

Intended Use

The Pointe Lipoprotein(a) Assay is intended as a latex particle enhanced immunoturbidimetric assay for the *in vitro* quantitative determination of Lipoprotein(a) concentration in human serum or plasma on Clinical Chemistry Systems. The measurement of Lipoprotein(a) is useful in evaluating lipid metabolism disorders and assessing atherosclerotic cardiovascular diseases in specific populations, when used in conjunction with clinical evaluation. For *in vitro* diagnostic use only on the Yumizen C560 chemistry analyzer. **Rx Only**

Clinical Significance

Lipoprotein (a) is a cholesterol-rich lipoprotein particle found in human serum. There is substantial evidence linking lipoprotein(a) excess to a high risk for premature coronary heart disease (CHD), increased risk of myocardial infarction (MI) and stroke, and restenosis after angioplasty (PTCA) and coronary bypass procedures.¹⁻³ Assessment should be based on patient history, clinical findings, and other laboratory tests.

Test Principle

The Pointe Lipoprotein(a) Assay is based on a latex enhanced immunoturbidimetric assay. Lipoprotein(a) in the sample binds to specific anti-Lipoprotein(a) antibody, which is coated on latex particles, and causes agglutination. The degree of the turbidity caused by agglutination can be measured optically and is proportional to the amount of Lipoprotein(a) in the sample.

Reagents

R1: Tris Buffer Solution R2: Latex particles coated with anti-Lipoprotein antibodies.

Precautions and Hazards

1. For *in vitro* diagnostic use only. RX only.
2. Caution: Federal law restricts this device to sale by or on the order of a physician or other practitioner licensed by laws of the State in which he/she practices, to use or order the use of the device.
3. Each laboratory should follow federal, state, and local guidelines for testing QC material.
4. Do not use the reagents, calibrator, and controls after the expiration date labeled on the outer box.
5. The assay should be recalibrated and controls run with each new lot of reagents.
6. Samples containing precipitates should not be used.
7. Specimens containing human sourced materials should be handled as if potentially infectious using safe laboratory procedures, such as those outlined in Biosafety in Microbiological and Biomedical Laboratories (HHS Publication Number [CDC] 93-8395).
8. Avoid ingestion and contact with skin and eyes. See the Safety Data Sheet (SDS).
9. The REAGENT contains <0.1% sodium azide, NaN₃, as preservative. Sodium azide may react with lead and copper to form highly explosive metal azide. On disposal, flush with a large volume of water to prevent azide buildup.
10. Additional safety information concerning storage or handling of this product is provided within the Safety Data Sheet (SDS) for this product. To obtain an SDS, please contact our customer service department at 800-445-9853.

Reagent Handling

1. The Pointe Lipoprotein(a) Assay REAGENT provided is ready to use.
2. Physiological saline is needed to dilute high lipoprotein (a) samples.

Reagent Storage and Stability

The Pointe Lipoprotein(a) Assay REAGENT should be stored at 2-8°C. **DO NOT FREEZE**. The reagents are stable when stored at 2-8°C until the expiration date on the label. Do not mix reagent from different lots.

Specimen Collection and Storage

Serum or K2 EDTA plasma samples or Li-Heparin Plasma samples can be used for the Lipoprotein (a) assay. Analyze fresh specimens if possible. Repeated freeze/thaw cycles should be avoided to minimize potential protein degradation.⁹

It is the responsibility of the individual laboratory to use all available references and/or its own studies to determine specific stability criteria for its laboratory.¹⁶

Materials Provided

Reagents – R1 and R2

Materials Required but not Provided

The Pointe Lipoprotein(a) Calibrator Set (L7597-CAL) and saline for calibration and Lipoprotein(a) Controls (L7597-CTL) for validating the performance of the Pointe Lipoprotein(a) Assay reagents are provided separately.

Calibration

Five levels of liquid-stable calibrators are needed for calibration, along with saline. The lot specific calibrator values are stated in the Package Insert.

