

# RayBio<sup>®</sup> Anti-Adalimumab Antibody ELISA Kit

Catalog #: EAD-AnAdal

User Manual  
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Caution:  
Extraordinarily useful information enclosed



ISO 13485 Certified

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# RayBio<sup>®</sup> Anti-Adalimumab Antibody ELISA Kit Protocol

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Please read the entire manual carefully before starting your experiment

## I. INTRODUCTION

The RayBio<sup>®</sup> Anti-Adalimumab Antibody ELISA (Enzyme-Linked Immunosorbent Assay) kit is an in vitro enzyme-linked immunosorbent assay for the quantitative measurement of anti-Adalimumab antibodies in serum, plasma, and cell culture supernatants. This assay employs Adalimumab coated on a 96-well plate. Standards and samples are pipetted into the wells and anti-Adalimumab antibodies present in a sample is bound to the wells by Adalimumab. The wells are washed and HRP-conjugated Adalimumab is added. The wells are again washed. A TMB substrate solution is added to the wells and color develops in proportion to the amount of anti-Adalimumab antibody bound. The stop solution changes the color from blue to yellow, and the intensity of the color is measured at 450 nm.

## II. STORAGE

The entire kit may be stored at -20°C for up to 1 year from the date of shipment. Avoid repeated freeze-thaw cycles. The kit may be stored at 4°C for up to 6 months. For extended storage, it is recommended to store at -80°C. For prepared reagent storage, see table below.

## III. REAGENTS

<b>Component</b>	<b>Size / Description</b>	<b>Storage / Stability After Preparation</b>
Adalimumab Microplate (Item A)	96 wells (12 strips x 8 wells) coated with Adalimumab.	1 month at 4°C*
Wash Buffer Concentrate (20X) (Item B)	25 ml of 20X concentrated solution.	1 month at 4°C
Anti-Adalimumab Standard (Item C)	2 vials of anti-Adalimumab antibody. 1 vial is enough to run each standard in duplicate.	1 month at 4°C
HRP-conjugated Adalimumab (Item F)	2 vials of HRP-conjugated Adalimumab. Each vial is enough to assay half the microplate.	5 days at 4°C
TMB One-Step Substrate Reagent (Item H)	12 ml of 3,3',5,5'-tetramethylbenzidine (TMB) in buffer solution.	N/A
Stop Solution (Item I)	8 ml of 0.2 M sulfuric acid.	N/A
5x Assay Diluent B (Item E)	15 ml of 5X concentrated buffer. Diluent for standards, samples, and HRP-Conjugate.	1 month at 4°C

\*Return unused wells to the pouch containing desiccant pack, reseal along entire edge.

## IV. ADDITIONAL MATERIALS REQUIRED

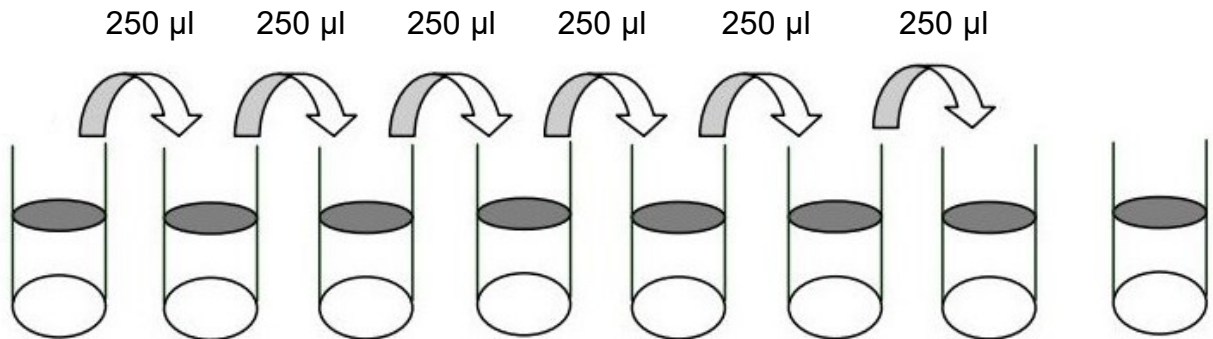
1. Microplate reader capable of measuring absorbance at 450 nm.
2. Precision pipettes to deliver 2 µl to 1 ml volumes.
3. Adjustable 1-25 ml pipettes for reagent preparation.
4. 100 ml and 1-liter graduated cylinders.
5. Absorbent paper.
6. Distilled or deionized water.
7. Log-log graph paper or computer and software for ELISA data analysis.
8. Horizontal orbital microplate shaker.
9. Tubes to prepare standard or sample dilutions.

