Overview

Product name: Human Apolipoprotein B ELISA Kit
Detection method: Colorimetric

Precision

<table>
<thead>
<tr>
<th>Sample</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
<th>CV%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human serum</td>
<td>8</td>
<td></td>
<td></td>
<td>2.3%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sample</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
<th>CV%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human serum</td>
<td>3</td>
<td></td>
<td></td>
<td>10.5%</td>
</tr>
</tbody>
</table>

Sample type: Cell culture supernatant, Serum, Heparin Plasma, EDTA Plasma, Citrate Plasma
Assay type: Sandwich (quantitative)
Sensitivity: 5.7 ng/ml
Range: 14 ng/ml - 900 ng/ml

Recovery

<table>
<thead>
<tr>
<th>Sample type</th>
<th>Average %</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serum</td>
<td>103</td>
<td>98% - 107%</td>
</tr>
<tr>
<td>Cell culture media</td>
<td>91</td>
<td>90% - 93%</td>
</tr>
<tr>
<td>Heparin Plasma</td>
<td>100</td>
<td>98% - 103%</td>
</tr>
<tr>
<td>EDTA Plasma</td>
<td>99</td>
<td>95% - 102%</td>
</tr>
<tr>
<td>Citrate Plasma</td>
<td>108</td>
<td>99% - 114%</td>
</tr>
</tbody>
</table>

Assay time: 1h 30m
Assay duration
One step assay

Species reactivity
Reacts with: Human
Does not react with: Mouse, Rat, Rabbit, Goat, Chicken, Guinea pig, Hamster, Cow, Dog, Pig

Product overview
Abcam’s Apolipoprotein B (APOB) Human in vitro SimpleStep ELISA™ (Enzyme-Linked Immunosorbent Assay) kit is designed for the quantitative measurement of Apolipoprotein B protein in Human serum, plasma, and cell culture supernatants.

The SimpleStep ELISA™ employs an affinity tag labeled capture antibody and a reporter conjugated detector antibody which immunocapture the sample analyte in solution. This entire complex (capture antibody/analyte/detector antibody) is in turn immobilized via immunoaffinity of an anti-tag antibody coating the well. To perform the assay, samples or standards are added to the wells, followed by the antibody mix. After incubation, the wells are washed to remove unbound material. TMB substrate is added and during incubation is catalyzed by HRP, generating blue coloration. This reaction is then stopped by addition of Stop Solution completing any color change from blue to yellow. Signal is generated proportionally to the amount of bound analyte and the intensity is measured at 450 nm. Optionally, instead of the endpoint reading, development of TMB can be recorded kinetically at 600 nm.

Notes
Apolipoproteins are proteins that bind lipids to form lipoproteins, which carry fats and cholesterol in the bloodstream. Apolipoproteins provide structural support to these lipoproteins, may act as ligands for specific cell surface receptors or may modulate the activity of metabolic enzymes that act on lipoproteins. A major class of apolipoproteins is ApoB, which is found in two forms: ApoB-100 (550 kDa) and ApoB-48 (264 kDa). ApoB-48 is made from the N-terminal 48% of the Apolipoprotein B-100 protein due to a post-transcriptional mRNA editing by the ApoB mRNA editing enzyme ApoBec1. ApoBec1 causes a C to U transition, replacing a CAA glutamine encoding codon for a UAA stop codon and generating ApoB-48. ApoBec1 is expressed in the intestine but not the liver, thus ApoB-48 is secreted by the intestine to become the building block of chylomicrons, while ApoB-100 is secreted by the liver to become a component of very low-density lipoproteins (VLDLs), intermediate-density lipoproteins (IDLs), and low-density lipoproteins (LDLs). Importantly, ApoB is also post-translationally palmitoylated; palmitoylation is necessary for proper assembly of lipoproteins (including proper assembly of the hydrophobic core). Furthermore, ApoB-100 operates on the surface of LDLs to allow binding to the LDL receptor and transport for breakdown of LDLs.

Mutations in the Apolipoprotein B gene can cause several diseases. First, in familial hypobetalipoproteinemia (FHBL), mutations in the Apolipoprotein B gene cause production of abnormally short lengths of ApoB protein, lowering the amount of lipoproteins and hence decreasing the body’s capacity to transport and absorb fat and fat-soluble vitamins. Second, in a form of inherited hypercholesterolemia called familial defective ApoB-100 (FDB), mutations in the Apolipoprotein B gene prevent LDLs from effectively binding to their receptors. As a result, fewer LDLs are removed from the blood, leading to hypercholesterolemia, distribution and buildup of cholesterol into tissues such as the skin and arteries, and an increased risk of coronary artery disease (CAD).

Tested applications
Suitable for: Sandwich ELISA

Platform
Microplate

Properties

Storage instructions
Store at +4°C. Please refer to protocols.
Apolipoprotein B is a major protein constituent of chylomicrons (apo B-48), LDL (apo B-100) and VLDL (apo B-100). Apo B-100 functions as a recognition signal for the cellular binding and internalization of LDL particles by the apoB/E receptor.

Involvement in disease
Hypobetalipoproteinemia, familial, 1
Familial ligand-defective apolipoprotein B-100
Defects in APOB associated with defects in other genes (polygenic) can contribute to hypocholesterolemia.

Sequence similarities
Contains 1 vitellogenin domain.

Post-translational modifications
Palmitoylated; structural requirement for proper assembly of the hydrophobic core of the lipoprotein particle.

Cellular localization
Cytoplasm. Secreted.

Applications
Our Abpromise guarantee covers the use of ab190806 in the following tested applications.

<table>
<thead>
<tr>
<th>Application</th>
<th>Abreviews</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sandwich ELISA</td>
<td></td>
<td>Use at an assay dependent concentration.</td>
</tr>
</tbody>
</table>

Images
Other - Human Apolipoprotein B ELISA Kit
(ab190806)

ELISA Protocol Summary

Example of Apolipoprotein B standard curve.

Background-subtracted data values (mean +/- SD) are graphed.

Ten individual healthy male donors were evaluated for the presence of Apolipoprotein B in serum using this assay.

Results were interpolated from the standard curve in Sample Diluent NS and corrected by sample dilution (1:6500). The mean level of Apolipoprotein B is 332.7 µg/mL with a range of 159.7-550 µg/mL and a standard deviation of 117.3 µg/mL.
Three individual donors with high levels of LDL (220, 241, 209 mg/dL respectively) and a pooled sample (n = 50) of normal Human serum (NHS) were evaluated for the presence of Apolipoprotein B in serum using this assay. Results were interpolated from the standard curve in Sample Diluent NS and corrected by sample dilution (1:6,500). The mean level of Apolipoprotein B in the high LDL samples is 1116.4 µg/mL with a range of 553.9 – 1555.5 µg/mL and a standard deviation of 512.1 µg/mL.

Please note: All products are “FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC PROCEDURES”

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