

Asymmetrical Dimethylarginine (ADMA) CLIA Kit

Catalog No.: abx490404

Size: 96T

Range: 3.9 ng/ml - 1000 ng/ml

Sensitivity: < 1.5 ng/ml

Storage: Store standard, detection reagent A, detection reagent B and the 96-well plate at -20°C, and the rest of the kit components at 4°C.

Application: For quantitative detection of ADMA in General, Human, Mouse, Rat, Rabbit, Pig, Goat, Sheep, Chicken, Monkey Serum, Plasma, Tissue Homogenates and other biological fluids.

Introduction: Asymmetric dimethylarginine (ADMA) is a naturally occurring chemical found in blood plasma. It is a metabolic by-product of continual protein modification processes in the cytoplasm of all human cells. It is closely related to L-arginine, a conditionally essential amino acid. ADMA interferes with L-arginine in the production of nitric oxide (NO), a key chemical involved in normal endothelial function and, by extension, cardiovascular health.

Principle of the Assay

This kit is based on competitive chemiluminescent immunoassay technology. ADMA antibody is pre-coated onto a 96-well plate. A competitive inhibition reaction is launched between biotin labeled ADMA and unlabeled ADMA with the pre-coated antibody specific to ADMA. After washing away the unbound conjugates, avidin conjugated to Horseradish Peroxidase is added to each microplate well and incubated. After the mixture of substrate A and B is added only wells that contain biotin labeled ADMA will produce chemiluminescence. The intensity of the emitted light is inversely proportional to the amount of ADMA in the sample or standard.

Kit components

1. One pre-coated 96-well microplate (12 × 8 well strips)
2. Standard: 2 tubes
3. Standard Diluent Buffer: 20 ml
4. Wash Buffer (30X): 20 ml. Dilution: 1:30
5. Detection Reagent A (100X): 120 µl
6. Detection Reagent B (100X): 120 µl
7. Diluent A: 12 ml
8. Diluent B: 12 ml
9. Substrate A: 10 ml
10. Substrate B: 2 ml
11. Plate sealer: 4

Material Required But Not Provided

1. 37°C incubator
2. Luminometer capable of reading 96-well microplates (lag time 30.0 secs and read time 1.0 sec/well)
3. High-precision pipette and sterile pipette tips
4. Automated plate washer
5. Deionized or distilled water
6. Tubes to prepare standard or sample dilutions
7. Absorbent filter papers
8. 100 ml and 1 L volume graduated cylinders

Protocol

A. Preparation of sample and reagents

1. Sample

Isolate the test samples soon after collecting, analyze immediately or store at 4°C for up to 5 days. Otherwise, store at -20°C for up to one month or -80°C for up to two months to avoid loss of bioactivity. Avoid multiple freeze-thaw cycles.

- **Serum:** Samples should be collected into a serum separator tube. Coagulate the serum by leaving the tube undisturbed in a vertical position overnight at 4°C or at room temperature for up to 60 minutes. Centrifuge at approximately 1000 × g for 20 min. Analyze the serum immediately or aliquot and store at -20°C or -80°C.
- **Plasma:** Collect plasma using heparin or EDTA as an anticoagulant. Centrifuge for 15 minutes at 1000 × g within 30 minutes of collection. Assay immediately or aliquot and store at -20°C. Avoid hemolysis and high cholesterol samples.
- **Tissue homogenates:** The preparation of tissue homogenates will vary depending upon tissue type – this is just an example. Rinse tissues with ice-cold PBS to remove the excess of blood. Weigh before homogenization. Finely mince tissues and homogenize with a tissue homogenizer on ice in PBS and sonicate the cell suspension. Centrifuge the homogenates at 5000 × g for 5 min and collect the supernatant. Assay immediately or aliquot and store at -20°C.
- **Other biological fluids:** Centrifuge at approximately 1000 × g for 20 min to remove precipitant. Analyze immediately or aliquot and store at -20°C or -80°C.

Note:

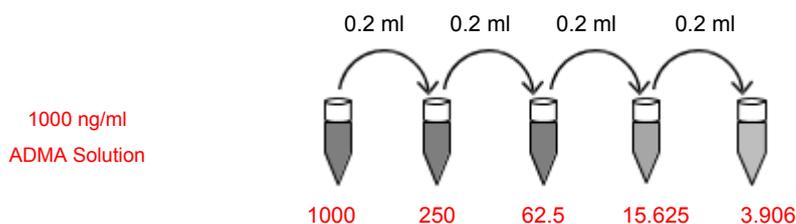
- » Please bring sample slowly to room temperature. Sample hemolysis will influence the result. Hemolyzed specimen should not be used.
- » Samples must be diluted so that the expected concentration falls within the kit's range. Sample should be diluted in 0.01 mol/L PBS (PH=7.0-7.2). Serum/plasma samples require approximately a 6 fold dilution.
- » If the sample are not indicated in the manual's applications, a preliminary experiment to determine the validity of the kit will be necessary.
- » Fresh sample or recently obtained samples are recommended to prevent protein degradation and denaturalization that may lead to erroneous results. **Notice:** Undefined index: recommendation in /home/abbexa/public_html/admin/view/template/manual/21_CLIA_C.tpl on line 195 For better detection, it is highly recommended to use serum instead of plasma.
- » Always use non-pyrogenic, endotoxin-free tubes for blood collection.

