MAYO CLINIC LABORATORIES

Test Definition: VITE

Vitamin E, Serum

Overview

Useful For

Assessing vitamin E status

Monitoring vitamin E supplementation or treatment

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: 12 hours, required; infants should have specimen collected before next feeding

Supplies: Amber Frosted Tube, 5 mL (T915)

Collection Container/Tube:

Preferred: Red top

Acceptable: Serum gel

Submission Container/Tube: Amber vial

Specimen Volume: 0.5 mL

Collection Instructions: Within 2 hours of collection, centrifuge and aliquot serum into a light protected plastic vial.

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

Gross hemolysis	OK

Gross lipemia	Reject
Gross icterus	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum	Refrigerated (preferred)	44 days	LIGHT PROTECTED
	Ambient	7 days	LIGHT PROTECTED
	Frozen	44 days	LIGHT PROTECTED

Clinical & Interpretive

Clinical Information

Vitamin E is the generic term for two different groups of methylated phenol compounds with a chromane alcoholic core linked to poly-carbon chains (tocopherols and tocotrienols).

These vitamins are all free radical scavengers, with a-Tocopherol being the most potent one in humans, as most of the related compounds are not re-secreted by the liver, thus leading to much lower circulating concentrations.

Vitamin E deficiency is very rare and mostly seen in patients with extreme malabsorption of fat and in patients with abetalipoproteinemia, a rare inborn error of metabolism. Patients with these conditions may develop hemolytic anemia, peripheral neuropathy, myopathy, retinopathy, and immune deficiency.

There is a large body of scientific studies that indicates positive effects on outcomes of various diseases if regular Vitamin E supplementation is provided; however, several trials have shown evidence of increasing bleeding risks at high Vitamin E doses. Therefore, tables of tolerable doses in children and adults have been established, which should not be exceeded.

Reference Values

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

Interpretation

Vitamin E levels below the reference interval suggest deficiency. Conversely, Vitamin E concentrations significantly above the upper healthy reference population range might indicate that Vitamin E intake exceeds the tolerable upper daily intake level(s).

The rare occurrence of low Vitamin A and E levels might correlate with potential deficiency and investigation of potential fat malabsorptions should be considered.

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

1. Sodi R, Taylor A. Vitamins and trace elements In: Rifai N, Horvath AR, Wittwer CT, eds. Tietz Fundamentals of Clinical Chemistry and Molecular Diagnostics. 8th ed. Elsevier; 2020:466-487
2. Vitamin A and Carotenoids-Fact Sheet for Health Professionals. US Department of Health and Human Services, National Institutes of Health. Updated March 10, 2025. Accessed October 7, 2025. Available at https://ods.od.nih.gov/factsheets/VitaminA-HealthProfessional/
3. Greaves RF, Woollard GA, Hoad KE, et al. Laboratory medicine best practice guideline: vitamins a, e and the carotenoids in blood. Clin Biochem Rev. 2014;35(2):81-113
4. Brigelius-Flohe R, Traber MG. Vitamin E: function and metabolism. FASEB J. 1999;13(10):1145-1155
5. Traber MG, Head B. Vitamin E: How much is enough, too much and why!. Free Radic Biol Med. 2021;177:212-225. doi:10.1016/j.freeradbiomed.2021.10.028
6. Traber MG. Vitamin E inadequacy in humans: causes and consequences. Adv Nutr. 2014;(5):503-14. doi:10.3945/an.114.006254

Performance

Method Description

Deuterated vitamin E (d6-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) Performed

Monday through Friday, Sunday

Report Available

3 to 5 days

Specimen Retention Time

14 days

Performing Laboratory Location

Mayo Clinic Laboratories - Rochester Superior Drive

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 Definition: VITE

Vitamin E, Serum

Test Classification

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

CPT Code Information

84446

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
VITE	Vitamin E, S	1823-4

Result ID	Test Result Name	Result LOINC® Value
2350	A-Tocopherol, Vitamin E	1823-4