MAYO CLINIC LABORATORIES

Test Definition: CDTA

Carbohydrate Deficient Transferrin, Adult, Serum

Overview

Useful For

Indicating chronic alcohol abuse

This test is **not appropriate** for screening patients for congenital disorders of glycosylation.

Highlights

Patients with chronic alcoholism demonstrate increased levels of carbohydrate deficient transferrin over the amount of normally glycosylated tetrasialotransferrin.

Method Name

Affinity Chromatography/Mass Spectrometry (MS)

NY State Available

Yes

Specimen

Specimen Type

Serum

Ordering Guidance

This test is for evaluation of alcohol abuse. If the ordering physician is looking for congenital disorders of glycosylation, order CDG / Carbohydrate Deficient Transferrin for Congenital Disorders of Glycosylation, Serum.

Necessary Information

1. Patient's age is required.

2. Reason for testing is required if patient is younger than 21 years.

Specimen Required

Collection Container/Tube:

Preferred: Serum gel

Acceptable: Red top

Submission Container/Tube: Plastic vial

Specimen Volume: 0.1 mL

Collection Instructions: Centrifuge and aliquot serum into a plastic vial.

Forms

If not ordering electronically, complete, print, and send a Therapeutics Test Request (T831) with the specimen.

Specimen Minimum Volume

0.05 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)	45 days	
	Refrigerated	28 days	
	Ambient	7 days	

Clinical & Interpretive

Clinical Information

Chronic alcoholism causes a transient change in the glycosylation pattern of transferrin where the relative amounts of disialo- and asialotransferrin (carbohydrate deficient transferrin: [CDT]) are increased over the amount of normally glycosylated tetrasialotransferrin. This recognition led to the use of CDT in serum as a marker for chronic alcohol abuse.

CDT typically normalizes within several weeks of abstinence of alcohol use. However, it is important to recognize that there are other causes of abnormal CDT levels, which include congenital disorders of glycosylation and other genetic and nongenetic causes of acute or chronic liver disease.

CDT testing alone is not recommended for general screening for alcoholism; however, when combined with other methods (ie, gamma-glutamyltransferase, mean corpuscular volume, patient self-reporting, ethylglucuronide analysis), clinicians can expect to identify the majority of patients who consume a large amount of alcohol.

Reference Values

< or =0.10
0.11-0.12 (indeterminate)

Interpretation

Patients with chronic alcoholism may develop abnormally glycosylated transferrin isoforms (ie, carbohydrate deficient transferrin: CDT >0.12). CDT results from 0.11 to 0.12 are considered indeterminate.

Patients with liver disease due to genetic or nongenetic causes may also have abnormal results.

Cautions

This assay has not been fully validated for the investigation of alcoholism.

Carbohydrate deficient transferrin (CDT) testing alone is not recommended for general screening for alcoholism. Analysis of more than one biomarker is recommended to avoid misinterpretation of results.

The abnormal transferrin isoform pattern in patients with chronic alcoholism is similar to that observed in congenital disorders of glycosylation (CDG). However, unlike most patients with CDG, the relative amount of monoglycosylated transferrin is much lower. Other conditions such as hereditary fructose intolerance, galactosemia, and liver disease may result in increased levels of CDT. In addition, preanalytic variables such as bacterial contamination may cause falsely elevated CDT values. Several factors may cause variability in CDT analysis, including ethnicity, gender, pregnancy, body mass index, smoking, blood pressure, iron metabolism, drug interactions, chronic medical illness.

Clinical Reference

1. De Giovanni N, Cittadini F, Martello S. The usefulness of biomarkers of alcohol abuse in hair and serum carbohydrate-deficient transferrin: a case report. Drug Test Anal. 2015;7(8):703-707
2. Fleming MF, Anton RF, Spies CD. A review of genetic, biological, pharmacological, and clinical factors that affect carbohydrate-deficient transferrin levels. Alcohol Clin Exp Res. 2004;28(9):1347-1355
3. Gough G, Heathers L, Puckett D, et al. The Utility of Commonly Used Laboratory Tests to Screen for Excessive Alcohol Use in Clinical Practice. Alcohol Clin Exp Res. 2015;39(8):1493-1500
4. Shibamoto A, Namisaki T, Suzuki J, et al. Clinical significance of gamma-glutamyltranspeptidase combined with carbohydrate-deficient transferrin for the assessment of excessive alcohol consumption in patients with alcoholic cirrhosis. Medicines (Basel). 2021;8(7):39
5. Torrente MP, Freeman WM, Vrana KE. Protein biomarkers of alcohol abuse. Expert Rev Proteomics. 2012;9(4):425-436

Performance

Method Description

This method is a qualitative assay that measures transferrin isoform ratios using a combination of immunoaffinity capture and liquid chromatography-mass spectrometry analysis.(Lacey JM, Bergen R, Magera MJ, et al: Rapid determination of transferrin isoforms by immunoaffinity liquid chromatography and electrospray mass spectrometry. Clin Chem. 2001; Mar;47(3):513-518; Helander A, Wielders J, Anton R, et al. Standardisation and use of the alcohol biomarker carbohydrate-deficient transferrin [CDT], Clin Chim Acta. 2017;467:15-20 doi:10.1016/j.cca.2017.03.018)

PDF Report

No

Day(s) Performed

Wednesday

Report Available

3 to 9 days

Specimen Retention Time

1 month

Performing Laboratory Location

Rochester

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 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

82373

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
CDTA	Carb Def Transferrin, Adult, S	53803-3

Result ID	Test Result Name	Result LOINC® Value
31714	Mono-oligo/Di-oligo Ratio	35469-6
31715	Interpretation	59462-2