Test Definition: VITK1
Vitamin K1, S

Overview

Useful For
Assessment of circulating vitamin K1 concentration

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

NY State Available
Yes

Specimen

Specimen Type
Serum

Specimen Required
Collection Container/Tube:

Preferred: Red top

Acceptable: Serum gel

Submission Container/Tube: Plastic vial

Specimen Volume: 2 mL

Collection Instructions: Fasting overnight (12-14 hours) (infants-draw prior to next feeding).

Specimen Minimum Volume
0.75 mL

Reject Due To

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

Specimen Stability Information

<table>
<thead>
<tr>
<th>Specimen Type</th>
<th>Temperature</th>
<th>Time</th>
<th>Special Container</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serum</td>
<td>Refrigerated (preferred)</td>
<td>30 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ambient</td>
<td>30 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frozen</td>
<td>30 days</td>
<td></td>
</tr>
</tbody>
</table>
Clinical and Interpretive

Clinical Information

Vitamin K1 or phylloquinone is part of a group of similar fat-soluble vitamins in which the 2-methyl-1,4-naphthoquinone ring is common. Phylloquinone is found in high amounts in leafy green vegetables and some fruits (avocado, kiwi). It is a required cofactor involved in the gamma-carboxylation of glutamate residues of several proteins. Most notably, the inactive forms of the coagulation factors prothrombin (factor II), factors VII, IX, and X and protein S and protein C are converted to their active forms by the transformation of glutamate residues to gamma-carboxyglutamic acid (Gla). Other proteins such as those involved in bone metabolism, cell growth, and apoptosis also undergo this Gla transformation. Measurement of vitamin K1 (phylloquinone) in fasting serum is a strong indicator of dietary intake and status.

Reference Values

> or =18 years: 0.10-2.20 ng/mL

<18 years: not established

Interpretation

Low vitamin K1 concentrations in the serum are indicative of insufficiency and poor vitamin K1 status.

Cautions

Testing of nonfasting specimens or the use of vitamin K1 supplementation can result in elevated serum vitamin K1 concentrations.

Clinical Reference


Performance

Method Description

Deuterated stable isotope (vitamin K1-d7) is added to a serum sample as an internal standard. Protein is precipitated from the mixture by the addition of ethanol. Vitamin K1 and internal standard are extracted from the resulting supernatant by solid-phase extraction. Vitamin K1 and internal standard are then separated utilizing high-throughput liquid chromatography (HTLC) with analysis on a tandem mass spectrometer equipped with a heated nebulizer ion source using multiple-reaction monitoring. (Unpublished Mayo method)

PDF Report

No

Day(s) and Time(s) Test Performed

Monday through Friday; 4 p.m.

Analytic Time

2 days
Maximum Laboratory Time
4 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
84597

LOINC® Information

<table>
<thead>
<tr>
<th>Test ID</th>
<th>Test Order Name</th>
<th>Order LOINC Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>VITK1</td>
<td>Vitamin K1, S</td>
<td>9622-2</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>62167</td>
<td>Vitamin K1, S</td>
<td>9622-2</td>
</tr>
</tbody>
</table>