**Overview**

**Useful For**
First-order test in the diagnosis of lecithin-cholesterol acyltransferase deficiency

**Method Name**
Enzymatic Colorimetric

**NY State Available**
Yes

**Specimen**

**Specimen Type**
Serum

**Specimen Required**

**Patient Preparation:**
1. Fasting-overnight (12-14 hours)
2. Patient must not consume any alcohol for 24 hours before the specimen is drawn.

**Collection Container/Tube:**

**Preferred:** Red top

**Acceptable:** Serum gel

**Submission Container/Tube:** Plastic vial

**Specimen Volume:** 1 mL

**Forms**
If not ordering electronically, complete, print, and send a Cardiovascular Test Request Form (T724) with the specimen.

**Specimen Minimum Volume**
0.5 mL

**Reject Due To**

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Hemolysis</td>
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<tr>
<td>Lipemia</td>
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<td>Icterus</td>
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<td>Other</td>
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**Specimen Stability Information**
Phospholipids, S

**Clinical and Interpretive**

**Clinical Information**

The phospholipids comprise about 1/3 of the total lipids in serum. These consist in a large part of a lipid, phosphatidylcholine (formerly lecithin), in which 1 of the glycerol carbons is esterified with choline phosphate. A major step in lipoprotein particle remodeling results from lecithin-cholesterol acyltransferase (LCAT) activity, which normally transesterifies free cholesterol with fatty acids derived from phosphatidylcholine. LCAT deficiency results in a lack of remodeling of primary lipoprotein particles, affecting eventual cholesterol uptake and elimination. In cases of deficiency of LCAT, the concentration of lecithin in the serum are increased several-fold.

Clinical findings in LCAT deficiency include corneal opacities, anemia, and frequently, proteinuria. The disorder is inherited as an autosomal recessive trait. Early atherosclerosis develops in many individuals with this disorder.

In addition, sphingomyelin normally comprises about 5% to 20% of the total phospholipids of serum. In Niemann-Pick Type A and B diseases, sphingomyelin accumulates in visceral and neural tissues and may become increased in the serum.

Other disorders involving alterations of the concentration, composition, and/or lipoprotein distribution include: abeta- or hypobetalipoproteinemia, Tangier disease, or fish eye disease.

**Reference Values**

155-275 mg/dL

Reference values have not been established for patients who are <16 years of age.

**Interpretation**

Elevated in cases of lecithin-cholesterol acyltransferase deficiency deficiency due to elevations of lecithin

**Cautions**

Analyses of disorders mentioned are complex. Specialized additional testing may be required.

**Clinical Reference**


**Performance**

**Method Description**
Direct analysis of serum is performed on a Cobas chemistry analyzer using enzymatic reagents supplied by Wako Chemicals USA, Inc. Choline is liberated from lecithin, sphingomyelin, and lysolecithin by phospholipase D. Choline reacts with choline oxidase to produce hydrogen peroxide that, in turn, reacts with 3,5-dimethoxy-N-ethyl-N-(2-hydroxy-3-sulfopropyl) aniline sodium (DAOS) and 4-aminoantipyrine to produce a blue pigment. The product concentration, measured spectrophotometrically, is proportional to the serum phospholipid concentration. (Takayama M, Itoh S, Nagasaki T, Tanimizu I: A new enzymatic method for determination of serum choline-containing phospholipids. Clin Chim Acta 1977;79:93-98)

**PDF Report**

No

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

Monday through Friday; 7 a.m.-5 p.m.

**Analytic Time**

1 day (not reported on Saturday or Sunday)

**Maximum Laboratory Time**

3 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**

84311

**LOINC® Information**

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