MAYO CLINIC LABORATORIES

# Test Definition: LITH

Lithium, Serum

## Overview

### Useful For

Monitoring therapy of patients with bipolar disorders, including recurrent episodes of mania and depression

Evaluating lithium toxicity

### Method Name

Colorimetric

### NY State Available

Yes

## Specimen

### Specimen Type

Serum

### Specimen Required

**Collection Container/Tube:**

**Preferred:** Serum gel

**Acceptable:** Red top

**Submission Container/Tube:** Plastic vial

**Specimen Volume:** 0.5 mL

**Collection Instructions:**

1. Draw blood 8 to 12 hours after last dose (trough specimen).
2. Serum gel tubes should be centrifuged within 2 hours of collection.
3. Red-top tubes should be centrifuged, and the serum aliquoted into a plastic vial within 2 hours of collection.

**Additional Information:** Peak serum concentrations do not correlate with symptoms.

### Forms

If not ordering electronically, complete, print, and send a Therapeutics Test Request (T831) with the specimen.

### Specimen Minimum Volume

0.25 mL

### Reject Due To

| | |
|---|---|
| Gross hemolysis | Reject |

### Specimen Stability Information

| Specimen Type | Temperature | Time | Special Container |
|---|---|---|---|
| Serum | Refrigerated (preferred) | 7 days | |
| | Frozen | 28 days | |
| | Ambient | 72 hours | |

## Clinical & Interpretive

### Clinical Information

Lithium alters the intraneuronal metabolism of catecholamines by an unknown mechanism. It is used to suppress the manic phase of manic-depressive psychosis.

Lithium is distributed throughout the total water spaces of the body and is excreted primarily by the kidney.

Toxicity from lithium salts leads to ataxia, slurred speech, and confusion. Since the concentration of lithium in the serum varies with the time after the dose, blood for lithium determination should be drawn at a standard time, preferably 8 to 12 hours after the last dose (trough values).

### Reference Values

Therapeutic: 0.5-1.2 mmol/L (trough concentration)
Critical value: >1.6 mmol/L
There is no relationship between peak concentration and degree of intoxication.

### Interpretation

The therapeutic range for lithium has been established at 0.5 to 1.2 mmol/L. Within this range, most people will respond to the drug without symptoms of toxicity. However, response and side effects are individual. Lithium concentrations and side effects can increase with the loss of salt and water from the body, which can occur with a salt-free diet, excessive sweating, or an illness that causes vomiting and diarrhea. A variety of prescribed drugs, over-the-counter medications, and supplements can also increase, decrease, or interfere with the concentrations of lithium.

### Cautions

No significant cautionary statements

### Clinical Reference

1. Judd LL: The therapeutic use of psychotropic medications: lithium and other mood-normalizing medications. In Harrison's Principles of Internal Medicine. 12th edition. Edited by JD Wilson, E Braunwald, KJ Isselbacher, et al. New York, McGraw-Hill Book Company, 1991, pp 2141-2143
2. Gelenberg AJ, Kane JM, Kekller MB, et al: Comparison of standard and low serum levels of lithium for maintenance treatment of bipolar disorder. N Engl J Med 1989;321:1489-1493
3. Lithium Product Monograph, Physicians' Desk Reference (PDR). 61st edition. Montvale, NJ: Thomson PDR, 2007

## Performance

### Method Description
Colorimetric test. Lithium present in the sample reacts with a substituted porphyrin compound at an alkaline pH, resulting in a change in absorbance which is directly proportional to the concentration of lithium in the sample.(Package insert: Roche Lithium reagent, Roche Diagnostic Corp, Indianapolis, IN)

### PDF Report
No

### Day(s) Performed
Monday through Sunday

### Report Available
Same day/1 day

### Specimen Retention Time
1 week

### Performing Laboratory Location
Rochester

## 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
80178

### LOINC® Information

| Test ID | Test Order Name | Order LOINC® Value |
|---|---|---|
| LITH | Lithium, S | 14334-7 |

| Result ID | Test Result Name | Result LOINC® Value |
|---|---|---|
| LITH | Lithium, S | 14334-7 |