

## VLDL-C (Cholesterol) by ultracentrifugation

**Analyte:** VLDL Cholesterol

**Specimen Type:** Serum, EDTA Plasma

**Optimum Volume:** 2.5 mL\*

**Stability:**

2-8 Degrees C	-20 Degrees C	-70 Degrees C
5 days	2 months	2 years

**Reporting Units:** mg/dL

**Method:** Ultracentrifugation & Immunoturbidimetric

**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. The role of VLDL is to transport triglycerides in the blood stream and is associated with an increased risk of heart disease.

**Principle of Test Method:**

In this method, the bottom fraction is obtained by ultracentrifugation (see LDL-C by ultracentrifugation). Cholesterol is then measured in both the whole sample and bottom fraction using an automated enzymic method. The VLDL Cholesterol is obtained by calculating the difference between the cholesterol measured in the whole sample and the cholesterol measured in the bottom fraction. \*1.2 mL minimum volume; 2.5 mL allows for a repeat if needed.

**References:**

1. Hainline A, Karon J, and Lippel K., eds. Manual of Laboratory Operations. Lipid Research Clinics Program, Lipid and Lipoprotein Analysis. NIH - Dept. of Health and Human Services, Second Edition, 1982.
2. Executive summary of the Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III). JAMA 2001; 285: 22486 – 2497.