

RAT KIDNEY INJURY MOLECULE (KIM1)

Immunoperoxidase Assay for Determination of Kim-1 in Rat Samples

DIRECTIONS FOR USE

Version2 1.0 -- 1

For Research Use Only, NOT for Diagnostic Purposes

Please Read this Package Insert Completely Before Using This Product

INTENDED USE

The Kidney Injury Molecule (KIM1) test kit is a highly sensitive two-site enzyme linked immunoassay (ELISA) for measuring KIM1 in biological samples of rats.

PRINCIPLE OF THE ASSAY

The principle of the double antibody sandwich ELISA is represented in Figure 1. In this assay the KIM1 present in samples reacts with the anti-KIM1 antibodies which have been adsorbed to the surface of polystyrene microtitre wells. After the removal of unbound proteins by washing, anti-KIM1 antibodies conjugated with horseradish peroxidase (HRP), are added. These enzyme-labeled antibodies form complexes with the previously bound KIM1. Following another washing step, the enzyme bound to the immunosorbent is assayed by the addition of a chromogenic substrate, 3,3',5,5'-tetramethylbenzidine (TMB). The quantity of bound enzyme varies directly with the concentration of KIM1 in the sample tested; thus, the absorbance, at 450 nm, is a measure of the concentration of KIM1 in the test sample. The quantity of KIM1 in the test sample can be interpolated from the standard curve constructed from the standards, and corrected for sample dilution.

Anti-KIM1 Antibodies Bound To Solid Phase
|
Standards and Samples Added
|
KIM1*Anti-KIM1 Complexes Formed
|
Unbound Sample Proteins Removed
|
Anti-KIM1-HRP Conjugate Added
|
Anti-KIM1-HRP * KIM1 * Anti-KIM1 Complexes

Formed
|
Unbound Anti-KIM1-HRP Removed
|
Chromogenic Substrate Added
|
Determine Bound Enzyme Activity

Figure 1.

REAGENTS

(Quantities sufficient for 96 determinations)

1. DILUENT CONCENTRATE (Running Buffer)
One bottle containing 50 ml of a 5X concentrated diluent running buffer.
 2. WASH SOLUTION CONCENTRATE
One bottle containing 50 ml of a 20X concentrated wash solution.
 3. ENZYME-ANTIBODY CONJUGATE 100X
One vial containing 150 µL of affinity purified anti-Rat KIM1 antibody conjugated with horseradish peroxidase in a stabilizing buffer.
 4. CHROMOGEN-SUBSTRATE SOLUTION
One vial containing 12 mL of 3,3',5,5'-tetramethylbenzidine (TMB) and hydrogen peroxide in citric acid buffer at pH 3.3.
 5. STOP SOLUTION
One vial containing 12 ml 0.3 M sulfuric acid.
- WARNING: Avoid contact with skin.**
6. ANTI-RAT KIM1 ELISA MICRO PLATE
Twelve removable eight (8) well micro well strips in well holder frame. Each well is coated with affinity purified anti-Rat KIM1.
 7. RAT KIM1 CALIBRATOR
Three vials containing lyophilized Rat KIM1 calibrator.

FOR IN VITRO USE ONLY

REAGENT PREPARATION

1. DILUENT CONCENTRATE

The Diluent Solution supplied is a 5X Concentrate and must be diluted 1/5 with distilled or deionized water (1 part buffer concentrate, 4 parts dH₂O).

2. WASH SOLUTION CONCENTRATE

The Wash Solution supplied is a 20X Concentrate and must be diluted 1/20 with distilled or deionized water (1 part buffer concentrate, 19 parts dH₂O). Crystal formation in the concentrate is not uncommon when storage temperatures are low. Warming of the concentrate to 30-35°C before dilution can dissolve crystals.

3. ENZYME-ANTIBODY CONJUGATE

Calculate the required amount of working conjugate solution for each microtitre plate test strip by adding 10 µL Enzyme-Antibody Conjugate to 990 µL of 1X Diluent for each test strip to be used for testing. Mix uniformly, but gently. Avoid foaming.

