Test Definition: LIPA1

Lipoprotein(a), Serum

Overview

Useful For

Cardiovascular disease (CVD) risk refinement in patients with moderate or high risk based on conventional risk factors or patients with clinical suspicion of residual CV risk not identified by other lipid parameters

Method Name

Immunoturbidimetric Assay

NY State Available

Yes

Specimen

Specimen Type

Serum

Specimen Required

Supplies: Sarstedt Aliquot Tube, 5 mL (T914)
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 plastic vial. Send refrigerated.

Forms

If not ordering electronically, complete, print, and send 1 of the following forms with the specimen:
-Cardiovascular Test Request Form (T724)
-General Test Request (T239)

Specimen Minimum Volume

0.5 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	Reject
Gross icterus	Reject

Specimen Stability Information

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

Clinical & Interpretive

Clinical Information

Lipoprotein (a) [Lp(a)] consists of a low-density lipoprotein (LDL) particle that is covalently bound to an additional protein, apolipoprotein (a) [Apo(a)]. Apo(a) has high sequence homology with the coagulation factor plasminogen, and like LDL, Lp(a) contains apolipoprotein B100 (ApoB). Thus, Lp(a) is both proatherogenic and prothrombotic.

Lp(a) is an independent risk factor for coronary heart disease (CHD), ischemic stroke, and aortic valve stenosis. Lp(a) has been referred to as "the most atherogenic lipoprotein". The mechanism of increased risk is unclear but most likely involves progression of atherosclerotic stenosis via intimal deposition of cholesterol and promotion of thrombosis via homology to plasminogen.

Accurate immunochemical measurement of Lp(a) is complicated by the heterogeneity of Lp(a) molecular size. Due to the large number of polymorphisms (varying number of kringle domain repeats in the Apo[a] protein) in the population, any given individual can have an Apo(a) protein between 240 to 800 kDa. This heterogeneity leads to inaccuracies in all immunoassays. In addition, the degree of atherogenicity of the Lp(a) particle may depend on the molecular size of the Lp(a)-specific protein. However, the measurement of Lp(a) using immunoassays calibrated to molar units is recommended to minimize assay inaccuracies caused by Apo(a) isoform size.

Serum concentrations of Lp(a) are related to genetic factors, specifically the expression of Apo(a), and are largely unaffected by diet, exercise, and lipid-lowering pharmaceuticals. However, in a patient with additional modifiable CHD risk factors, more aggressive therapy to normalize these factors may be indicated if the Lp(a) value is also increased. In cases of extremely elevated Lp(a), lipoprotein apheresis may be considered.

Reference Values

> or =18 years: <75 nmol/L

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

Interpretation

Lipoprotein (a) [Lp(a)] concentrations of 75 nmol/L and above are linearly related to increased risk of cardiovascular events independent of conventional risk markers.

Values > or =75 nmol/L may suggest increased risk of coronary heart disease.

Values > or =125 nmol/L are considered a risk-enhancing factor for cardiovascular disease by several professional societies. Clinician-patient discussion of therapeutic strategy is warranted.

Cautions

Epidemiologic studies have shown lipoprotein (a) [Lp(a)] concentrations are lowest in non-Hispanic white, Chinese, and Japanese populations. The Hispanic population has a slightly higher median Lp(a) concentration, and, in the African American population, the median Lp(a) serum concentration is approximately 2 times higher than in the white population.

In very rare cases, gammopathy, type IgM (Waldenstrom macroglobulinemia) in particular, may cause unreliable results.

Clinical Reference

1. Emerging Risk Factors Collaboration, Erqou S, Kaptoge S, et al. Lipoprotein(a) concentration and the risk of coronary heart disease, stroke, and nonvascular mortality. JAMA. 2009;302(4):412-423
2. Tsimikas S. A test in context: Lipoprotein(a): Diagnosis, prognosis, controversies, and emerging therapies. J Am Coll Cardiol. 2017;69(6):692-711. doi:10.1016/j.jacc.2016.11.042
3. Marcovina SM, Koschinsky ML, Albers JJ, Skarlatos S. Report of the National Heart, Lung, and Blood Institute Workshop on Lipoprotein (a) and Cardiovascular Disease: recent advances and future directions. Clin Chem. 2003;49(11):1785-1796
4. Wilson DP, Jacobson TA, Jones PH, et al. Use of Lipoprotein(a) in clinical practice: A biomarker whose time has come. A scientific statement from the National Lipid Association. J Clin Lipidol. 2019;13(3):374-392. doi:10.1016/j.jacl.2019.04.010

Performance

Method Description

This test is a particle enhanced immunoturbidimetric assay. Human lipoprotein (a) (Lp[a]) agglutinates with the latex particles coated with anti-Lp(a) antibodies.(Package insert: Tina-quant Lipoprotein(a) Gen.2 reagent. Roche Diagnostics; V2.0, 01/2015)

PDF Report

No

Day(s) Performed

Monday through Sunday

Report Available

1 to 3 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.

Test Classification

This test has been modified from the manufacturer's instructions. Its performance characteristics were determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information

83695

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
LIPA1	Lipoprotein(a), S	43583-4

Result ID	Test Result Name	Result LOINC® Value
LIPA1	Lipoprotein(a), S	43583-4