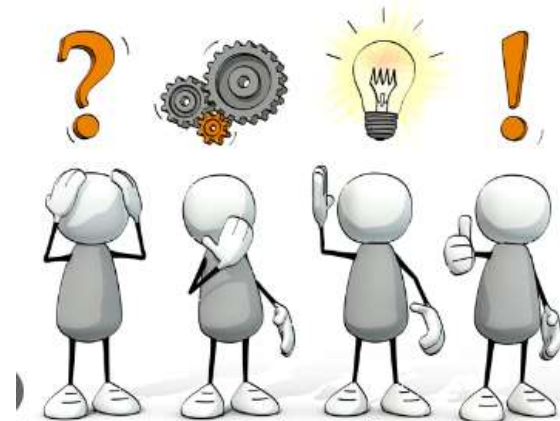
The minerals form only a small portion of the total body weight. They form only 7% of the composition of human body. Many of these are widely distributed in foods so that a well balanced diet will supply them in sufficient quantities.



# ASSESSMENT



- Describe classification of minerals?
- Enlist the micro nutrients?
- Enumerate any 2 functions of minerals?





# REFERENCE

- Darshan sohi, “ A comprehensive textbook of applied Nutrition and dietetics” , 3<sup>rd</sup> edition, published by Jaypee publication.
- Shella John, Jasmine devaselvam, “Essentials of Nutrition and dietetics for nursing”, 2<sup>nd</sup> edition, published by Wolters Kluwer.



*Thank  
you*