## V. REAGENT PREPARATION

1. Bring all reagents and samples to room temperature (18 - 25°C) before use.
2. Sample dilution: 1X Assay Diluent B (Item E) should be used for dilution of serum, plasma, and cell culture supernatant samples. The suggested dilution for normal serum/plasma is 8-fold.

**Note:** Levels of anti-Adalimumab antibodies may vary between different samples. Optimal dilution factors for each sample must be determined by the investigator.

3. Preparation of standard: Briefly spin a vial of Item C. Add 500 µl 1X Assay Diluent B (Item E, Assay Diluent should be diluted 5-fold with deionized or distilled water before use) into Item C vial to prepare a 250 ng/ml standard solution. Dissolve the powder thoroughly by a gentle mix. Pipette 250 µl 1X Assay Diluent B (Item E) into each tube. Use the 250 ng/ml standard solution to produce a dilution series (shown below). Mix each tube thoroughly before the next transfer. 1X Assay Diluent B (Item E) serves as the zero standard (0 ng/ml).



	Std1	Std2	Std3	Std4	Std5	Std6	Std7	Zero Standard
<b>Diluent volume</b>	Item C + 500 µl	250 µl	250 µl	250 µl	250 µl	250 µl	250 µl	250 µl
<b>Conc.</b>	250 ng/ml	125 ng/ml	62.5 ng/ml	31.25 ng/ml	15.6 ng/ml	7.8 ng/ml	3.9 ng/ml	0 ng/ml

4. If the Wash Concentrate (20X) (Item B) contains visible crystals, warm to room temperature and mix gently until dissolved. Dilute 20 ml of Wash Buffer Concentrate into deionized or distilled water to yield 400 ml of 1X Wash Buffer.
5. Briefly spin the HRP-conjugated Adalimumab vial (Item F) before use. Add 56  $\mu$ l of 1X Assay Diluent B (Item E) into the vial to prepare an HRP-conjugated Adalimumab concentrate. Pipette up and down to mix gently (the concentrate can be stored at 4°C for 5 days). The HRP-conjugated Adalimumab concentrate should be diluted 100-fold with 1X Assay Diluent B (Item E) and used in step 5 of Part VI Assay Procedure.

## **VI. ASSAY PROCEDURE**

1. Bring all reagents and samples to room temperature (18 - 25°C) before use. It is recommended that all standards and samples to be run at least in duplicate.
2. Label removable 8-well strips as appropriate for your experiment.
3. Add 100  $\mu$ l of each standard (see Reagent Preparation step 3) and sample into appropriate wells. Cover wells and incubate for 2 hours at room temperature on a horizontal orbital microplate shaker set at 500 rpm.
4. Discard the solution and wash 4 times with 1X Wash Solution. Wash by filling each well with Wash Buffer (300  $\mu$ l) using a multi-channel pipette or auto washer. Complete removal of liquid at each step is essential to good performance. After the last wash, remove any remaining Wash Buffer by aspirating or decanting. Invert the plate and blot it against clean paper towels.
5. Add 100  $\mu$ l of 1X prepared HRP-conjugated Adalimumab (Reagent Preparation step 6) to each well. Incubate for 1 hour at room temperature on the shaker.
6. Discard the solution. Repeat the wash as in step 4.
7. Add 100  $\mu$ l of TMB One-Step Substrate Reagent (Item H) to each well. Incubate for 30 minutes at room temperature in the dark on the shaker.
8. Add 50  $\mu$ l of Stop Solution (Item I) to each well. Read at 450 nm immediately.

