

OxLDL (Oxidized Low Density Lipoprotein)

Analyte: Oxidized LDL

Specimen Type: Serum, EDTA Plasma

Optimum Volume: 0.5 mL

Stability:

2-8 Degrees C	-20 Degrees C	-70 Degrees C
6 days	1 mo	2 years

Reporting Units: U/L

Method: ELISA

Biological or Clinical Significance:

Lipoprotein measurements are used in the diagnosis and treatment of lipid disorders (such as dyslipidemia in diabetes mellitus), atherosclerosis, and various liver and renal diseases. The oxidative conversion of low density lipoproteins (LDL) to oxidized low density lipoproteins (oxidized LDL) is now generally considered to be a key event in the biological process that initiates and accelerates the development of the early atherosclerotic lesion, the fatty streak.

Experimental studies have shown that native LDL becomes atherogenic when it is converted to oxidized LDL, and that oxidized LDL is more atherogenic than native LDL. Oxidized LDL is found in monocyte-derived macrophages in atherosclerotic lesions, but not in normal arteries. The uptake of LDL into macrophages does not occur by way of the classic Brown/Goldstein LDL receptor. Numerous studies have established that LDL, the major carrier of blood cholesterol, must first be converted to oxidized LDL so that it can be recognized by “scavenger” or “oxidized LDL” receptors on monocyte-derived macrophages. The binding of oxidized LDL to macrophages appears to be a necessary step through which oxidized LDL induces cholesterol accumulation in macrophages, and thus, transforms the macrophages into lipid-laden foam cells.

Holvoet and his colleague’s were the first to clearly demonstrate that patients with coronary artery disease had significantly elevated plasma levels of oxidized LDL, and that these circulating levels of oxidized LDL were very similar in patients with stable coronary artery disease and in patients with acute coronary syndromes. They found plasma oxidized LDL results to be significantly higher in patients with stable angina, unstable angina and acute myocardial infarction when compared to age matched, presumably healthy, control subjects.

Principle of Test Method:

The Oxidized LDL ELISA is a solid phase two-site enzyme immunoassay. It is based on the direct sandwich technique in which two monoclonal antibodies are directed against separate antigenic determinants on the oxidized apolipoprotein B molecule.

References:

1. Holvoet P, Donck J, Landeloos M, Brouwers E, Luitjens K, Arnout J, Lesaffre E, Vanrenterghem Y, Collen D. Correlation between oxidized low density lipoproteins and von Willebrand factor in chronic renal failure. *Thromb Haemost.* 1996; 76:663-669.
2. Holvoet P, Macy E, Landeloos M, Jones D, Nancy JS, Van deWerf J, Tracy RP. Analytical performance and diagnostic accuracy of immunometric assays for the measurement of circulating oxidized LDL. *Clin Chem.* 2006; 52:760-764.