



## Human apoA1 ELISA Kit

Enzyme Immunoassay for the quantification of Human Apolipoprotein A1 in serum, plasma, cell culture supernatants

Catalog number: ARG80132

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For research use only. Not for use in diagnostic procedures.

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### INTRODUCTION

Apolipoprotein A I promotes cholesterol efflux from tissues to the liver for excretion. Apolipoprotein A I is the major protein component of high density lipoprotein (HDL) in the plasma. Synthesized in the liver and small intestine, it consists of two identical chains of 77 amino acids; an 18 amino acid signal peptide is removed co-translationally and a 6 amino acid propeptide is cleaved post-translationally. Apolipoprotein A I is a cofactor for lecithin cholesterolacyltransferase (LCAT) which is responsible for the formation of most plasma cholesteryl esters. Defects in the Apolipoprotein A I gene are associated with HDL deficiency and Tangier disease.

### PRINCIPLE OF THE ASSAY

This assay employs the quantitative sandwich enzyme immunoassay technique. An antibody specific for apoA1 has been pre-coated onto a microtiter plate. Standards or samples are pipetted into the wells and any apoA1 present is bound by the immobilized antibody. After washing away any unbound substances, a biotin-conjugated antibody specific for apoA1 is added to each well and incubate. Following a washing to remove unbound substances, streptavidin conjugated to Horseradish Peroxidase (HRP) is added to each microplate well and incubated. After washing away any unbound antibody-enzyme reagent, a substrate solution (TMB) is added to the wells and color develops in proportion to the amount of apoA1 bound in the initial step. The color development is stopped by the addition of acid and the intensity of the color is measured at a wavelength of 450nm  $\pm$ 2nm. The

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concentration of apoA1 in the sample is then determined by comparing the O.D of samples to the standard curve.

### MATERIALS PROVIDED & STORAGE INFORMATION

Store the unopened kit at 2-8 °C. Use the kit before expiration date.

Component	Quantity	Storage information
Antibody-coated microplate	8 X 12 strips	4°C. Unused strips should be sealed tightly in the air-tight pouch.
Standard (Lyophilized)	3 X 40 ng/vial	4°C
Standard diluent buffer	20 ml	4°C
Antibody conjugate concentrate	1 vial (400 µl)	4°C
Antibody diluent buffer	16 ml	4°C
HRP-Streptavidin concentrate	1 vial (400 µl)	4°C (Protect from light)
HRP-Streptavidin diluent buffer	16 ml	4°C
20X Wash buffer	50 ml	4°C
TMB substrate	12 ml	4°C (Protect from light)
STOP solution	12 ml	4°C
Plate sealer	6 strips	Room temperature

### MATERIALS REQUIRED BUT NOT PROVIDED

- Microplate reader capable of measuring absorbance at 450nm
- Pipettes and pipette tips
- Deionized or distilled water
- Automated microplate washer (optional)

## **TECHNICAL HINTS AND PRECAUTIONS**

- Wear protective gloves, clothing, eye, and face protection especially while handling blood or body fluid samples.
- Store the kit at 4°C at all times.
- Briefly spin down the antibody conjugate concentrate and HRP-Streptavidin concentrate before use.
- If crystals are observed in the 20X Wash buffer, warm to RT (not more than 50°C) until the crystals are completely dissolved.
- Ensure complete reconstitution and dilution of reagents prior to use.
- It is highly recommended that the standards, samples and controls be assayed in duplicates.
- Change pipette tips between the addition of different reagent or samples.

## **SAMPLE COLLECTION & STORAGE INFORMATION**

The sample collection and storage conditions listed below are intended as general guidelines. Sample stability has not been evaluated.

**Cell Culture Supernatants** - Remove particulates by centrifugation and aliquot & store samples at  $\leq -20^{\circ}\text{C}$ . Avoid repeated freeze-thaw cycles.

**Serum**- Use a serum separator tube (SST) and allow samples to clot for 30 minutes before centrifugation for 15 minutes at 1000 x g. Remove serum and assay immediately or aliquot and store samples at  $\leq -20^{\circ}\text{C}$ . Avoid repeated freeze-thaw cycles.

**Plasma** - Collect plasma using EDTA or heparin as an anticoagulant. Centrifuge for 15 minutes at 1000 x g within 30 minutes of collection. Assay immediately

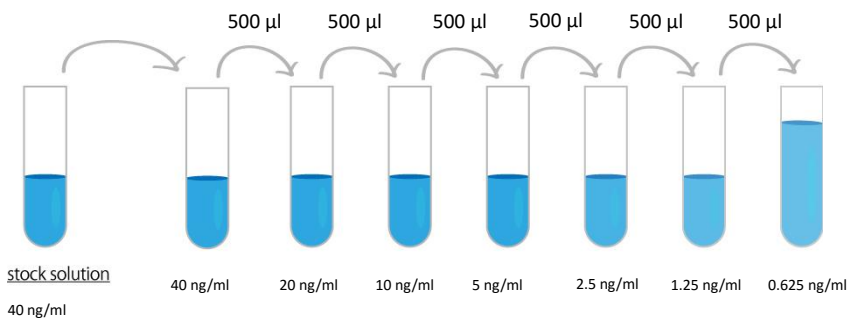
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or aliquot and store samples at  $\leq -20$  °C. Avoid repeated freeze-thaw cycles.

