MAYO CLINIC LABORATORIES

Test Definition: DLAC

D-Lactate, Plasma

Overview

Useful For

As an adjunct to urine D-lactate (preferred) for the diagnosis of D-lactate acidosis

Special Instructions

- Biochemical Genetics Patient Information

Method Name

Gas Chromatography Mass Spectrometry (GCMS) Stable Isotope Dilution Analysis

NY State Available

Yes

Specimen

Specimen Type

Plasma NaFl-KOx

Ordering Guidance

Urine is the preferred specimen for D-lactate determination, order DLAU / D-Lactate, Urine.

For determination of L-lactate (lactic acid), order LACS1 / Lactate, Plasma

Specimen Required

Supplies: Sodium Fluoride/Potassium Oxalate Tube, 2 mL (T275)
Collection Container/Tube:
Preferred: Sodium fluoride/potassium oxalate tube
Acceptable: Green top (sodium heparin)
Submission Container/Tube: Plastic vial
Specimen Volume: 0.5 mL plasma
Collection Instructions: Centrifuge and aliquot plasma into a plastic vial.
Note: If collecting in sodium heparin tubes, centrifugation must occur within one hour of collection.

Specimen Minimum Volume

Plasma: 0.15 mL

Reject Due To

Gross hemolysis	OK

Gross lipemia	OK
Gross icterus	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Plasma NaFl-KOx	Frozen (preferred)	91 days	
	Ambient	91 days	
	Refrigerated	91 days	

Clinical & Interpretive

Clinical Information

D-lactate is produced by bacteria residing in the colon when carbohydrates are not completely absorbed in the small intestine. When large amounts of D-lactate are present, individuals can experience metabolic acidosis, altered mental status (from drowsiness to coma), and a variety of other neurologic symptoms, in particular dysarthria and ataxia. Although a temporal relationship has been described between elevations of plasma and urine D-lactate and the accompanying encephalopathy, the mechanism of neurologic manifestations has not been elucidated.

D-lactic acidosis is typically observed in patients with a malabsorptive disorder, such as short-bowel syndrome, or following a jejunoileal bypass. In addition, healthy children presenting with gastroenteritis may also develop clinical manifestations of D-lactic acidosis.

Routine lactic acid determinations in blood will not reveal abnormalities because most lactic acid assays measure only L-lactate. Accordingly, D-lactate analysis must be specifically requested (eg, this test). However, as D-lactate is readily excreted in urine, it is the preferred specimen for D-lactate determinations; see DLAU / D-Lactate, Urine.

Reference Values

< or =0.25 mmol/L

Interpretation

Increased levels are consistent with D-lactic acidosis. However, because D-lactate is readily excreted, urine determinations are preferred.

Cautions

The test performed is for D-lactate. This is a product of bacterial overgrowth in the gastrointestinal tract. It should not be confused with L-lactate, which accumulates in some metabolic acidosis.

Clinical Reference

1. Khrais A, Ali H, Choi S, Ahmed A, Ahlawat S. D-Lactic acidosis in short bowel syndrome. Cureus. 2022;14(5):e25471. doi:10.7759/cureus.25471
2. Bianchetti DGAM, Amelio GS, Lava SAG, et al. D-lactic acidosis in humans: systematic literature review. Pediatr Nephrol. 2018;33(4):673-681. doi:10.1007/s00467-017-3844-8
3. Brandt RB, Siegel SA, Waters MG, Bloch MH. Spectrophotometric assay for D-(-)-lactate in plasma. Anal Biochem.

1980;102(1):39-46

Performance

Method Description

Plasma is spiked with a mixture of internal standards and evaporated. The dry residue is derivatized with diacetyl-L-tartaric anhydride to form the diastereomeric molecules, then acidified and extracted with ethyl acetate. After evaporation, the dry residue is again derivatized to form trimethylsilyl esters at the carboxylic acid moiety. Specimens are then analyzed by capillary gas chromatography mass spectrometry selected ion monitoring using positive chemical ionization, with chromatographic separation of the L,L- and D,L-diastereoisomers of derivatized lactate, corresponding to L-Lactate and D-Lactate, respectively.(Ding X, Lin S, Weng H, Liang J. Separation and determination of the enantiomers of lactic acid and 2-hydroxyglutaric acid by chiral derivatization combined with gas chromatography and mass spectrometry. J Sep Sci. 2018;41(12):2576–2584)

PDF Report

No

Day(s) Performed

Monday, Thursday

Report Available

3 to 6 days

Specimen Retention Time

1 month

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.

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

83605

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
DLAC	D-Lactate, P	14045-9

Result ID	Test Result Name	Result LOINC® Value
8878	D-Lactate, P	14045-9