INTENDED USE
This human alpha-2-antiplasmin activity assay is for the quantitative determination of active alpha-2-antiplasmin in human plasma.

BACKGROUND
Alpha2-antiplasmin is the major circulating inhibitor of plasmin. It plays a role in the regulation of intravascular fibrinolysis [1,2]. Decreased levels of alpha2-antiplasmin may play an important role in the increased capacity of the fibrinolytic function and may be beneficial in the treatment of thrombotic diseases, acute pulmonary embolism, and hepatic repair [3,4,6,7].

ASSAY PRINCIPLE
Functionally active alpha2-antiplasmin present in plasma reacts with plasmin coated and dried on a microtiter plate. Latent or complexed alpha2-antiplasmin will not bind to the plate or be detected. Unbound alpha2-antiplasmin samples are aspirated and an anti-alpha2-antiplasmin primary antibody is added. Excess primary antibody is then aspirated. The bound antibody, which is proportional to the original active alpha2-antiplasmin present in the samples, is then reacted with a horseradish peroxidase conjugated secondary antibody. Following an additional washing step, TMB substrate solution is used for color development at 450nm. The amount of color development is directly proportional to the concentration of active alpha2-antiplasmin in the sample.

REAGENTS PROVIDED
♦ Immunoassay plate: 1-96 well immulon plate (8x12 strips) coated, blocked, and dried with plasmin
♦ Human alpha2-antiplasmin activity standard: 1 vial of lyophilized standard
♦ 10X Wash Buffer: 1 bottle of 50ml wash; bring to 1X using DI water
♦ Anti-Human-antiplasmin primary antibody: 1 vial of lyophilized monoclonal anti-human antiplasmin antibody
♦ Horseradish peroxidase secondary antibody: 1 vial concentrated HRP labeled antibody
♦ TMB One substrate solution: 1 bottle of 10 ml solution

STORAGE AND STABILITY
Kit components should be stored at 4°C when not in use. Kit should be used no later than the expiration date.

REAGENTS AND EQUIPMENT REQUIRED
• 1-channel pipettes covering 0-10µl and 200-1000µl
• 12-channel pipette for 30-300µl
• Paper towels or kimwipes
• 50ml tubes
• 1N H₂SO₄
• DI water
• Magnetic stirrer and stir-bars
• Plastic containers with lids
• TBS buffer
• Blocking buffer
• Microtiter plate spectrophotometer operable at 450nm
• Microtiter plate shaker with uniform horizontally circular movement up to 300rpm

**WARNINGS**

**Warning** – Avoid skin and eye contact when using TMB One substrate solution since it may be irritating to eyes, skin, and respiratory system. Wear safety goggles and gloves.

**PRECAUTIONS**

• **DO NOT** mix any reagents or components of this kit with any reagents or components of any other kit. This kit is designed to work properly as provided.
• **DO NOT** pipette reagents by mouth.
• Always pour substrate out of the bottle into a clean test tube. DO NOT pipette out of the bottle as you could contaminate the substrate.
• Keep plate covered except when adding reagents, washing, or reading.
• All kit components must be kept refrigerated (4°C).
• **DO NOT** smoke, drink, or eat in areas where specimens or reagents are being handled.

**PREPARATION OF REAGENTS**

• **TBS buffer**: 0.10M TRIS, 0.15M NaCl, pH 7.4
• **Blocking buffer (BSA)**: 3% BSA in TBS buffer

**SPECIMEN COLLECTION**

This assay has been validated for use with samples of human plasma in citrate anticoagulant and human serum. Collect 9 volumes of blood in 1 volume of 0.1M trisodium citrate or acidified citrate. Immediately after collection of blood, samples must be centrifuged at 3000Xg for 15 minutes. The plasma should be transferred to a clean plastic tube and must be stored on ice prior to analysis. The samples are stable on ice for up to 6 hours or freeze at –20°C or colder for extended storage.

**ASSAY PROCEDURE**

Perform assay at room temperature. Vigorously shake plate (300rpm) at each step of the assay.

**Preparation of Standard:**
Prepare the alpha2-antiplasmin standard according to the dilution table. Make standard dilutions in 1.5ml microcentrifuge tubes.

