

Determination of Phosphorus in the blood

Phosphorus is ingested in both organic and inorganic forms with most of the organic phosphorus being converted to inorganic in the body . It is an important anion , most of the phosphorus exists in form of phosphate ($\text{HPO}_4^{=}$ or H_2PO_4^-). Inside the cells organic phosphate predominates with a total phosphorus level 50 times greater than in the ECF .

It is involved in the storage and transport of metabolites across membranes , in the storage and transfer of energy .

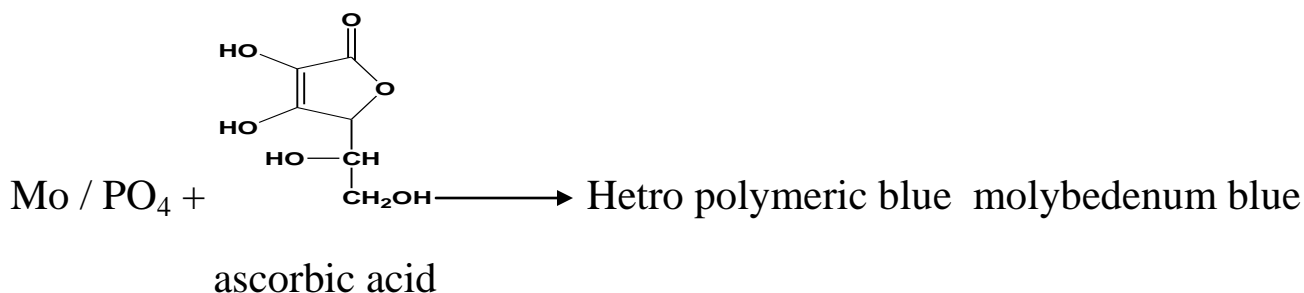
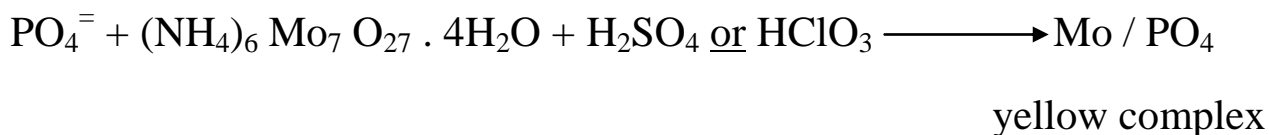
Phosphate is closely associated with calcium , when serum calcium level fall (PTH) is secreted causing increased bone released from Ca^{2+} that is lead to increase serum calcium but tubular reabsorption of phosphorus is inhibited .

Types of phosphate in blood and tissues :-

1. Inorganic phosphate from $\text{HPO}_3^{=}$ and $\text{HPO}_4^{=}$.
2. Organic phosphate such as *ester phosphate *nuclotides *nuclic acid .
3. phospho lipids .
4. phosphoric acid .

Principle :-

This method involve the photometric determination of molybdenum blue formed by reduction of phosphor molybdenum .



Organic phosphate does not reactive with molybdic acid therefore using H_2SO_4 or HClO_3 for converted it to inorganic phosphate .

Clinical significant :-

Hyper phosphotemia :-

1. Hypo para thyroidism .
2. Increasing vit. D activity.
3. Nephritic syndrom .
4. Renal failure .
5. Metastatic bone tumors.

Hypo phosphotemia :-

1. Hyper para thyroidism .
2. Vit. D deficiency .
3. Hypo pituitarism .
4. Malabsorption syndromes .
5. Rickets in children and ostemallacia in adults .

Normal value :-

Phospho lipid 6 - 11 mg / dL

Organic phosphate 0.1 - 1.7 mg / dL

Inorganic phosphate 4.5 - 5.5 mg / dL child

 2.7 - 4.5 mg / dL adult