

Accelerated Development of Foam Cells by anti-oxLDL-β2GPI Antibodies

Anti-AtherOx (IgG & IgM anti-oxLDL-β2GPI antibody) ELISA Test Kits detect antibodies to complexes formed by the interaction of oxidized low-density lipoprotein cholesterol (oxLDL) with β2-glycoprotein I (β2GPI) in human serum or plasma.

Antibodies to oxLDL-β2GPI may be used as an aid in the serologic risk assessment for arterial thrombosis and atherosclerotic cardiovascular disease in individuals with systemic autoimmune diseases - systemic lupus erythematosus (SLE) and lupus-like disorders (Antiphospholipid Syndrome, APS).

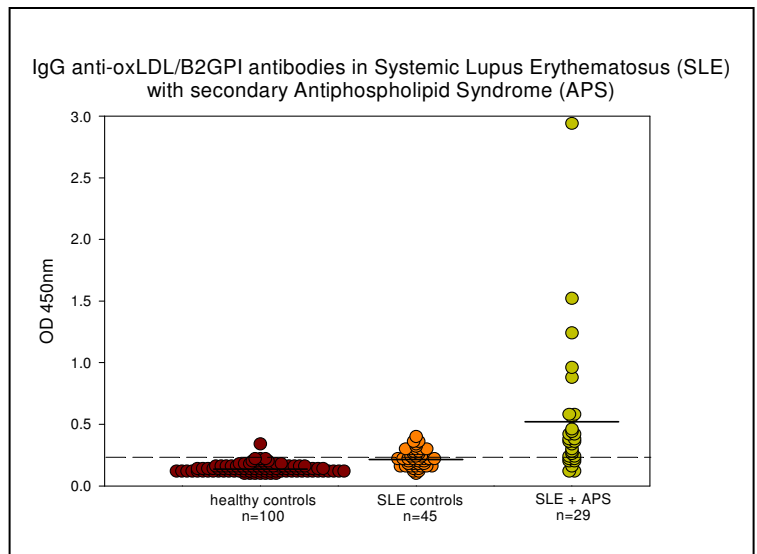
Clinical Relevance:

The oxidative modification of low-density lipoprotein (oxLDL) represents an important pathogenic event in the initiation and progression of atherosclerotic lesions. In the arterial wall, oxLDL is a pro-inflammatory chemotactic factor for macrophages and immunoreactive cells. OxLDL interacts with β2GPI forming OxLDL-β2GPI complexes, which have been implicated as pro-atherogenic antigens. Antibodies to this complex have been demonstrated in patients with systemic autoimmune diseases.

An active macrophage uptake of immune complexes containing oxLDL-β2GPI-antibody via Fc receptors has been demonstrated, a process that leads to accelerated development of foam (fat-containing) cells and atherosclerotic plaques.

The premature (or accelerated) development of clinical atherosclerosis in patients with certain systemic autoimmune disorders cannot be fully explained by traditional risk factors. Oxidative stress resulting in oxLDL and complex formation with β2GPI is common in patients with autoimmune diseases characterized by significant vascular complications.

Figure 1



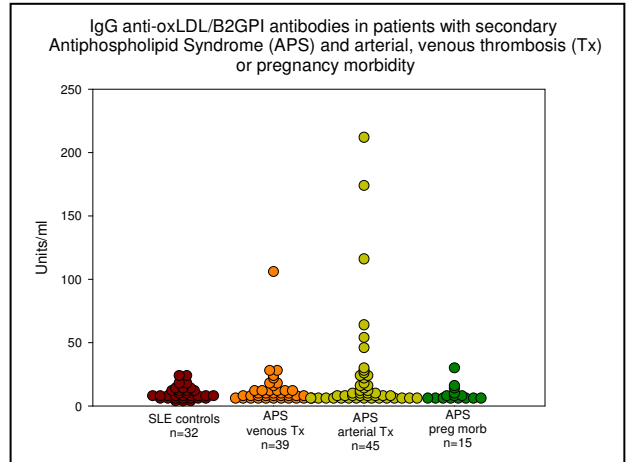
Anti-AtherOx® Test Kits
(IgG anti-oxLDL-β2GPI antibody)
FDA Cleared
(IgM anti-oxLDL-β2GPI antibody)
For Investigational or Research Use Only

