MAYO CLINIC LABORATORIES

Test Definition: BIOTN

Biotin, Serum

Overview

Useful For

Measurement of biotin in serum

Assessment of biotin concentrations in individuals taking biotin supplements

Investigation of unexpected results from immunoassays that utilize biotin-streptavidin detection methods

This test is **not useful as** a screen for biotinidase deficiency.

Highlights

Serum biotin is usually at relatively low endogenous concentrations but can be found at high concentrations if vitamin and herbal supplements containing biotin are taken.

This test measures free biotin concentrations in serum and can be used to determine if a patient's high biotin concentrations are likely from biotin supplementation or treatment.

Method Name

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

NY State Available

Yes

Specimen

Specimen Type

Serum

Ordering Guidance

If testing for biotinidase deficiency is requested, order BIOTS / Biotinidase, Serum.

Shipping Instructions

Freeze specimens within 3 days of collection and send frozen.

Specimen Required

Collection Container/Tube:
Preferred: Serum gel
Acceptable: Red top
Submission Container/Tube: Plastic vial
Specimen Volume: 1 mL
Collection Instructions: Centrifuge and aliquot serum into a plastic vial.

Specimen Minimum Volume

0.5 mL

Reject Due To

Gross hemolysis	OK
Gross lipemia	OK
Gross icterus	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum	Frozen (preferred)	30 days	
	Ambient	24 hours	
	Refrigerated	7 days	

Clinical & Interpretive

Clinical Information

Biotin is a water soluble B complex vitamin (vitamin B7 or vitamin H) that is an essential cofactor for the synthesis of fatty acids, catabolism of branched chained amino acids, and for gluconeogenesis. It is usually found at relatively low endogenous concentrations in patients on a normal diet. However, biotin can be found in over-the-counter multi-vitamins, prenatal vitamins, and dietary supplements marketed for hair, skin, and nail growth. Additionally, treatment of certain progressive multiple sclerosis patients with high doses of biotin has been reported to be beneficial. Biotin supplementation from either over-the-counter or prescription sources can result in extremely elevated circulating biotin. Some immunoassays in the clinical laboratory use chemistry that utilizes the high affinity and avidity that biotin has for binding avidin (or streptavidin). As a result, high serum biotin concentrations can yield inaccurate laboratory results in laboratory assays that utilize this biotin-streptavidin chemistry. Specifically, specimens with high biotin can yield falsely decreased results when the testing methodology utilizes sandwich-based methods or falsely increased results when the methodology utilizes competitive binding methods. Each clinical laboratory method that utilizes biotin-streptavidin chemistry has a defined biotin concentration limit above which serum biotin can interfere with assay results. This test measures free biotin concentrations in serum and can be used to determine whether a patient has high biotin concentrations that are likely from biotin supplementation/treatment.

Reference Values

> or =18 years: < or =0.3 ng/mL

Reference values have not been established for patients who are <18 years of age.

Interpretation

Biotin results that are significantly higher than the reference interval indicate biotin supplementation.

Cautions

It is unknown how long biotin will remain elevated in patients taking biotin supplements. Variables include the dose

taken, the duration of supplementation, and the time of blood draw after ingestion.

Supportive Data

An internal study of volunteers taking 1 dose of 5000 to 20,000 micrograms of biotin showed elevated serum biotin concentrations of between 10 to 50 ng/mL at 1 to 2 hours post supplementation.

Clinical Reference

1. Elston MS, Sehgal S, Du Toit S, Yarndley T, Conaglen JV. Factitious Graves' disease due to biotin immunoassay interference-a case and review of the literature. J Clin Endocrinol Metab. 2016;101(9):3251-3255
2. Grimsey P, Frey N, Bendig G, et al. Population pharmacokinetics of exogenous biotin and the relationship between biotin serum levels and in vitro immunoassay interference. Int J Pharmacokinet. 2017;2:247-256
3. Katzman BM, Lueke AJ, Donato LJ, Jaffe AS, Baumann NA. Prevalence of biotin supplement usage in outpatients and plasma biotin concentrations in patients presenting to the emergency department. Clin Biochem. 2018;60:11-16

Performance

Method Description

Biotin (Vitamin B7) is quantified in serum by liquid chromatography tandem mass spectrometry.(Unpublished Mayo method)

PDF Report

No

Day(s) Performed

Tuesday

Report Available

2 to 7 days

Specimen Retention Time

7 days

Performing Laboratory Location

Mayo Clinic Laboratories - Rochester Main Campus

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.

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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

84591

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
BIOTN	Biotin, S	1980-2

Result ID	Test Result Name	Result LOINC® Value
606867	Biotin, S	1980-2