4. CHROMOGEN-SUBSTRATE SOLUTION

Ready to use as supplied.

5. STOP SOLUTION

Ready to use as supplied.

6. ANTI-RAT KIM1 ELISA MICRO PLATE

Ready to use as supplied. Unseal Microtiter Pouch and remove plate from pouch. Remove all strips and wells that will not be used in the assay and place back in pouch and re-seal along with desiccant.

7. RAT KIM1 CALIBRATOR

Add 0.5 mL of distilled or de-ionized water to the Rat KIM1 Calibrator and mix gently until dissolved. The calibrator is now at a concentration of 500 ng/ml. **Rat KIM1 standards need to be prepared immediately prior to use (see chart below).** Mix well between each step. Avoid foaming.

Standard	ng/ml	Volume added to 1x Diluent	Volume of 1x Diluent
7	10	200 µl KIM1 Calibrator	300 µl
6	5	250 µl standard 7	250 µl
5	2.5	250 µl standard 6	250 µl
4	1.25	250 µl standard 5	250 µl
3	0.625	250 µl standard 4	250 µl
2	0.313	250 µl standard 3	250 µl
1	0.156	250 µl standard 2	250 µl
0	0		500 µl

STORAGE AND STABILITY

The expiration date for the package is stated on the box label.

1. DILUENT

The 5X Diluent Concentrate is stable until the expiration date. The 1X working solution is stable for at least one week from the date of preparation. Both solutions should be stored at 4-8°C.

2. WASH SOLUTION

The 20X Wash Solution Concentrate is stable until the expiration date. The 1X working solution is stable for at least one week from the date of preparation. Both solutions can be stored at room temperature (16-25°C) or at 4-8°C.

3. ENZYME-ANTIBODY CONJUGATE

Undiluted horseradish peroxidase anti-KIM1 conjugate should be stored at 4-8°C and **diluted immediately prior to use.** The working conjugate solution is stable for up to 8 hours.

4. CHROMOGEN-SUBSTRATE SOLUTION

The Substrate Solution should be stored at 4-8°C and is stable until the expiration date.

5. STOP SOLUTION

The Stop Solution should be stored at 4-8°C and is stable until the expiration date.

6. ANTI-RAT KIM1 ELISA MICRO PLATE

Anti-Rat KIM1 coated wells are stable until the expiration date, and should be stored at 4-8°C in sealed foil pouch with desiccant pack.

7. RAT KIM1 CALIBRATOR

Short Term Storage: the unreconstituted calibrator is stable until the expiration date. **The working standard solutions should be prepared immediately prior to use.**

INDICATIONS OF INSTABILITY

If the test is performing correctly, the results observed with the standard solutions should be within 20 % of the expected values.

SPECIMEN COLLECTION AND HANDLING

Blood should be collected by venipuncture. The serum should be separated from the cells after clot formation by centrifugation. For plasma samples, blood should be collected into a container with an anticoagulant and then centrifuged. Care should be taken to minimize hemolysis, excessive hemolysis can impact your results. Assay immediately or aliquot

and store samples at -20°C. Avoid repeated freeze-thaw cycles.

1. Precautions

For any sample that might contain pathogens, care must be taken to prevent contact with open wounds.

2. Additives and Preservatives

No additives or preservatives are necessary to maintain the integrity of the specimen. Avoid azide contamination.

3. Known interfering substances

Azide and thimerosal at concentrations higher than 0.1% inhibits the enzyme reaction.