Quality Control

We recommend that each laboratory use Lipoprotein(a) controls to validate the performance of Lipoprotein (a) reagent. A set of normal and abnormal ranges of Lipoprotein(a) control is available from HORIBA Medical. The range of acceptable control limits should be established by individual laboratories.

Results:

Results are printed out in mg/dL.

Pointe Lipoprotein(a) Reagent Set

Reference Range

Studies have shown the expected range for Lipoprotein(a) has been reported to be between 10 and 30 mg/dL.^{10,11} Some studies have indicated that Lipoprotein (a) concentrations in African Americans may differ from Caucasians with African American ranges higher.^{12,13,14} Increased serum Lipoprotein (a) concentrations are associated with increased risk of premature coronary artery disease and stroke. Because Lipoprotein(a) levels are highly heritable, Lipoprotein (a) may be an important marker for premature CHD, especially among Caucasians. Although Lipoprotein(a) levels are higher in African Americans than in Caucasians, associated CHD risk appears to be less.¹⁵ Each laboratory, however, is recommended to establish a range of normal values for the population in their region. Lipoprotein(a) values should be interpreted in conjunction with clinical evaluation and other lipoprotein tests when assessing atherosclerotic cardiovascular disease in specific populations.

Limitations

1. Harmonization efforts for Lipoprotein(a) assay methods have suggested an impact of Apo A size heterogeneity on Lipoprotein(a) measurement methods.^{12,13} The effects of the impact of Apo A size have not been assessed for this assay.
2. Store the reagents at 2-8°C. Do not freeze the reagents.
3. Assessment should be based on patient history, clinical findings, and other laboratory tests.

Performance

1. Assay Range: The assay has an analytical measuring range (AMR) up to 100 mg/dL.
2. Correlation: A study was performed between the Yumizen C560 and a similar analyzer using this method, resulting in the following:

Method	Lp(a)
N	83
Mean Lp(a) (mg/dL)	24.22
Range (mg/dL)	3.7-77.7
Standard Deviation	1.59
Regression Analysis	$y = 0.993x + 0.25$
Correlation Coefficient	0.9969

3. Precision: Precision studies were performed following a modification of the guidelines contained in the NCCLS document EP5-T2.⁹

Sample	Within Day			Sample	Total		
	LOW	MID	HIGH		LOW	MID	HIGH
N	20	20	20	N	40	40	40
Mean	14.58	33.63	61.39	Mean	14.55	35.25	64.02
Standard Deviation	0.62	0.54	0.29	Standard Deviation	0.83	1.33	0.64
Coefficient of Variation (%)	4.4%	1.6%	0.5%	Coefficient of Variation (%)	5.7%	3.8%	1.0%

4. Detection Limits: The limit of detection (LOD) for Lipoprotein(a) Assay is determined to be 1.3 mg/dL and the limit of Quantitation (LOQ) for Lipoprotein(a) assay is 3.2 mg/dL. The Limit of Quantitation is the lowest analyte concentration that can be reproducibly measured with a precision of 20 % CV. The assay has measuring range of 5.4 to 100 mg/dL.
5. Interferences: Interference studies were conducted according to the CLSI EP7-A2 guidelines. The acceptance criterion was set at 10% or less deviation between the spiked sample and the control. The assay's results were not significantly affected by the following substances: Triglycerides (1000 mg/dL), Ascorbic Acid (176 mg/dL), Bilirubin (40mg/dL), Bilirubin Conjugated (40mg/dL), and Hemoglobin (1000 mg/dL)
6. Hook Effect: No high dose hook effect was observed up to 500 mg/dL Lipoprotein(a).