Dilution table for preparation of human alpha-2-antiplasmin standards:
Human alpha-2-antiplasmin: 10µg/ml before reconstitution

<table>
<thead>
<tr>
<th>antiplasmin concentration (µg/ml)</th>
<th>Dilutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>900µl (BSA) + 100µl (10µg/ml)</td>
</tr>
<tr>
<td>0.5</td>
<td>500µl (BSA) + 500µl (1µg/ml)</td>
</tr>
<tr>
<td>0.25</td>
<td>500µl (BSA) + 500µl (0.5µg/ml)</td>
</tr>
<tr>
<td>0.1</td>
<td>600µl (BSA) + 400µl (0.25µg/ml)</td>
</tr>
<tr>
<td>0.05</td>
<td>500µl (BSA) + 500µl (0.1µg/ml)</td>
</tr>
<tr>
<td>0.025</td>
<td>500µl (BSA) + 500µl (0.05µg/ml)</td>
</tr>
<tr>
<td>0.01</td>
<td>600µl (BSA) + 400µl (0.025µg/ml)</td>
</tr>
<tr>
<td>0</td>
<td>500µl (BSA)</td>
</tr>
</tbody>
</table>

**NOTE:** DILUTIONS FOR THE STANDARD CURVE AND ZERO STANDARD MUST BE MADE AND APPLIED TO THE PLATE IMMEDIATELY.

**Standard and Unknown Addition:**
Add 100µl standard in duplicate and unknown to wells. Carefully record position of standards and unknowns. Shake plate at 300rpm for 30 minutes. Wash wells three times with 300µl wash buffer. Remove excess wash by gently tapping plate on paper towel or kimwipe.
NOTE: If the unknown is thought to have high antiplasmin levels, dilutions may be made in 3% BSA blocking buffer.

**Primary Antibody Addition:**
Reconstitute primary antibody as directed on vial and agitate gently to completely dissolve contents. Add 100µl to all wells. Shake plate at 300rpm for 30 minutes. Wash wells three times with 300µl wash buffer. Remove excess wash by gently tapping plate on paper towel or kimwipe.

**Secondary Antibody Addition:**
Dilute 3µl into 10ml 3% BSA and add 100µl to all wells. Shake plate at 300rpm for 30 minutes. Wash wells three times with 300µl wash buffer. Remove excess wash by gently tapping plate on paper towel or kimwipe.

**Substrate Incubation:**
Add 100µl TMB substrate to all wells and shake plate for 2-5 minutes. Substrate will change from colorless to different strengths of blue. Quench reaction by adding 50µl of 1N H₂SO₄ stop solution to all wells when samples are visually in the same range as the standards. Add stop solution to wells in the same order as substrate upon which color will change from blue to yellow. Mix thoroughly and read final absorbance values at 450nm. For best results read plate immediately.

**Measurement:**
Set the absorbance at 450nm in a microtiter plate spectrophotometer. Measure the absorbance in all wells at 450nm. Subtract zero point from all standards and unknowns to determine corrected absorbance (A₄₅₀).

**Assay Calibration:**
Plot A₄₅₀ against the amount of alpha2-antiplasmin in the standards. Fit a straight line through the points using a linear fit procedure. The alpha2-antiplasmin activity in the unknowns can be determined from this curve.

A typical standard curve.

(EXAMPLE ONLY, DO NOT USE)

![Standard Curve](image)

**EXPECTED VALUES**

The normal human concentration of alpha 2-antiplasmin is 70µg/ml or 1µM in plasma and 47.6 µg/ml or 0.68µM in serum [8].

Abnormalities in alpha2-antiplasmin levels have been reported in the following conditions:

♦ Hemostatic Dysfunction: Low levels of alpha2-antiplasmin may result in hemostatic dysfunction [5].

♦ Thrombus Formation: Reduction of alpha2-antiplasmin may result in thrombus formation [9].
The assay measures active α2-antiplasmin in the 0-1 µg/ml range. Extensive dilutions must be performed to assure the unknowns will be in the assay range. It is highly suggested to dilute unknowns by at least 1:1,000 because of the high level of α2-antiplasmin in normal human plasma and serum.

This information is believed to be correct but does not claim to be all-inclusive and shall be used only as a guide. The supplier of this kit shall not be held liable for any damage resulting from handling or from contact with the above product.

REFERENCES