### REAGENT PREPARATION

- **1X Wash buffer:** Dilute 20X Wash buffer into distilled water to yield 1X Wash buffer.
- **1X Antibody conjugate:** Dilute 30X antibody conjugate concentrate into 1X antibody diluent buffer to yield 1X Detection antibody solution.
- **1X HRP-Streptavidin Solution:** Dilute 30X HRP-Streptavidin concentrate solution into 1X HRP-Streptavidin diluent buffer to yield 1X HRP-Streptavidin Solution buffer.
- **Standards:** Reconstitute the standard with 1 ml standard diluent buffer to yield a stock concentration of 40 ng/ml. Make sure the standard is dissolved completely before making serial dilutions. The standard diluent buffer serves as zero standard (0 ng/ml), and the rest of the standard serial dilution can be diluted as according to the suggested concentration below: 40 ng/ml, 20 ng/ml, 10 ng/ml, 5 ng/ml, 2.5 ng/ml, 1.25 ng/ml, 0.625 ng/ml.



## **ASSAY PROCEDURE**

All materials should be equilibrated to room temperature (RT) before use. Standards, samples and controls should be assayed in duplicates.

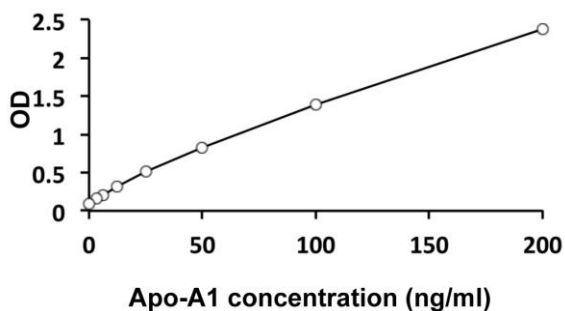
1. Remove excess microplate strips from the plate frame, return them to the foil pouch containing the desiccant pack, and reseal it.
2. Add 100 µl of standards, samples and zero controls (standard diluent buffer) into wells. Incubate for 1.5 h at 36 °C.
3. Aspirate each well and wash, repeating the process four times for a total five washes. Wash by filling each well with 1× Wash Buffer (350 µl) using a squirt bottle, manifold dispenser, or autowasher. Complete removal of liquid at each is essential to good performance. After the last wash, remove any remaining Wash Buffer by aspirating, decanting or blotting against clean paper towels.
4. Add 100 µl 1X Antibody conjugate into each well. Cover wells and incubate for 1 hour at 36°C.
5. Aspirate each well and wash as step 3.
6. Add 100 µl of 1X HRP-Streptavidin solution to each well. Cover wells and incubate for 30 minutes at 36°C.
7. Aspirate each well and wash as step 3.
8. Add 100 µl of TMB Reagent to each well. Incubate for 15 minutes at 36°C in dark.
9. Add 100 µl of Stop Solution to each well. The color of the solution should change from blue to yellow.
10. Read the OD with a microplate reader at 450nm immediately.

## **CALCULATION OF RESULTS**

1. Calculate the average absorbance values for each set of standards, controls and patient samples.
2. Using linear graph paper, construct a standard curve by plotting the mean absorbance obtained from each standard against its concentration with absorbance value on the vertical (Y) axis and concentration on the horizontal (X) axis.
3. Using the mean absorbance value for each sample determine the corresponding concentration from the standard curve.
4. Automated method: The results in the IFU have been calculated automatically using a 4 PL (4 Parameter Logistics) curve fit. 4 Parameter Logistics is the preferred method. Other data reduction functions may give slightly different results.

## **EXAMPLE OF TYPICAL STANDARD CURVE**

The following data is for demonstration only and cannot be used in place of data generations at the time of assay.





## **QUALITY ASSURANCE**

### **Sensitivity**

The minimum detectable dose (MDD) of Human apoA1 ranged from 0.625-40 ng/ml. The mean MDD was 0.3 ng/ml.

### **Specificity**

This assay recognizes natural and recombinant Human apoA1. No significant cross-reactivity or interference with the factors below was observed:

Human ApoB,ApoC1,ApoC2,ApoC3,ApoD, ApoE,  
ApoE3,ApoER2,ApoH,ApoJ,ApoM

### **Intra-assay and Inter-assay precision**

The CV values of both intra and inter precision fall below 9%.