ACCUCARE®

PHOSPHORUS UV

UV MOLYBDATE METHOD

Quantitative determination of Phosphorus in serum / plasma / Urine
Only for *In Vitro* Diagnostic use

ORDER INFORMATION

REF	Cont.
PHOS 25	25 X 1 mL
PHOS 100	2 X 50 mL

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 malabsorption. High levels of phosphorus can be caused by diet, bone metastases, liver disease, alcohol ingestion, diarrhea and vomiting1,5,6. Clinical diagnosis should not be made on a single test result; it should integrate clinical and other laboratory data.

Method

Photometric UV test with endpoint determination

PRINCIPLE

Inorganic phosphate reacts in acid environment with molybdic acid to form an unreduced phosphomolybdic acid complex, which absorbs light at 340 nm. The absorbance is directly proportional to the phosphorus concentration in the sample.

REAGENT

Reagent I : Molybdate reagent
Phosphorus standard : 5.0 mg/dl

REAGENT PREPARATION

All Reagents are ready to use

REAGENT STORAGE AND STABILITY

When stored at recommended storage temperature stated on label, reagent is stable until the expiration date stated on the bottle and kit box label

WARNING AND PRECAUTIONS

- For in vitro diagnostic use.
- Do not use components beyond the expiration date.
- Do not mix materials from different kit lot numbers.
- Exercise the normal precautions required for handling all laboratory reagents.
- The reagent contains preservative. Do not swallow. Avoid contact with skin and mucous membranes.
- For detailed information refer Material Safety Data Sheet.
- Proceed carefully with this product because due to its nature it can get contaminated easily.
- Most of the detergents and water softening products used in the laboratories contain chelating agents. A defective rinsing will invalidate the procedure.

WASTE MANAGEMENT

Please refer to local legal requirements.

MATERIALS REQUIRED BUT NOT PROVIDED

- NaCl solution 9 g/L
- General laboratory equipment

SAMPLE COLLECTION AND PRESERVATION

Serum or plasma (lithium heparin)
Separate from cellular contents immediately after blood collection.
Stability: at least one year at –20°C in case of immediate freezing.
7 days at 4 – 8°C
Freeze only once! Discard contaminated specimens!

Urine: Collect 24-hour urine specimen in Phosphorus free containers. Dilute a sample 1/2 in distilled water. Mix. Multiply results by 2 (dilution factor).
Stability of the sample:
1 week at refrigerator (2-8ºC) or frozen (-20ºC) temperatures.

ASSAY PROCEDURE

Operating Instructions

- Check reagent inventories at least daily to ensure that quantities are sufficient for the planned work load.
- Bring all reagents, standard and samples to room temperature 18 - 28ºC, prior to analysis.

AUTOMATED PARAMETERS	
Wavelength	340 nm
Cuvette	1 cm light path
Temperature	37 ºC
Measurement	Against Reagent Blank
Sample Volume	20 µl
Reagent Volume	1000 µl
Reaction Type	End Point
Incubation	5 mins.
Low Normal	2.5 mg/dl
High Normal	4.5 mg/dl
Linearity	12.0 mg/dl

MANUAL ASSAY PROCEDURE

Pipette into Test Tubes

	BLANK	STD	SAMPLE
SAMPLE	-	-	20µl
STANDARD	-	20µl	-
REAGENT	1000µl	1000µl	1000µl

Mix well incubates at 37 ºC for 5 mins. Measure final absorbance of the sample (Ac) and standard (As) against the reagent blank

SAMPLE DILUTIONS

- This method is linear upto a concentration of 12 mg/dL.
- Dilute samples above this concentration 1:1 with DI Water
- Repeat assay. Multiply the result by 2.

CALCULATION

Phosphorus Conc. in Serum/Plasma(mg/dL) = $\frac{\text{Abs Sample}}{\text{Abs Standard}}$ X Concentration of Standard

Phosphorus Conc. in Urine (mg/dL) = $\frac{\text{Abs Sample}}{\text{Abs Standard}}$ × Conc. of Standard x 2

CALIBRATORS AND CONTROLS

For the calibration of automated photometric systems the commercially available suitable multi-calibrator is recommended.

The assigned values of **Phosphorus standard** have been made traceable to a primary phosphorus standard (traceable to the reference material NERL / Weighed purified material).

It is recommended to run a normal and a pathological control serum which is commercially available to verify the performance of the measured procedure. The value of controls should fall within the established limit.

Each laboratory should establish corrective action in case of deviations in control recovery.

PERFORMANCE CHARACTERISTICS

WITHIN RUN

Sample	Mean Concentration	SD	CV %
Norm	3.05	0.11	3.60%
Path	6.62	0.18	2.79%

Art No.: IFU/BC/PHO
Effective Date: 20/09/2019
Revision No.: 01

RUN TO RUN

Sample	Mean Concentration	SD	CV %
Norm	3.09	0.09	2.89%
Path	6.62	0.18	2.66%

LINEARITY

This method is linear upto a concentration of 12 mg/dL.
Dilute samples above this concentration 1:1 with DI Water and Repeat assay. Multiply the result by 2.

Limit of detection: The limit of detection for Phosphorus is 0.2 mg/dL (0.065 mmol/L)..

METHOD COMPARISON

A comparison of Accucare Phosphorus with a commercially available assay (x) using 59 samples gave following results: $R^2 = 0.9400$

REFERENCE VALUES

Adults: 2.5 – 4.5 mg/dl / 0.81-1.45 mmol/L
Children: 4.0 – 7.0 mg/dl / 1.29-2.26 mmol/L
Urine: 0.4 – 1.3 g/24 Hr. Urine / 12.9 – 42 mmol/24 Hr.
The reference values are to be considered as indicative only. Every laboratory should establish its own normal range.

LIMITATION OF THE PROCEDURE

- For diagnostic purposes, the results should always be assessed in conjunction with the patient's medical history, clinical examination and other findings.

INTERFERENCE

- Bilirubin: No interference found upto Bilirubin 25mg/dl.
- Hemoglobin: No interference found upto 100mg/dl.
- Both positive and negative interferences with lipemic samples has been observed
- These characteristics have been obtained using an automatic analyzer. Results may vary if a different instrument or a manual procedure is used.

BIBLIOGRAPHY

1. Thomas L. Clinical Laboratory Diagnostics. 1st ed. Frankfurt: TH-Books Verlagsgesellschaft; 1998. p. 241-7.
2. Endres DB, Rude RK. Mineral and bone metabolism. In: Burtis CA, Ashwood ER, editors. Tietz Textbook of Clinical Chemistry. 3rd ed. Philadelphia: W.B Saunders Company; 1999. p. 1395-1457.
3. Burtis CA, Ashwood ER, Bruns DE. Tietz Textbook of Clinical Chemistry. 4th ed. Elsevier Saunders; 2006. p. 1908.

GLOSSARY OF SYMBOL

	Consult Instruction for Use	LOT	Lot Number
REF	Catalog Number		Date of Manufacturing
	Store between		Use By or Expiration Date
	Manufacturer	IVD	For *in vitro* Diagnostic use only
	Keep away from sunlight	CONT	Content of the kit

LAB-CARE DIAGNOSTICS (INDIA) PVT. LTD.
C1 Type, Shed No.: 3225, Chemical Zone,
GIDC Sarigam – 396155, Dist. Valsad, Gujarat, India.
Tel.: +91 22 2554 2109 /1558
Email: accucare@labcarediagnostics.com;
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Art No.: IFU/BC/PHO
Effective Date: 20/09/2019
Revision No.: 01