

Overview

Useful For

Evaluation of hypo- or hyperphosphatemic states

Evaluation of patients with nephrolithiasis

Method Name

Molybdic Acid

NY State Available

Yes

Specimen

Specimen Type

Urine

Specimen Required

Supplies: Sarstedt 5 mL Aliquot Tube (T914)

Container/Tube: Plastic, 5-mL tube

Specimen Volume: 4 mL

Collection Instructions:

1. Collect a random urine specimen.
2. No preservative.

Forms

If not ordering electronically, complete, print, and send a [Renal Diagnostics Test Request](#) (T830) with the specimen.

Specimen Minimum Volume

1 mL

Reject Due To

All specimens will be evaluated at Mayo Clinic Laboratories for test suitability.

Specimen Stability Information

| Specimen Type | Temperature | Time | Special Container |
|---------------|--------------------------|---------|-------------------|
| Urine | Refrigerated (preferred) | 14 days | |
| | Ambient | 7 days | |

| | | | |
|--|--------|---------|--|
| | Frozen | 30 days | |
|--|--------|---------|--|

Clinical & Interpretive

Clinical Information

Approximately 80% of filtered phosphorus is reabsorbed by renal proximal tubule cells. The regulation of urinary phosphorus excretion is principally dependent on regulation of proximal tubule phosphorus reabsorption. A variety of factors influence renal tubular phosphate reabsorption and consequent urine excretion. Factors that increase urinary phosphorus excretion include high phosphorus diet, parathyroid hormone, extracellular volume expansion, low dietary potassium intake, and proximal tubule defects (eg, Fanconi syndrome, X-linked hypophosphatemic rickets, tumor-induced osteomalacia). Factors that decrease, or are associated with decreases in, urinary phosphorus excretion include low dietary phosphorus intake, insulin, high dietary potassium intake, and decreased intestinal absorption of phosphorus (eg, phosphate-binding antacids, vitamin D deficiency, malabsorption states).

A renal leak of phosphate has also been implicated as contributing to kidney stone formation in some patients.

A timed 24-hour urine collection is the preferred specimen for measuring and interpreting this urinary analyte. Random collections normalized to urinary creatinine may be of some clinical use in patients who cannot collect a 24-hour specimen, typically small children.

Reference Values

No established reference values

Random urine phosphorus may be interpreted in conjunction with serum phosphorus, using both values to calculate fractional excretion of chloride.

The calculation for fractional excretion (FE) of phosphorus is

$$FE(P) = ([P(\text{urine}) \times \text{Creat}(\text{serum})]) / ([P(\text{serum}) \times \text{Creat}(\text{urine})]) \times 100$$

Interpretation

Interpretation of urinary phosphorous excretion is dependent upon the clinical situation and should be interpreted in conjunction with the serum phosphorous concentration.

Cautions

No significant cautionary statements.

Clinical Reference

1. Delaney MP, Lamb EJ: Kidney disease. In: Rifai N, Horvath AR, Wittwer CT, eds. Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. 6th ed. Elsevier; 2018:1280-1283
2. Matos V, van Melle G, Boulat O et al: Urinary phosphate/creatinine, calcium/creatinine, and magnesium/creatinine ratios in a healthy pediatric population. *J Pediatr.* 1997;131:252-257
3. Agarwal R, Knochel JP: Hypophosphatemia and hyperphosphatemia. In: Brenner BM, ed. *The Kidney.* 6th ed. WB Saunders Company; 2000:1071-1125

Performance

Method Description

Inorganic phosphorus reacts with ammonium molybdate in an acidic solution to form ammonium phosphomolybdate. The ammonium phosphomolybdate is quantified in the ultraviolet range (340 nm). (Package insert: Roche Phosphorus. Roche Diagnostics; V9.0 12/2019)

PDF Report

No

Day(s) Performed

Monday through Sunday

Report Available

Same day/1 to 3 days

Specimen Retention Time

7 days

Performing Laboratory Location

Mayo Clinic Laboratories - Rochester Main Campus

Fees & Codes

Fees

- Authorized users can sign in to [Test Prices](#) for detailed fee information.
- Clients without access to Test Prices can contact [Customer Service](#) 24 hours a day, seven days a week.
- Prospective clients should contact their account representative. For assistance, contact [Customer Service](#).

Test Classification

This test has been cleared, approved, or is exempt by the US Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

CPT Code Information

84105

LOINC® Information

| Test ID | Test Order Name | Order LOINC® Value |
|-----------|-----------------------|---------------------|
| RPHOC | Phosphorus, Random, U | 2778-9 |
| Result ID | Test Result Name | Result LOINC® Value |
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|-------|-----------------------|--------|
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