References

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3. Wu AHB, Contois JH, Cole TG. Reflex testing I: Algorithm for lipid and lipoprotein measurement in coronary heart risk assessment. *Clinica Chimica Acta.* 1999; 280:181-193.
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14. Marcovina SM, Albers JJ, Jacobs DR, Perkins LL, Lewis CE, Howard, BV and Savage P. Lp(a) and Apo (a0 Phenotypes in Caucasians and African Americans. The Cardia Study. *Arteriosclerosis and Thrombosis.* 1993; 13(7): 1037-1045.
15. Wu, Alan HB. Tietz Clinical Guide to Laboratory Tests. 4th edition. 2006; 678-9.
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CHEMISTRY PARAMETERS

Chem:	Lp(A)	No.:	225	Sample Type:	Serum	
Chemistry:	Lipoprotein(a)			Print Name:	Lp(A)	
Reaction Type:	Fixed Time			Reaction Direction:	Positive	
Pri Wave:	660			Sec Wave:		
Unit:	mg/dL			Decimal:	0.1	
Blank Time:	47	49		Reaction Time:	54	71
	Sample Vol.	Aspirated	Diluent	Reagent Vol.	Diluent	
Standard:	3.7 ul	--- ul	--- ul	R1:	120 ul	--- ul
Decreased:	--- ul	--- ul	--- ul	R2:	40 ul	--- ul
Increased:	--- ul	--- ul	--- ul	R3:	--- ul	--- ul
	<input type="checkbox"/> Sample Blank	<input checked="" type="checkbox"/> Auto Rerun		R4:	--- ul	--- ul
<u>Slope/Offset Adjustment</u>						
Slope: 1		Offset: 0				

Linearity Range (Standard)	5.4	100	Linearity Limit:
Linearity Range (Decreased)	---	---	Substrate Depletion:
Linearity Range (Increased)	---	---	Mixed Blank Abs:
R1 Blank Abs:	---	---	Uncapping Time
Blank Response:	---	---	Reagent Alarm Limit: 10
Twin Chemistry:			<input type="checkbox"/> Enzyme Linear Extension
<input type="checkbox"/> Prozone Check		<input type="radio"/> Rate Check	<input type="radio"/> Antigen Addition
Q1:	Q2:	Q3:	Q4:
PC:	ABS:		

Pointe Lipoprotein(a) Reagent Set

CALIBRATION PARAMETERS

Calibrator Definition						
Calibrator:	*	Lot No.:			*	
Exp Date:	*					
Carousel	Pos					
Sample Carousel 1	*					
Sample Carousel 2						
Sample Carousel 3						
Reagent/Calibration						
<u>Calibrator</u>	<u>Pos</u>	<u>Lot No</u>	<u>Exp Date</u>	<u>Chem</u>	<u>Conc</u>	<u>Unit</u>
Water	W	*	*	Lp(A)	0	mg/dL
Lp(A) Cal 1	*	*	*	Lp(A)	*	mg/dL
Lp(A) Cal 2	*	*	*	Lp(A)	*	mg/dL
Lp(A) Cal 3	*	*	*	Lp(A)	*	mg/dL
Lp(A) Cal 4	*	*	*	Lp(A)	*	mg/dL
Lp(A) Cal 5	*	*	*	Lp(A)	*	mg/dL
Calibration Setup						
Chem:	Lp(A)					
<u>Calibration Settings</u>						
Math Model:	Spine					
Factor:	Replicates: 2					
<u>Acceptance Limits</u>						
Cal Time:	*	Hour				
Slope Diff:	---	SD:	---			
Sensitivity :	---	Repeatability:	---			
Deter Coeff:	---					
<u>Auto Calib.</u>						
<input type="checkbox"/> Bottle Changed	<input type="checkbox"/> Lot Changed	<input type="checkbox"/> Cal Time				

It is recommended that two levels of control material be assayed daily.
* Indicates user defined parameter.

REF 14-L7597-216



Manufactured by
HORIBA Instruments Incorporated-Pointe Brand
5449 Research Drive Canton, MI 48188



Certified to Perform Reagents

The Pointe reagents are certified to be manufactured according to specified parameters. Any Pointe reagent product not meeting specifications through its listed expiration date will be remedied immediately without charge.

Manufactured by HORIBA Instruments Incorporated – Pointe Brand
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Symbol Key

Use by (YYYY-MM-DD)	LOT Lot and batch code	REF Catalog number
Manufacturer	Temperature limitation	Consult instructions for use
IVD <i>In vitro</i> diagnostic medical device	Rx Only: Prescription Use Only	
CE mark	EC REP Authorized representative in the European Community	