

LDL Cholesterol. Enzymatic colorimetric. Liquid
Quantitative Determination of LDL Cholesterol
 Only for *in vitro* use in clinical laboratory
 Store at 2-8°C

Ref.: LDL-025

60+20 mL

LDL CHOLESTEROL

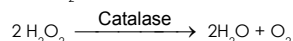
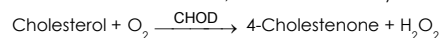
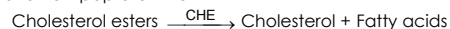


PRINCIPLE OF THE METHOD

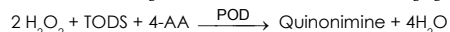
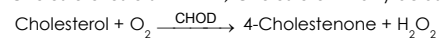
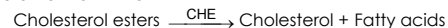
Direct determination of serum LDLc (low-density lipoprotein cholesterol) levels without the need for any pre-treatment or centrifugation steps.

The assay takes place in two steps.

- 1° Elimination of lipoprotein no-LDL



- 2° Measurement of LDLc



The intensity of the color formed is proportional to the LDLc concentration in the sample.

CLINICAL SIGNIFICANCE

The LDLc particle is lipoproteins that transport cholesterol to the cells.

Often called "bad cholesterol" because high levels are risk factor for coronary heart disease and are associated with obesity, diabetes and nephrosis^{1,5,6}.

Clinical diagnosis should not be made on a single test result; it should integrate clinical and other laboratory data.

REAGENTS

R 1 Enzymes	GOOD pH 7.0 (20°C)	50 mmol/L
	Cholesterol esterase (CHE)	380 U/L
	Cholesterol oxidase (CHOD)	380 U/L
	Catalase	400 U/mL
	N-(2-hydroxy-3-sulfo-propyl)-3,5-dimethoxyaniline (TODS)	0.45 mmol/L
R 2 Enzymes	GOOD pH 7.0	50 mmol/L
	4-Aminoantipyrene (4-AA)	1.00 mmol/L
	Peroxidase (POD)	1000 U/L
HDLc/LDLc CAL	Standard. Lyophilized human serum	

PRECAUTIONS

HDLc/LDLc CAL: Components from human origin have been tested and found to be negative for the presence of HBsAg, HCV, and antibody to HIV (1/2). However handle cautiously as potentially infectious.

PREPARATION

- **R 1 and R 2:** Are ready to use.

- **HDLc/LDLc CAL:** Dissolve the contents with 1 mL of distilled water. Cap vial and mix gently to dissolve contents.

STORAGE AND STABILITY

All the components of the kit are stable until the expiration date on the label when stored tightly closed at 2-8°C and contaminations are prevented during their use.

- **R 1 and R 2:** Once opened is stable 4 weeks at 2-8°C.

- **HDLc/LDLc CAL:** Once reconstitute 1 week at 2-8°C or 5 weeks -20°C.

Do not use reagents over the expiration date.

Signs of reagent deterioration:

- Presence of particles and turbidity.

ADDITIONAL EQUIPMENT

- Spectrophotometer or colorimeter measuring at 600 nm.

- Matched cuvettes 1.0 cm light path.

- General laboratory equipment.

SAMPLES

Serum¹: After sampling, the test should be performed without delay.

Repeated freezing and thawing should be avoided.

Stability of the sample: 7 days at 2-8°C.

PROCEDURE

- Assay conditions:
 Wavelength: 600 (590-700) nm
 Cuvette: 1 cm. light path
 Temperature 37°C
- Adjust the instrument to zero with distilled water.
- Pipette into a cuvette:

	Blank	Standard	Sample
R 1 (μL)	300	300	300
Standard (μL)	--	4	--
Sample (μL)	--	--	4

- Mix and incubate for 5 min. at 37°C.
- Add:

R 2 (μL)	100	100	100
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- Mix and incubate for 5 min. at 37°C.
- Read the absorbance (A), against the Blank.

CALCULATIONS

$$\frac{(A)_{\text{Sample}}}{(A)_{\text{Standard}}} \times \text{Standard conc.} = \text{mg/dL of LDLc in the sample}$$

Conversion factor: mg/dL x 0.02586 = mmol/L

QUALITY CONTROL

Control sera are recommended to monitor the performance of assay procedures.

If control values are found outside the defined range, check the instrument, reagents and calibrator for problems.

Each laboratory should establish its own Quality Control scheme and corrective actions if controls do not meet the acceptable tolerances.

REFERENCE VALUES^{1,5,6}

Levels of the risk

Desirable < 100 mg/mL

Medium 130-160 mg/mL

High > 160 mg/mL

These values are for orientation purpose; each laboratory should establish its own reference range.

PERFORMANCE CHARACTERISTICS

Measuring range: From detection limit of 3,7 mg/dL to linearity limit of 1000 mg/dL.

If the results obtained were greater than linearity limit, dilute the sample 1/2 with NaCl 9 g/L and multiply the result by 2.

Precision:

Mean (mg/dL)	Intra-assay			Inter-assay		
	63.2	107	49.0	65.2	112	253
SD	0.64	1.89	0.79	0.3	0.7	1.7
CV	1.01	1.76	1.61	0.45	0.60	0.65

Sensitivity: 1 mg/dL = 0.0012A

Accuracy: Results obtained using BSM reagents (y) did not show systematic differences when compared with other commercial reagents (x).

The results obtained using 92 samples were the following:

Correlation coefficient (r): 0.998.

Regression equation: y = 4.6 + 0.940 x.

The results of the performance characteristics depend on the analyzer used.

INTERFERENCES

No interferences were observed with ascorbic acid up to 50 mg/dL, hemoglobin up to 500 mg/dL or bilirubin up to 30 mg/dL.

A list of drugs and other interfering substances with LDL cholesterol determination has been reported by Young et. al^{3,4}.

NOTES

BSM has instruction sheets for several automatic analyzers. Instructions for many of them are available on request.

BIBLIOGRAPHY

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