Overview

Useful For
Evaluation of individuals with motor and sensory neuropathies

Monitoring vitamin E status of premature infants requiring oxygenation

Evaluation of persons with intestinal malabsorption of lipids

Method Name
Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS)

NY State Available
Yes

Specimen

Specimen Type
Serum

Shipping Instructions
Ship specimen in amber vial to protect from light.

Specimen Required

Patient Preparation: Fasting overnight (12-14 hours) (infants-draw prior to next feeding)

Supplies: Amber Frosted Tube, 5 mL (T192)

Collection Container/Tube:
Preferred: Red top
Acceptable: Serum gel

Submission Container/Tube: Amber vial

Specimen Volume: 0.5 mL

Collection Instructions: Within 24 hours of collection, aliquot specimen into amber vial to protect from light.

Forms
If not ordering electronically, complete, print, and send a General Request (T239) with the specimen.

Specimen Minimum Volume
0.25 mL

Reject Due To

<table>
<thead>
<tr>
<th>Condition</th>
<th>Action</th>
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</thead>
<tbody>
<tr>
<td>Gross hemolysis</td>
<td>Reject</td>
</tr>
<tr>
<td>Gross lipemia</td>
<td>Reject</td>
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</table>
Gross icterus  
OK

**Specimen Stability Information**

<table>
<thead>
<tr>
<th>Specimen Type</th>
<th>Temperature</th>
<th>Time</th>
<th>Special Container</th>
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<tbody>
<tr>
<td>Serum</td>
<td>Refrigerated (preferred)</td>
<td>44 days</td>
<td>LIGHT PROTECTED</td>
</tr>
<tr>
<td></td>
<td>Frozen</td>
<td>44 days</td>
<td>LIGHT PROTECTED</td>
</tr>
<tr>
<td></td>
<td>Ambient</td>
<td>7 days</td>
<td>LIGHT PROTECTED</td>
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**Clinical and Interpretive**

**Clinical Information**

Vitamin E (alpha-tocopherol) contributes to the normal maintenance of biomembranes, the vascular and nervous systems, and provides antioxidant protection for vitamin A. The level of vitamin E in the plasma or serum after a 12- to 14-hour fast reflects the individual's reserve status.

The current understanding of the specific actions of vitamin E is very incomplete. The tocopherols (vitamin E and related fat-soluble compounds) function as antioxidants and free-radical scavengers, protecting the integrity of unsaturated lipids in the biomembranes of all cells and preserving retinol (vitamin A) from oxidative destruction. Vitamin E is known to promote the formation of prostacyclin in endothelial cells and to inhibit the formation of thromboxanes in thrombocytes, thereby minimizing the aggregation of thrombocytes at the surface of the endothelium. Those influences on thromocyte aggregation may be of significance in relation to risks for coronary atherosclerosis and thrombosis.

Deficiency of vitamin E in children leads to reversible motor and sensory neuropathies; this problem also has been suspected in adults. Premature infants who require an oxygen-enriched atmosphere are at increased risk for bronchopulmonary dysplasia and retrolental fibroplasia; supplementation with vitamin E has been shown to lessen the severity of, and may even prevent, those problems.

Deficiencies of vitamin E may arise from poor nutrition or from intestinal malabsorption. At-risk persons, especially children, include those with bowel disease, pancreatic disease, chronic cholestasis, celiac disease, cystic fibrosis, and intestinal lymphangiectasia. Infantile cholangiopathies that may lead to malabsorption of vitamin E include intrahepatic and extrahepatic biliary atresia, paucity of intrahepatic bile ducts, arteriohepatic dysplasia, and rubella-related embryopathy. In addition, low blood levels of vitamin E may be associated with abetalipoproteinemia, presumably as a result of a lack of the ability to form very low-density lipoproteins and chylomicrons in the intestinal absorptive cells of affected persons.

Vitamin E toxicity has not been established clearly. Chronically excessive ingestion has been implicated as a cause of thrombophlebitis, although this has not been definitively verified.

**Reference Values**

0-17 years: 3.8-18.4 mg/L

> or =18 years: 5.5-17.0 mg/L

**Interpretation**

Therapeutic Ranges:
Test Definition: VITE
Vitamin E, S

0-17 years: 3.8-18.4 mg/L
> or =18 years: 5.5-17.0 mg/L

Significant deficiency: <3.0 mg/L

Cautions
Testing of nonfasting specimens or the use of vitamin supplementation can result in elevated serum vitamin concentrations. Reference values were established using specimens from individuals who were fasting.

Clinical Reference

Performance

Method Description
Deuterated vitamin E (d[6]-alpha-tocopherol) is added to serum as an internal standard. Vitamin E (alpha-tocopherol) and the deuterated internal standard are extracted from the specimens and analyzed by liquid chromatography-tandem mass spectrometry.(Unpublished Mayo method)

PDF Report
No

Day(s) and Time(s) Test Performed
Monday through Friday

Analytic Time
2 days

Maximum Laboratory Time
5 days

Specimen Retention Time
14 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
84446

LOINC® Information

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<tr>
<th>Test ID</th>
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<th>Order LOINC Value</th>
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<tbody>
<tr>
<td>VITE</td>
<td>Vitamin E, S</td>
<td>1823-4</td>
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<table>
<thead>
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<tbody>
<tr>
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<td>A-Tocopherol, Vitamin E</td>
<td>1823-4</td>
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