Product datasheet

Lipoprotein Lipase Assay Kit (Fluorometric) ab204721

Overview

Product name                  Lipoprotein Lipase Assay Kit (Fluorometric)
Detection method              Fluorescent
Sample type                   Plasma, Cell Lysate, Purified protein, Tissue Lysate
Assay type                    Enzyme activity
Assay time                    0h 20m
Species reactivity            Reacts with: Mammals, Other species
Product overview              Lipoprotein Lipase Activity Assay Kit (Fluorometric) ab204721 contains a quenched substrate that fluoresces upon hydrolysis by lipoprotein lipase (LPL). The fluorometric intensity is directly proportional to the amount of substrate hydrolyzed.

This lipase assay detects total lipase activity when no inhibitor is used. Comparing results in the presence or absence of an LPL inhibitor allows for quantification of LPL activity specifically.

Our results indicate that the majority (~90%) of lipase activity detected by this kit in post-heparin treated mouse plasma is from LPL. To determine the exact LPL specific activity in mouse plasma, measure activity in pre- and post-heparin treated plasma.

Notes

Lipoprotein lipase (LPL) is a member of the lipase family that hydrolyzes triglycerides in chylomicrons and very low-density lipoprotein (VLDL). Digestion of triglycerides in VLDL by LPL leads to their conversion to intermediate-density lipoprotein (IDL) and then low-density lipoprotein (LDL). LPL is found attached to the luminal surface of endothelial cells in the heart, muscle, and adipose tissue. Mutations in lipoprotein lipase can lead to a variety of disorders such as lipoprotein metabolism, hypertriglyceridemia etc. Overexpression of LPL in mice has been shown to promote obesity and insulin resistance.

Platform                     Microplate reader

Properties

Storage instructions          Store at +4°C. Please refer to protocols.

<table>
<thead>
<tr>
<th>Components</th>
<th>100 tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhibitor (Orlistat)</td>
<td>1 x 20µl</td>
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</table>
Function

The primary function of this lipase is the hydrolysis of triglycerides of circulating chylomicrons and very low density lipoproteins (VLDL). Binding to heparin sulfate proteoglycans at the cell surface is vital to the function. The apolipoprotein, APOC2, acts as a coactivator of LPL activity in the presence of lipids on the luminal surface of vascular endothelium.

Involvement in disease

Defects in LPL are the cause of lipoprotein lipase deficiency (LPL deficiency) [MIM:238600]; also known as familial chylomicronemia or hyperlipoproteinemia type I. LPL deficiency chylomicronemia is a recessive disorder usually manifesting in childhood. On a normal diet, patients often present with abdominal pain, hepatosplenomegaly, lipemia retinalis, eruptive xanthomata, and massive hypertriglyceridemia, sometimes complicated with acute pancreatitis.

Sequence similarities

Belongs to the AB hydrolase superfamily. Lipase family. Contains 1 PLAT domain.

Post-translational modifications

Tyrosine nitration after lipopolysaccharide (LPS) challenge down-regulates the lipase activity.

Cellular localization

Cell membrane. Secreted. Locates to the plasma membrane of microvilli of hepatocytes with triacyl-glycerol-rich lipoproteins (TRL). Some of the bound LPL is then internalized and located inside non-coated endocytic vesicles.

Lipoprotein Lipase Activity Assay Kit (Fluorometric)

<table>
<thead>
<tr>
<th>Components</th>
<th>100 tests</th>
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</thead>
<tbody>
<tr>
<td>LPL Assay Buffer</td>
<td>1 x 5ml</td>
</tr>
<tr>
<td>Positive Control</td>
<td>1 vial</td>
</tr>
<tr>
<td>Substrate (in DMSO)</td>
<td>1 x 10µl</td>
</tr>
</tbody>
</table>

Images

Typical LPL Substrate Standard Curve.
Measurement of LPL activity in purified enzyme from *Pseudomonas sp.* (5 ng), post-heparin treated mouse plasma (2 µl), 7-day post-differentiated 3T3-L1 cell lysate (100 µg), and rat heart lysate (200 µg).

Inhibition of LPL activity from post-heparin treated mouse plasma by Angptl 4, an LPL specific inhibitor. The assay was run for 1 hour and the activity was determined by calculating the slope. The IC\textsubscript{50} was determined to be 22.6 nM.

Inhibition of Positive Control by Orlistat, a generic lipase inhibitor. The assay was run for 1 hour and the IC\textsubscript{50} was determined to be 11.4 µM.
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