Overview

Useful For

Monitoring therapy for kidney stones

Identifying increased urinary oxalate as a risk factor for stone formation

Diagnosis of primary or secondary hyperoxaluria

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. Therefore, this random test is offered for children <16 years old.

Method Name

Enzymatic Using Oxalate Oxidase

NY State Available

Yes

Specimen

Specimen Type

Urine

Specimen Required

Container/Tube: Plastic, 10-mL urine tube (T068)

Specimen Volume: 7 mL

Collection Instructions:

1. Collect a random urine specimen.

2. No preservative.

3. Specimen pH should be between 4.5 and 8 and will stay in this range if kept refrigerated. Specimens with pH >8 may indicate bacterial contamination, and testing will be cancelled. Do not attempt to adjust pH as it will adversely affect results.

Additional Information:

1. 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. Therefore, this random test is offered for children <16 years old.

2. Avoid taking large doses (>2 g orally/24 hours) of vitamin C prior to specimen collection.

Specimen Minimum Volume

6 mL
Clinical and Interpretive

Clinical Information

Oxalate is an end product of glyoxalate and glycerate metabolism. Humans have no enzyme capable of degrading oxalate, so it must be eliminated by the kidney.

In tubular fluid, oxalate can combine with calcium to form calcium oxalate stones. In addition, high concentrations of oxalate may be toxic for renal cells.

Increased urinary oxalate excretion results from inherited enzyme deficiencies (primary hyperoxaluria), gastrointestinal disorders associated with fat malabsorption (secondary hyperoxaluria), or increased oral intake of oxalate-rich foods or vitamin C.

Since increased urinary oxalate excretion promotes calcium oxalate stone formation, various strategies are employed to lower oxalate excretion.

Reference Values

No established reference values

Interpretation

An elevated urine oxalate (>0.46 mmol/day) may suggest disease states such as secondary hyperoxaluria (fat malabsorption), primary hyperoxaluria (alanine glyoxalate transferase enzyme deficiency, glyceric dehydrogenase deficiency), idiopathic hyperoxaluria, or excess dietary oxalate or vitamin C intake.

In stone-forming patients high urinary oxalate values, sometimes even in the upper limit of the normal range, are treated to reduce the risk of stone formation.

The urinary oxalate creatinine ratio varies widely in young children from <0.35 mmol/mL at birth to <0.15 mmol/mL at 1 year to <0.10 mmol/mL at 10 years and <0.05 mmol/mL at 20 years of age (see table below).(1)

| Oxalate/Creatinine (mg/mg) |
Test Definition: ROXU
Oxalate, Pediatric, Random, U

<table>
<thead>
<tr>
<th>Age (year)</th>
<th>95th Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-0.5</td>
<td>&lt;0.175</td>
</tr>
<tr>
<td>0.5-1</td>
<td>&lt;0.139</td>
</tr>
<tr>
<td>1-2</td>
<td>&lt;0.103</td>
</tr>
<tr>
<td>2-3</td>
<td>&lt;0.08</td>
</tr>
<tr>
<td>3-5</td>
<td>&lt;0.064</td>
</tr>
<tr>
<td>5-7</td>
<td>&lt;0.056</td>
</tr>
<tr>
<td>7-17</td>
<td>&lt;0.048</td>
</tr>
</tbody>
</table>

**Cautions**

Ingestion of ascorbic acid (>2 g/day) may falsely elevate the measured urinary oxalate excretion.

Do not collect in metal-capped containers.

**Clinical Reference**


**Performance**

**Method Description**

The assay utilizes oxalate oxidase, which oxidizes oxalate to carbon dioxide and peroxide. In the presence of peroxidase, the peroxide oxidatively couples 3-methyl-2-benzothiazolinone and 3-dimethylaminobenzoic acid to form indamine dye, which is measured spectrophotometrically at 580 nm. (Kasidas GP, Rose GA: Continuous-flow assay for urinary oxalate using immobilized oxalate oxidase. Ann Clin Biochem 1985;22:412-419 [A modification of the method])

**PDF Report**

No

**Day(s) and Time(s) Test Performed**

Monday through Saturday; 1 p.m.

**Analytic Time**

3 days; Excess capacity for this test is limited. Therefore, if sample volume exceeds analyzer capacity, the turnaround time will increase. Please contact the lab supervisor for an estimate.

**Maximum Laboratory Time**

5 days

**Specimen Retention Time**

7 days
Performing Laboratory Location
Rochester

Fees and 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 Regional Manager. For assistance, contact Customer Service.

Test Classification
This test was developed and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Code Information
83945

LOINC® Information

<table>
<thead>
<tr>
<th>Test ID</th>
<th>Test Order Name</th>
<th>Order LOINC Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROXU</td>
<td>Oxalate, Pediatric, Random, U</td>
<td>In Process</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Result ID</th>
<th>Test Result Name</th>
<th>Result LOINC Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>OXCON</td>
<td>Oxalate, Pediatric, Random, U</td>
<td>15086-2</td>
</tr>
<tr>
<td>OXCO2</td>
<td>Oxalate Concentration</td>
<td>2700-3</td>
</tr>
<tr>
<td>CREA8</td>
<td>Creatinine Concentration</td>
<td>2161-8</td>
</tr>
<tr>
<td>RATO7</td>
<td>Oxalate/Creatinine Ratio</td>
<td>13483-3</td>
</tr>
</tbody>
</table>