Inorganic Phosphorous

Direct UV Test / Molybdate Method

IVD CE

PRODUCT CODE
CE003

INTENDED USE
For the quantitative determination of Phosphorous in serum.

CLINICAL SIGNIFICANCE
Phosphorus is an essential mineral for tissue bone formation and is required by every cell in the body for normal function. Approximately 85% of the body phosphorus is found in bone and in teeth. Low levels of phosphorus can be caused by hypervitaminosis D, primary hyperparathyroidism, renal tubular disorders, antacids or malabsortion. High levels of phosphorus can be caused by diet, bone metastases, liver disease, alcohol ingestion, diarrhea and vomiting.
Clinical diagnosis should not be made on a single test result; it should integrate clinical and other laboratory data.

PRINCIPLE
Inorganic phosphate reacts with molybdate in strong acid medium to form an unreduced phosphomolybdate complex (UPC). This complex is maintained in solution and its UV absorbance enhanced by the addition of a surfactant. In older but unstable method, the UPC was reduced by ferrous ammonium sulphate to form a blue color. the reduction step has been omitted and the UV absorbance is read directly at 340 nm.

Inorganic phosphorous + H_2SO_4 + ammonium molybdate ----->- Unreduced phosphomolybdate complex (UPC).

REAGENT COMPOSITION

PHOSPHOROUS REAGENT

Ammonium heptamolybdate	0.3 mmol/l
Sulphuric Acid (pH 1.0)	200 mmol/l
Detergent	1.0 %

PHOSPHOROUS STANDARD

Phosphorous standard concentration	10 mg/dL or 3.2 mmol/L

PREPARATION
The reagent and standard are ready to use.

STORAGE AND STABILITY
The reagent and standard are stable up to the stated expiry date when stored at 15 - 25°C.

SPECIMEN
Serum, do not use plasma. Clear, non-haemolysed, preferably fasting serum, separated from clot as soon as possible. Erythrocytes contain organic phosphates which can hydrolyze on standing. Inorganic phosphates can then leak from the cell and elevate serum levels. Serum phosphates are stable for 7 days at 4 °C, or 2 days at 25° C.

PRECAUTION
To avoid contamination, use clean laboratory wares.
Serum specimen should be considered infectious and handled appropriately.

ASSAY

Wavelength	340 nm
Cuvette	1 cm light path
Temperature	20-25°C
Measurement	Against reagent blank

PROCEDURE

Pipette in to cuvettes	Blank	Standard	Sample
Phosphorous reagent	1000 µL	1000 µL	1000 µL
Standard	--	10 µL	--
Sample	--	--	10 µL
Mix and incubate at least 1 minute at 20-25°C and measure the absorbance of the sample (As) and the standard (Astd) against the reagent blank within 60 minutes.			

CALCULATION

$$\text{Phosphorus (mg/dL)} = \frac{\Delta A \text{ sample}}{\Delta A \text{ standard}} \times 10 \text{ (Std.conc.)}$$

To convert serum Phosphorous concentration from mg/dL to mmol/L, divided by 3.1.

LINEARITY
The test is linear up to a serum phosphorous concentration of 20 mg/dL or 6.4 mmol/L, If Sample exceeding this value should be diluted 1+1 with distilled water.

NORMAL RANGE

Adults	2.5 - 4.8 mg/dL	0.81 - 1.55 mmol/L
Children	4.0 - 7.0 mg/dL	1.29 – 2.26 mmol/L

QUALITY CONTROL
All control sera with Phosphorous values determined by this method can be used.

NOTES
1- It is recommended to use disposable plasticware. Phosphorous contamination from glassware is a major source of error in this test. If glassware is used it should be soaked in dilute HCl and thoroughly rinsed in distilled water before use.
2- The reagent contains sulphuric acid to handle with care and wash thoroughly with water if it comes in contact with the skin.
3- Lipaemic, icteric or grossly haemolytic sera may require a sample blank.
4- Bilirubin levels up to 5 mg/dl have no effect on this procedure.

SYMBOL ON LABELS

Symbols	Signify	Symbols	Signify
REF	Catalogue Number	SIZE	Pack Size
	Expiry Date	VOL	Volume
	Storage Condition	LOT	Lot Number
	Instruction for Use	IVD	In Vitro Diagnostics
	Manufacturing Date		Manufacturer
Σ	Number of Tests	2	For Single Use Only
EC REP	EC Representative	CE	European conformity

BIBILOGRAPHY

1- Daly, J. A. and Eritingshausen, G.; Clin. 18, 263, 1972
2- Wang, J. Chen, C.C. Osaki, S. Clin. Chem. 29, 1255, 1983.
3- Henry, J.R., Clinical Chemistry, Harper and Row, New Yark, 415,

Bio Research For Medical Diagnostics
Muslim Al Attar Street,P.O.Box:1235,
Amman-11953,Jordan
Tel:+962 64892525, Fax: +962 64892526,
www.bioresearch.com.jo

EC REP
MDSS GmbH
Schiffgraben 41
30175 Hannover, Germany