# Human Oxidized Low Density Lipoprotein (OX-LDL) from Human Plasma

# np001034

**Storage：** Store at 2-8℃. Store in the dark.

## Product Description

Low-density lipoprotein (LDL) is derived from very low-density lipoprotein (VLDL). Its main function is to transport cholesterol to cells throughout the body and to the liver for bile acid synthesis. LDL can be used to study the process of receptor-mediated endocytosis, especially in diseases such as atherosclerosis, where plasma-derived LDL can be employed to investigate the oxidative effects of LDL in terms of its function and metabolism.

Oxidized LDL (Ox-LDL) is a type of modified LDL. In addition to oxidatively modified LDL, modified LDL also includes acetylated LDL and LDL directly bound to malondialdehyde (MDA) or 4-hydroxynonenal (4-HNE). Such LDL that undergoes only general chemical modification without oxidative modification is referred to as derived LDL. Unlike derived LDL, the physiological uniqueness of Ox-LDL is manifested in the following aspects:

1) In terms of the impact on cellular physiological functions, Ox-LDL can induce cytotoxicity, affect the metabolism of arachidonic acid, and inhibit cholesterol esterification, while derived LDL does not exhibit these effects;

2) Ox-LDL consumes endogenous antioxidants in LDL, leading to a decrease in the vitamin E content in LDL, which is not observed in MDA-LDL;

3) Oxidative modification involves lipid peroxidation reactions, in which polyunsaturated fatty acids (PUFAs) in LDL are oxidized. The modification of LDL by MDA occurs through the direct formation of Schiff bases with ApoB-100, accompanied by a slight lipid peroxidation reaction;

4) When the oxidation degree of Ox-LDL is low, ApoB is degraded; when the oxidation degree is high, ApoB can undergo repolymerization. In contrast, the modification of LDL by MDA does not cause the degradation or polymerization of ApoB;

5) The fluorescence peak wavelength of Ox-LDL is 430 nm, while that of MDA-LDL is 460 nm. Ox-LDL is not metabolized via LDL receptors; instead, it is recognized, bound, and endocytosed into cells by scavenger receptors, resulting in the loss of the normal cholesterol metabolism pathway, intracellular lipid deposition, and foam cell formation.

There are various methods for the oxidative modification of LDL, with the common ones listed below:

1) Cell-mediated oxidative modification of LDL, also known as biologically oxidized LDL. For example, endothelial cells, macrophages, and monocytes all possess this function;

2) LDL oxidative modification mediated by transition metal ions, such as $Ca^{2+}$ and $Fe^{2+}$ ;

Additionally, there are other forms of oxidative modification, including physical methods like ultraviolet radiation, or catalysis by peroxidase.

Density: 1.019-1.063 g/mL
Composition: 78 – 80% Lipid; 20 – 22%
Protein Protein Determination: Modified Lowry based on BSA as standard
Source: Human Plasma

Prepared from fresh, non-frozen plasma shown to be non reactive for HBsAg, anti-HCV, anti-HBc, and negative for anti-HIV 1 & 2 by FDA-required tests.
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