

Phosphorus

As we know like Calcium, Phosphorus forms a predominant constituent of bone and teeth. But it is also found in every cell of the body in combination with proteins, lipids and carbohydrates (e.g. Phosphoproteins, Phospholipid and hexose phosphates. Phosphorus

As a constituent of ATP and similar compounds, it plays a unique role in energy storage and transformations.

Proteins of food which do not have Calcium also supply good amount of Phosphorus.

Physiological Functions: -

- (1) It is essential for the formation and development of bones and teeth along with Calcium.
2. It is needed for the formation of Phospholipids, Nucleic acids and Phosphoproteins.
3. It gets involved in the formation of Organic phosphate, such as hexose phosphate, triose phosphate and Creatine phosphate etc.
4. It is needed for the formation of energy rich compounds such as ATP.
5. It forms Co-enzymes, such as NADP, ADP, AMP and B_6-P_4 etc.
(Adenine dinucleotide phosphate, Adenine diphosphate, Adenine Monophosphate)
 B_6-P_4 is active Coenzyme form of Vitamin B_6 which are bonded to phosphate group.

Absorption

1. Moderate amount of fat or acid tend to favour absorption of Phosphorus.
2. High Calcium diet and Phytic acid Causes a decrease in Phosphorus absorption.
3. The absorption gets enhanced when the Calcium and Phosphorus ratio becomes 1:1

Role of micro trace element

Role of Nickel in Biological system: : Now a day are known

Nearly by the Nickel Proteins are a part of plants or bacteria. Nickel is tightly bound component of Urease and is essential for the activity of the enzyme that Catalyses the hydrolysis of Urea to ammonia and Carbonic acid.

Methanogenic and several other type of bacteria are known to have Nickel containing hydrogenases which Catalyse the reaction, : $2H_2 \rightarrow 2H^+ + 2e^-$, the reduction of Sulphate ion, the production of methane and perhaps other reductive processes.

Specific environments for Nickel are also indicated for nucleic acids (or Nucleic acid binding proteins),

Since Nickel activates the gene for hydrogenase.

Role of Manganese (Mn) in Biological system:-

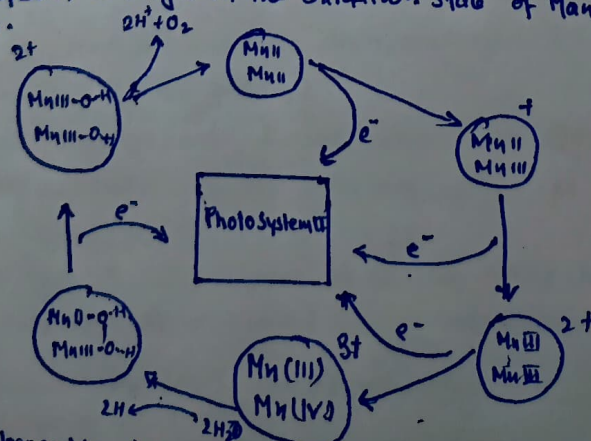
Manganese plays a Critical role in Oxygen evolution Catalysed by the Proteins of the Photosynthetic reaction Centre.

In the Photo system II, a strong oxidising agent is formed (P680, where P stands for Pigment, 680 is the Wavelength of light absorbed) and is responsible for the production of $\frac{1}{2}$ Molecule Oxygen.

This Oxidising agent is reduced and recycled for further use by interaction with a manganese Complex. During the sequence of events leading to reduction,

Manganese displays three of its Oxidising States.

The proposed changes in the Oxidation state of Manganese in Photosystem II is given below.



Moreover, the Superoxide dismutase of bacteria and Microchondria, as well as Pyruvate Carboxylase in mammals are also Manganese Proteins, responsible for various biological processes.