

MACRONUTRIENT AND MICRONUTRIENT



Macronutrients

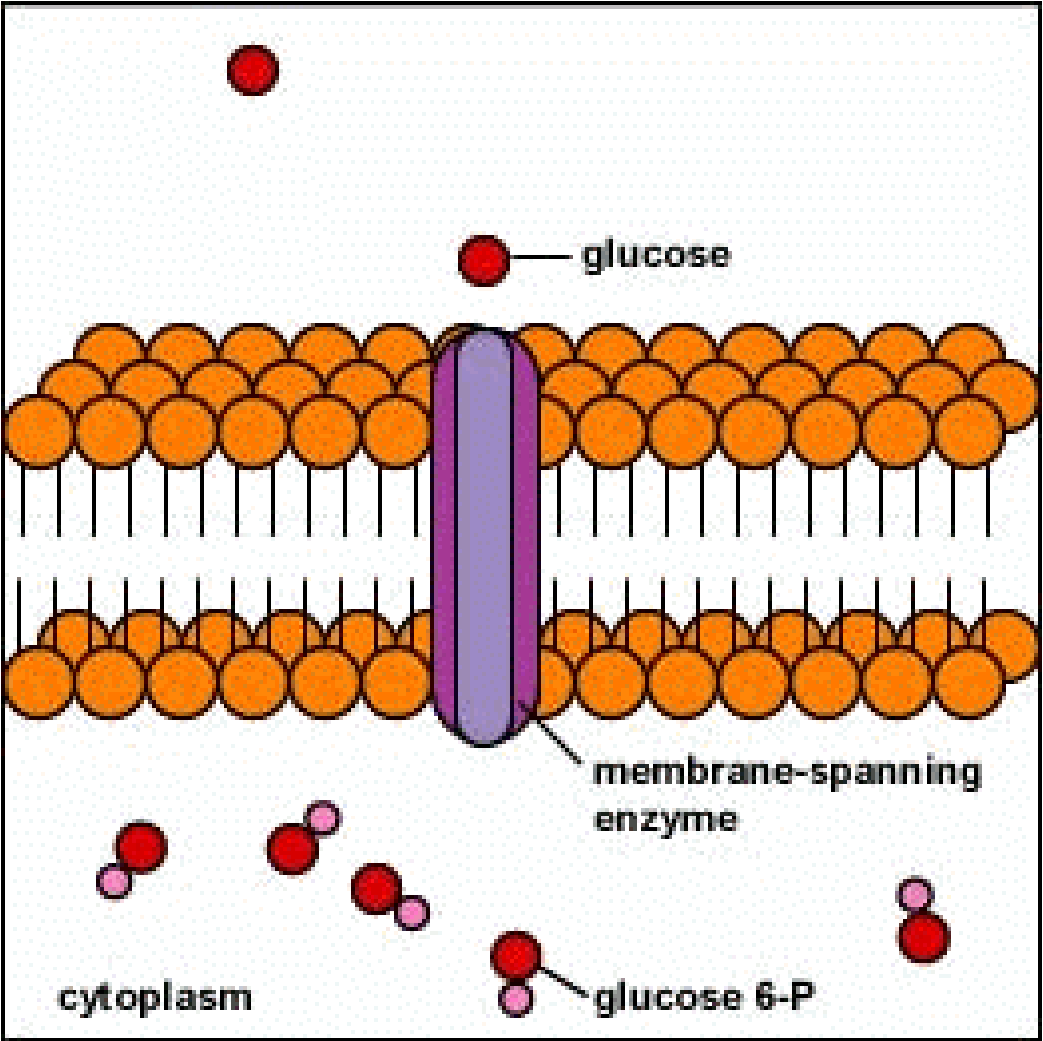
~ Proteins and lipids, particularly fats, can also supply energy certain conditions.

Micronutrients

- Vitamins functions as coenzymes and that minerals are essential to many biochemistry pathways.

Essential Nutrients

- Essential nutrient must come from food because the body cannot synthesize them.
- Essential nutrient vary among species.



