

LDL-C, Friedewald (calculated)

Analyte: LDL Cholesterol

Specimen Type: Serum, Inquire for additional option(s)

Optimum Volume: 0.5 mL

2-8°C

-20°C

-70°C

5 days

2 months

2 years

Reporting units: mg/dL

Method: Friedwald estimation

Biological or Clinical Significance:

Plasma lipoproteins are spherical particles that contain varying amounts of cholesterol, triglycerides, phospholipids and proteins. The phospholipid, free cholesterol and protein constitute the outer surface of the lipoprotein particle; the inner core contains mostly esterified cholesterol and triglycerides. These particles serve to solubilize and transport cholesterol and triglycerides in the bloodstream.

The relative proportions of protein and lipid determine the density of these plasma lipoproteins and provide a basis on which to begin their classification. The classes are: chylomicrons, very low density lipoproteins (VLDL), low density lipoproteins (LDL), and high density lipoproteins (HDL). Numerous clinical studies have shown that the different lipoprotein classes have very distinct and varied effects. The studies all point to LDL cholesterol as a key factor in the pathogenesis of atherosclerosis and coronary artery disease (CAD), while HDL cholesterol has often been observed to have a protective effect. Even within the normal range of total cholesterol concentrations, an increase in LDL cholesterol can occur with an associated increased risk for CAD.

Principle of Test Method:

This LDL-C method requires the measurement of Total Cholesterol, HDL Cholesterol and Triglycerides. LDL-C by Friedewald estimation is calculated by the following equation: Total Cholesterol - HDL Cholesterol - (Triglycerides/5). Triglyceride levels above 400 mg/dL preclude estimation by Friedewald.

References:

1. Friedewald WT, Levy RI, Fredrickson DS. Estimation of the concentration of low-density lipoprotein cholesterol in plasma, without use of the preparative ultracentrifuge. Clin Chem 1972;18:499-502.