## **VII. ASSAY PROCEDURE SUMMARY**

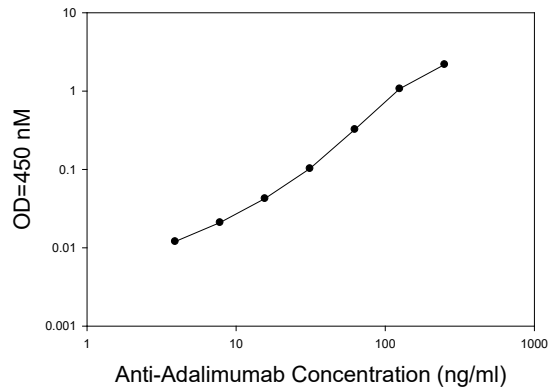
1. Prepare all reagents, samples and standards as instructed.
2. Add 100  $\mu$ l standard or sample to each well. Incubate 2 hours at room temperature.
3. Add 100  $\mu$ l  $\mu$ l prepared HRP-conjugated Adalimumab to each well. Incubate 1 hour at room temperature.
4. Add 100  $\mu$ l TMB One-Step Substrate Reagent to each well. Incubate 30 minutes at room temperature.
5. Add 50  $\mu$ l Stop Solution to each well. Read at 450 nm immediately.

## VIII. CALCULATION OF RESULTS

Calculate the mean absorbance for each set of duplicate standards, controls, and samples, and subtract the average zero standard optical density. Plot the standard curve on log-log graph paper or using Sigma plot software, with standard concentration on the x-axis and absorbance on the y-axis. Draw the best-fit straight line through the standard points.

### A. TYPICAL DATA

These standard curves are for demonstration only. A standard curve must be run with each assay.



### B. SENSITIVITY

The minimum detectable dose of anti-Adalimumab antibody was determined to be 1.64 ng/ml.

Minimum detectable dose is defined as the analyte concentration resulting in an absorbance that is 2 standard deviations higher than that of the blank (diluent buffer).



### **C. SPIKING & RECOVERY**

Recovery was determined by spiking various levels of Anti-Adalimumab Antibody into human serum samples. Mean recovery was 76% (n=6).

### **D. REPRODUCIBILITY**

Intra-Assay CV%: <10%

Inter-Assay CV%: <12%

### **IX. SPECIFICITY**

This ELISA antibody pair detects Anti-Adalimumab Antibody. Other targets not determined.

## X. TROUBLESHOOTING GUIDE

Problem	Cause	Solution
Poor standard curve	<ul style="list-style-type: none"> <li>• Inaccurate pipetting</li> <li>• Improper standard dilution</li> </ul>	<ul style="list-style-type: none"> <li>• Check pipettes</li> <li>• Briefly centrifuge Item C and dissolve the powder thoroughly by gently mixing</li> </ul>
Low signal	<ul style="list-style-type: none"> <li>• Improper preparation of standard and/or biotinylated antibody</li> <li>• Too brief incubation times</li> <li>• Inadequate reagent volumes or improper dilution</li> </ul>	<ul style="list-style-type: none"> <li>• Briefly spin down vials before opening. Dissolve the powder thoroughly.</li> <li>• Ensure sufficient incubation time. Assay procedure step 3 may be done overnight at 4°C with gentle shaking (note: may increase overall signals including background).</li> <li>• Check pipettes and ensure correct preparation</li> </ul>
Large CV	<ul style="list-style-type: none"> <li>• Inaccurate pipetting</li> <li>• Air bubbles in wells</li> </ul>	<ul style="list-style-type: none"> <li>• Check pipettes</li> <li>• Remove bubbles in wells</li> </ul>
High background	<ul style="list-style-type: none"> <li>• Plate is insufficiently washed</li> <li>• Contaminated wash buffer</li> </ul>	<ul style="list-style-type: none"> <li>• Review the manual for proper wash. If using a plate washer, ensure that all ports are unobstructed.</li> <li>• Make fresh wash buffer</li> </ul>
Low sensitivity	<ul style="list-style-type: none"> <li>• Improper storage of the ELISA kit</li> <li>• Stop solution</li> </ul>	<ul style="list-style-type: none"> <li>• Store your standard at &lt;-70°C after reconstitution, others at 4°C. Keep substrate solution protected from light.</li> <li>• Add stop solution to each well before reading plate</li> </ul>

# RayBio<sup>®</sup> ELISA Kits

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Over 4,000 ELISA kits available, visit [www.RayBiotech.com/ELISA-Kits](http://www.RayBiotech.com/ELISA-Kits) for details.

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