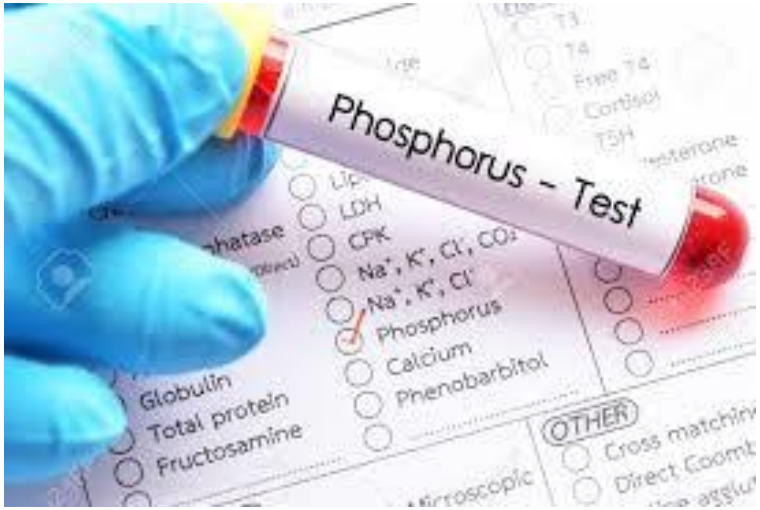
Blood Phosphorus



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What is phosphorus?

- ***It is a mineral that combines with other substances to form organic and inorganic phosphate compounds.***

What are functions of phosphates?

- ***Energy production***
- ***Muscle and nerve function***
- ***Bone growth***
- ***Buffer that maintains acid-base balance***

What are phosphorus rich foods?

Egg
Dairy products
Cereals
Beef
Chicken
Nuts
Fish
Beans
Peas

How can phosphorus be distributed throughout the body?

- **About 70%-80% of the body's phosphates are combined with calcium to help form bones and teeth.**
- **About 10% are found in muscles**
- **About 1% in nerve tissue**
- **Only 1% found in blood**
- **The rest are distributed within cells throughout the body to store energy.**

How can the body regulate blood phosphate level ?

- ***How much it absorbs from the intestines***
- ***How much it excretes via kidneys***
- ***It is also affected by parathyroid hormone (PTH), calcium and vitamin D.***

What are symptoms of low phosphate levels?

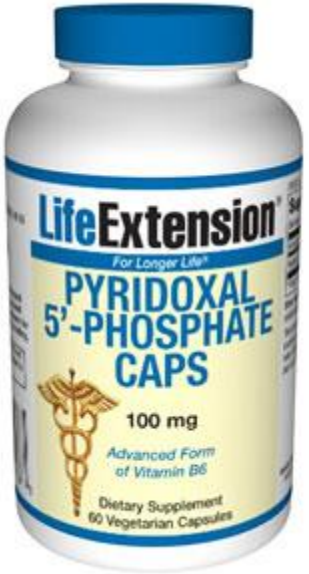
- Fatigue
- Muscle weakness
- Cramps
- Bone problems

Causes of hypophosphatemia:

- ***Hypercalcaemia and high level of PTH***
- ***Overuse of diuretics***
- ***Malnutrition***
- ***Diabetic ketoacidosis (after treatment)***
- ***Hypothyroidism***
- ***Hypokalemia***
- ***Rickets due to vit. D deficiency***
- ***Sever burns***
- ***Alcoholism***
- ***Chronic antacid use***

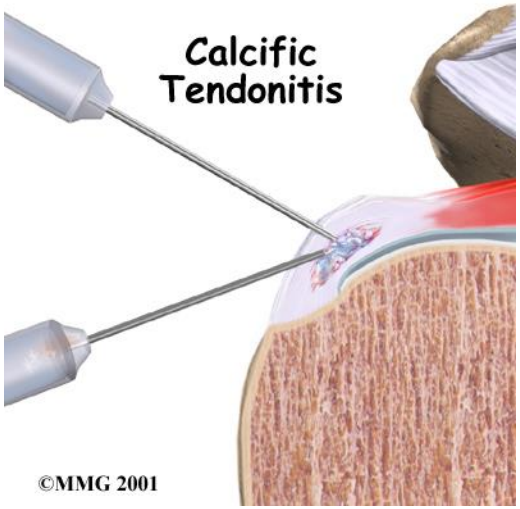
Causes of hyperphosphatemia:

- ***Kidney failure***
- ***Hypoparathyroidism***
- ***Hypocalcaemia***
- ***Diabetic ketoacidosis (first seen)***
- ***Phosphate supplementation***



High phosphorus level can lead to organ damage, why?

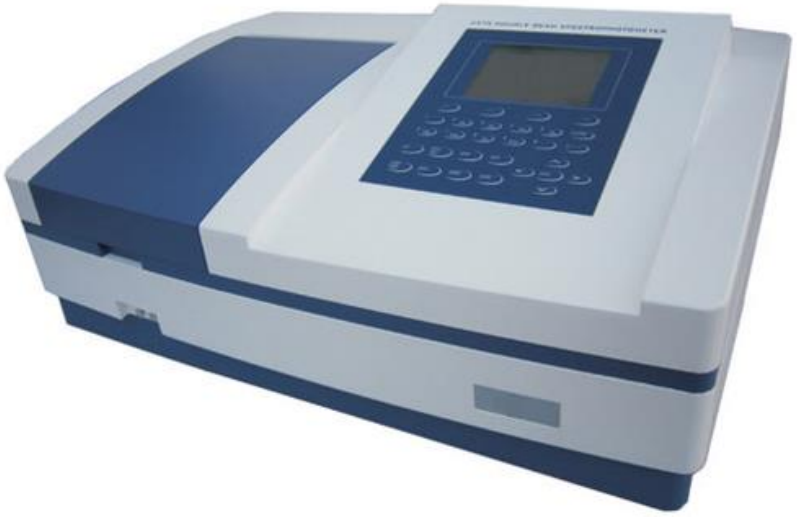
- ✓ ***due to calcification, deposits of calcium phosphate in tissues.***



Reference level:

- ***12-60 years : 2.7-4.5 mg/dl***

Why are phosphate levels in children higher than in adults?



Spectrophotometer

Micropipette

Phosphorus kit

Disposable Tips

Cuvettes

Test tube

Working Procedure:

1. **Bring reagents and samples to room temperature.**
2. **Pipette into labeled test tubes**

Tubes	Blank	Sample	Standard
Working reagent R1	1 ml	1 ml	1 ml
Sample	-	50 µ	-
Standard	-	-	50 µ

3. Mix, let stand the tubes for 1 min. then pipette:

Developer R2	**0.5 ml**	**0.5 ml**	**0.5 ml**

4. Mix, and let stand the tubes for 10 min. at room temperature

5. Read the absorbance (A) of the sample and standard at 740 nm against the reagent blank.

Calculations:

Serum :

A (sample) * concentration of standard (known) mg/dL= mg/dL phosphorus
A (standard)


THANK YOU