MATERIAL PROVIDED

See "REAGENTS"

MATERIALS REQUIRED BUT NOT PROVIDED

- Precision pipette (2 μ L to 200 μ L) for making and dispensing dilutions
- Test tubes
- Microtitre washer/aspirator
- Distilled or Deionized H₂O
- Microtitre Plate reader
- Assorted glassware for the preparation of reagents and buffer solutions
- Timer
- Vortex mixer
- Orbital Shaker

ASSAY PROTOCOL

DILUTION OF SAMPLES

The assay for quantification of KIM1 in samples requires that each test sample be diluted before use. For a single step determination a dilution of 1/2 is appropriate for most serum/plasma samples. For absolute quantification, samples that yield results outside the range of the standard curve, a lesser or greater dilution might be required. **If unsure of sample level, a serial dilution with one or two representative samples before running the entire plate is highly recommended.**

To prepare a 1/2 dilution of sample, transfer 150 μ L to 150 μ L of 1X diluent. This gives you a 1/2 dilution. Mix thoroughly.

PROCEDURE

1. Bring all reagents to room temperature before use.

2. Pipette 100 μ L of

Standard 0 (0.0 ng/ml) in duplicate
Standard 1 (0.156 ng/ml) in duplicate
Standard 2 (0.313 ng/ml) in duplicate
Standard 3 (0.625 ng/ml) in duplicate
Standard 4 (1.25 ng/ml) in duplicate
Standard 5 (2.5 ng/ml) in duplicate
Standard 6 (5 ng/ml) in duplicate
Standard 7 (10ng/ml) in duplicate

3. Pipette 100 μ L of sample (in duplicate) into pre designated wells.

4. Incubate the micro titer plate while shaking on an orbital shaker at room temperature for one hundred and twenty (120 \pm 2) minutes. Keep plate covered and level during incubation

5. Following incubation, aspirate the contents of the wells.

6. Completely fill each well with appropriately diluted Wash Solution and aspirate. Repeat three times, for a total of four washes. If washing manually: completely fill wells with wash buffer, invert the plate then pour/shake out the contents in a waste container. Follow this by sharply striking the wells on absorbent paper to remove residual buffer. Repeat 3 times for a total of four washes.

7. Pipette 100 μ L of appropriately diluted Enzyme-Antibody Conjugate to each well. Incubate at room temperature while shaking on an orbital shaker for sixty (60 \pm 2) minutes. Keep plate covered in the dark and level during incubation.

8. Wash and blot the wells as described in Steps 5/6.

9. Pipette 100 μ L of TMB Substrate Solution into each well.

10. Incubate in the dark while shaking on an orbital shaker at room temperature for precisely ten (10) minutes.

11. After ten minutes, add 100 μ L of Stop Solution to each well.

12. Determine the absorbance (450 nm) of the contents of each well.

STABILITY OF THE FINAL REACTION MIXTURE

The absorbance of the final reaction mixture can be measured up to 2 hours after the addition of the Stop Solution. However, good laboratory practice dictates that the measurement be made as soon as possible.

RESULTS

1. Subtract the average background value from the test values for each sample.
2. Using the results observed for the standards construct a Standard Curve. The appropriate curve fit is that of a four-parameter logistics curve. A second order polynomial (quadratic) or other curve fits may also be used.
3. Interpolate test sample values from standard curve. Correct for sera dilution factor to arrive at the KIM1 concentration in original samples.

LIMITATION OF THE PROCEDURE

1. Reliable and reproducible results will be obtained

when the assay procedure is carried out with a complete understanding of the information contained in the package insert instructions and with adherence to good laboratory practice.

2. Factors that might affect the performance of the assay include proper instrument function, cleanliness of glassware, quality of distilled or deionized water, and accuracy of reagent and sample pipettings, washing technique, incubation time or temperature.
3. Do not mix or substitute reagents with those from other lots or sources.

Manufactured by:



Immunology Consultants Laboratory, Inc.
141 N. Elliott Rd | Newberg, OR 97132 | USA
Phone (503) 538-5869 | Fax (503) 554-8510

This document contains information that is proprietary to Immunology Consultants Laboratory. The original recipient of this document may duplicate this document in whole or in part for internal business purposes only, provided that this entire notice appears in all copies. In duplicating any part of this document, the recipient agrees to make every reasonable effort to prevent the unauthorized use and distribution of the proprietary information.