Vitamins And Health



Water-Soluble Vitamins

Vitamins	Function	Food Sources	Deficiency Symptoms
Thiamine (vitamin B ₁)	Growth, fertility, digestion, nerve cell function, milk production	Pork, beans, peas, nuts, whole grains	Beriberi(neurological disorder), loss of appetite, swelling, poor growth, heart problems
Riboflavin (vitamin B ₂)	Energy Use	Liver, leafy vegetables, dairy products, whole grain	Hypersensitivity of eyes to light, lip sores, oily dermatitis
Pantothenic Acid	Growth, cell maintenance	Liver, eggs, peas, potatoes, peanuts	Headache, fatigue, poor muscles control
Pyridoxine (vitamin B ₆)	Protein use	Red meat, liver, corn, potatoes, whole Grains, green vegetables	Mouth sores, dizziness, nausea, weight loss, neurological disorders

Fat-Soluble Vitamins

Vitamins	Functions	Food Sources	Deficiency Symptoms
Retinol (vitamin A)	Night vision, new cell growth	Liver, dairy products, egg yolk, vegetables, fruit	Night blindness , rough skin
Cholecalciferol (Vitamin D)	Bone formation	Fish-liver oil, milk, egg yolk	Skeletal deformation (rickets)
Tocopherol (Vitamin E)	Prevent certain compounds from oxidized	vegetables oil, nuts beans	Anemia in premature infants*
Vitamin K	Blood clotting	Liver, egg yolk, green vegetables	Bleeding, liver problems.

- Good nutrient is matter balance.
- When we take in more Calories than we expend, weight increases.
- Those who consume fewer calorie than expended lose weight and, if taken to extreme may even starve.
- Balancing Vitamins and minerals is important to health, too.
- Eating a variety of foods helps meet nutritional requirements.



Macronutrients & Micronutrients in Plants

- The inorganic substances in plants contain more than 50 chemical elements.
- A chemical element is considered an **essential element** only if it is required for a plant to complete its life cycle and produce another cycle.
- To determine which chemical elements are essential, researchers use **hydroponic culture**, in which plants are grown in mineral solutions instead of soils.
- Such studies have helped identify 17 essential elements needed by all plants.

Macronutrients

- All of these mineral nutrients, nitrogen contributes the most to plant growth and crop yields.
- Plants require nitrogen as a component of proteins nucleic acids, chlorophyll, and other important organic molecules.

Micronutrients

- Plants that use C_4 and CAM pathways of photosynthesis require sodium ions to generate phosphoenolpyruvate, which is the CO_2 acceptor in these two types of carbon fixation.

Mineral Deficiency

- Mineral deficiency symptoms depend not only on the role of nutrient but also on its mobility within the plant.
- The symptoms of a deficiency depend partly on the mineral's function as a nutrient.
- For example, a deficiency of magnesium, a component of chlorophyll, causes *chlorosis*, *yellowing of the leaves*.

Mineral Deficiency

- If the omitted mineral is essential, mineral deficiency symptoms occur, such as stunted growth and discolored leaves.
- By definition, the plant would not be able to complete its life cycle.
- Deficiencies of different elements may have different symptoms, which can aid in diagnosing mineral deficiencies in soil.



Thank
You
for
listening.....

Pop Up Review Quiz

The following are water-soluble nutrients except?

A.) Thiamine

B.) Riboflavin

C.) Tocopherol

D.) Pyridoxine

Answer:

C.) Tocopherol

It is a fat soluble vitamins

This mineral function as a transport and use of oxygen (as a part of hemoglobin and myoglobin) part of certain enzymes?

- A.) Zinc
- B.) Iron
- C.) Potassium
- D.) Sulfur

Answer:

- B.) Iron

The food sources are: Meat, liver, fish, shellfish, egg yolk, peas, beans, dried fruit, whole grains

Which Does not belong to the group?

A.) Calcium

B.) Manganese

C.) Iron

D.) Boron

Answer:

- A.) Calcium

It is because it belongs to macronutrients of a plant

In 1640's, He tested the hypothesis that plants grow by consuming soil. He planted a small willow in pot that contained 90.0kg of soil. After five years the plant weighed 76.8kg but only 0.06 kg of soil had disappeared from the pot. He is _____?

- A.) Stephen Hales
- B.) Hans Krebs
- C.) Ludwig Boltzmann
- D.) Jan Baptista van Helmont

Answer:

- D.) Jan Baptista van Helmont

A century later, the English physiologist, armed with knowledge from advanced in physics and chemistry that air is a substance with mass, postulated that nourished mostly by air. Who is he?

- A.) Stephen Hales
- B.) Hans Krebs
- C.) Ludwig Boltzmann
- D.) Jan Baptista van Helmont

Answer:

- Stephen Hales