OxLDL-β2GPI complex is immunogenic. High levels of IgG anti-oxLDL-β2GPI antibodies have been demonstrated in patients with systemic lupus erythematosus (SLE) and antiphospholipid syndrome (APS) (Figure 1). These antibodies are strongly associated with arterial thrombosis in APS patients (Figure 2). OxLDL-β2GPI antibodies showed a positive predictive value for APS and arterial thrombosis of 90%, compared to 77% for venous thrombosis, while the predictive value of anticardiolipin (aCL) antibodies was 71% for APS and 64% for arterial thrombosis. This suggests that autoantibodies to oxLDL-β2GPI complexes are etiologically important in the development of thrombosis and atherosclerosis in SLE and APS.

Principle of the Assay:

Cu²⁺ oxidized LDL-β2GPI complex coated onto microwells captures antibodies to this complex in serum or plasma samples. HRP-conjugated anti-human IgG or IgM antibodies, followed by TMB substrate indicates the degree of reactivity. Values are calculated against the standard curve, which has been prepared from diseased state serum samples. Anti-oxLDL-β2GPI antibodies are distinct from “classic” anti-β2GPI antibodies.

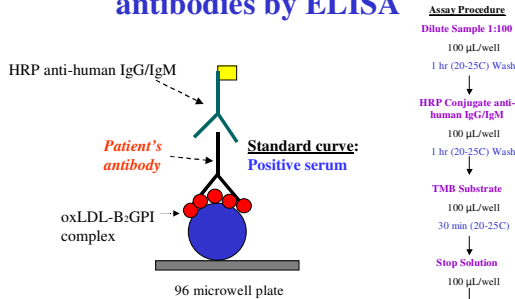
Figure 2



References:

1. Hasunuma Y, et al. Involvement of β2-glycoprotein I and anticardiolipin antibodies in oxidatively modified low-density lipoprotein uptake by macrophages. *Clin Exp Immunol* 1997;107:569.
2. Kobayashi K, et al. A specific ligand for β2-glycoprotein I mediates autoantibody-dependent uptake of oxidized low-density lipoprotein by macrophages. *J Lipid Res* 2001;42:697.
3. Kobayashi K, et al. Circulating oxidized LDL forms complexes with β2-glycoprotein I: implication as an atherogenic autoantigen. *J Lipid Res* 2003;44:716.
4. Lopez LR, et al. Anti-β2-glycoprotein I and antiphosphatidylserine antibodies are predictors of arterial thrombosis in patients with antiphospholipid syndrome. *Am J Clin Pathol* 2004;121:142.
5. Lopez D, et al. Oxidized low-density lipoprotein/β2-glycoprotein I complexes and autoantibodies to oxLig-1/β2-glycoprotein I in patients with systemic lupus erythematosus and antiphospholipid syndrome. *Am J Clin Pathol* 2004;121:426.
6. Lopez D, et al. Autoantibodies against β2-glycoprotein I complexed with a lipid ligand derived from oxidized low-density lipoprotein are associated with arterial thrombosis in antiphospholipid syndrome. *Clin Dev Immunol* 2003;10:203.

Determination of anti-oxLDL-B2GPI antibodies by ELISA



Anti-AtherOx® Test Kits (IgG & IgM anti-oxLDL-β2GPI antibody)

Product #: 11854 IgG

Product #: 11855 IgM

Quantity: 96 wells

Storage: 2-8°C

Stability: 12 months from date of manufacture

*Exclusive Corgenix Product (Patented)