LIQUIZYME

INORGANIC PHOSPHORUS

(Molybdate UV Method)

BEACON

Code	Product Name	Pack Size
LS037A	Liquizyme Inorganic Phosphorus	1 x 25 ml
LS037C	Liquizyme Inorganic Phosphorus	4 x 25 ml

Intended Use

Diagnostic reagent for quantitative *in vitro* determination of Phosphorus in human serum, plasma or urine.

Clinical Significance

More than 80% of the body's phosphate is present in bones as calcium phosphate. The remainder is found intracellularly as organic phosphates such as phospholi-pids, nucleic acids and ATP or extracellularly as inorganic phosphorus.

There is generally a reciprocal relationship between serum calcium and inorganic phosphorus levels. Increased levels of serum phosphorus is seen in renal diseases, hypoparathyroidism and excessive vitamin D intake.

Decreased levels of phosphorus is seen in rickets, osteomalacia (adult rickets), hyperparathyroidism and in diabetic coma.

Principle

Inorganic phosphorus combines with ammonium molybdate in the presence of strong acids to form phosphomolybdate. The formation of reduced phosphomo-lybdate is measured at 340 nm and is directly proportional to the concentration of inorganic phosphorus present in the sample.

Reaction

Phosphorus + Ammonium Molybdate $\longrightarrow$ Phosphomolybdate Complex

Reagent Composition

Reagent 1: Molybdate Reagent

Ammonium Molybdate : > 1 mmol/L

Reagent 2: Phosphorus Standard : 5 mg/dl

Ready to use

Reagent Preparation

Reagents are liquid, ready to use.

Stability And Storage

The unopened reagents are stable till the expiry date stated on the bottle and kit label when stored at 2–8°C.

Materials Required But Not Provided

- Clean & Dry container.
- Laboratory Glass Pipettes or Micropipettes & Tips
- Colorimeter or Bio-Chemistry Analyzer.

Specimen Collection And Handling

Use unheamolyse serum or plasma (heparin) or urine.

It is recommended to follow NCCLS procedures (or similar standardized conditions).

Stability

In Serum / Plasma :

7 days : at 4 – 25°C

3 months : at - 20°C

In Urine :

2 days : at 20 – 25°C at pH < 5

Acidify the urine with few drops of conc. Hydrochloric acid. Dilute 1 + 19 before the assay (result x 20)

Calibration

Calibration with the Inorganic Phosphorous standard provided in the kit is recommended.

Quality Control

It's recommended to run normal and abnormal control sera to validate reagent performance.

Unit Conversion

mg/dl x 0.32 = mmol/l

Expected Values

Serum	Adult	:	3 – 4.5 mg/dl
	Children	:	4.0 – 5.5 mg/dl
Urine, 24 h	Adult	:	0.4 – 1.3 g / 24 h

It is recommended that each laboratory verify this range or derives reference interval for the population it serves.

Performance Data

Data contained within this section is representative of performance on Beacon system. Data obtained in your laboratory may differ from these values.

Limit of quantification : 0.2 mg/dl

Linearity : 15 mg/dl

Measuring range : 0.2 – 15 mg/dl

Intra-assay precision Within run (n=20)	Mean (mg/dl)	SD (mg/dl)	CV (%)
Sample 1	5.00	0.04	0.77
Sample 2	7.00	0.04	0.56

Inter-assay precision Run to run (n=20)	Mean (mg/dl)	SD (mg/dl)	CV (%)
Sample 1	9.51	0.187	1.97

Comparison

A comparison between Beacon Inorganic Phosphorus (y) and a commercially available test (x) using 20 samples gave following results :

y = 0.992 x + 0.089 mg/dl

r = 0.998

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Interferences
Following substances do not interfere :
haemoglobin up to 1.25 g/l, bilirubin up to 20 mg/dl, triglycerides up to 500 mg/dl.

Warning And Precautions
For *in vitro* diagnostic use. To be handles by entitled and professionally educated person.
Reagents of the kit are not classified like dangerous but R2 standard contains less than 0.1% sodium azide - classified as very toxic and dangerous substance for the environment.

Waste Management
Please refer to local legal requirements.

Assay Procedure
Wavelength : 340 nm
Cuvette : 1 cm

Addition Sequence	Reagent Blank	Standard	Sample
Reagent 1	1000 µl	1000 µl	1000 µl
Standard	-	10 µl	-
Sample	-	-	10 µl
Distilled Water	10 µl	-	-

Mix and incubate for 5 min. at 37°C. Measure absorbance of the sample Abs. T and standard Abs. S against reagent blank.

Calculation

$$\text{Phoshhorus (mg/dl)} = \frac{\text{Abs. T}}{\text{Abs. S}} \times 5$$

Applications for automatic analysers are available on request.

Assay Parameters For Photometers

Mode	End point
Wavelength 1 (nm)	340
Sample Volume (µl)	10
Reagent Volume (µl)	1000
Incubation time (min.)	5
Incubation temp. (°C)	37
Normal Low (mg/dl)	3
Normal High (mg/dl)	4.5
Linearity Low (mg/dl)	0.2
Linearity High (mg/dl)	15
Standard Concentration	5 mg/dl
Blank with	Reagent
Unit	mg/dl

References

1. Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. Burtis, C. A., Ashwood, E.R., Bruns, D.E.; 5th edition, WB Saunders Company, 2012.
2. Daly J. A. and Erthingshausen G., Clinical Chem. (1972) 18,263.
3. Wang J. Chem C. C. Osaki, S. Clin. Chem. (1983) 29, 1255.
4. Young D. S. et al Clin. Chem. (1975) 21, 342 D.

Symbols Used On Labels

REF	Catalogue Number		Manufacturer
	See Instruction for Use	LOT	Lot Number
CONT	Content		Storage Temperature
	Expiry Date	IVD	In Vitro Diagnostics

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