2. Wash buffer

Dilute the concentrated Wash buffer 30-fold (1/30) with distilled water (i.e. add 20 ml of concentrated wash buffer into 580 ml of distilled water).

3. Standard

Bring samples and all kit components to room temperature. Prepare the Standard with 0.5 ml of Standard Diluent buffer to make the 1000 ng/ml Standard Solution. Allow the reconstituted standard to sit for 10 minutes with gentle agitation prior to carrying out the serial dilutions; avoiding foaming or bubbles. Label 4 tubes with 250 ng/ml, 62.5 ng/ml and 3.91 ng/ml respectively. Aliquot 0.6 ml of the Standard diluent buffer into each tube. Add 0.2 ml of 1000 ng/ml standard solution into the 1st tube and mix thoroughly. Transfer 0.2 ml from 1st tube to 2nd tube, mix thoroughly, and so on.



4. Detection Reagent A and B Preparation

Centrifuge Detection Reagent A and B briefly before use. Detection Reagent A and B should be diluted 100-fold with the Diluent A and B and mixed thoroughly. They are sticky solutions, therefore pipette with a slow, smooth action to reduce volume errors. Please discard after use.

5. Substrate working solution Preparation

Substrate A and B should be mixed with a ration of 99:1 respectively and mixed thoroughly. For example, prepare 1 ml of substrate working solution by mixing 0.99 ml of Substrate A and 0.01 ml of Substrate B.

B. Assay Procedure

Equilibrate the kit components and samples to room temperature before use. It is recommended to plot a standard curve for each test.

1. Set standard, test sample and control (zero) wells on the pre-coated plate respectively, and then, record their positions. It is recommended to measure each standard and sample in duplicate.
2. Add 100 μ l of the diluted standards into the standard wells. Aliquot 100 μ l Standard Diluent Buffer to the control (zero) well.
3. Add 100 μ l of appropriately diluted sample into the test sample wells. Add the solution at the bottom of each well without touching the side wall. Shake the plate mildly to mix thoroughly.
4. Seal the plate with a cover and incubate for 1 h at 37°C.
5. Remove the cover and discard the liquid. Do not wash.
6. Aliquot 100 μ l of the detection Reagent A working solution to each well. Seal the plate with a cover and incubate for 1 h at 37°C.
7. Discard the solution and wash the plate 3 times with wash buffer. Do not let the wells completely dry at any time.

Manual Washing: Discard the solution without touching the side walls. Fill each well completely (approximately 400 μ l) with Wash buffer and incubate on an ELISA shaker for 2 min. Invert the plate each time and decant the contents; tap it 4-5 times on absorbent paper towel to completely remove the liquid. Repeat this procedure for a total of three times.

Automated Washing: Discard the solution and wash the plate three times overfilling the wells with Wash buffer. After the final wash invert the plate, decant the contents; tap it 4-5 times on absorbent paper towel to completely remove the liquid. It is recommended that the washer be set for a soaking time of 1-2 min.

8. Aliquot 100 μ l of Detection Reagent B working solution into each well, seal and incubate at 37°C for 30 min.
9. Discard the solution and wash the plate 5 times with wash buffer (each time let the Wash Buffer stay for 1-2 min). Discard the Wash Buffer and blot the plate onto paper towels or other absorbent material.
10. Aliquot 100 μ l of Substrate working solution into each well. Seal the plate with a cover and incubate at 37°C for 10 min.
11. Measure the chemiluminescence signal in a microplate luminometer immediately.

For calculation, (the relative RLU) = (the RLU of each well) – (the RLU of Zero well). The standard curve can be plotted as the relative RLU of each standard solution (Y) vs. the respective concentration of the standard solution (X). Log-log curve fitting is recommended for data analysis. The ADMA concentration of the samples can be interpolated from the standard curve.

Note: If the samples measured were diluted, multiply the dilution factor by the concentrations from interpolation to obtain the concentration before dilution.

C. Precautions

1. Before using the kit, centrifuge the tubes briefly to bring down the contents trapped in the lid.
2. Wash buffer may crystallize and separate. If this happens warm to room temperature and mix gently until the crystals are completely dissolved.
3. Avoid foaming or bubbles when mixing or reconstituting components. Prepare the Standard solutions within 15 min of starting the experiment. Please use the diluted Standard for a single assay procedure and discard after use. For each step in the procedure, total dispensing time for addition of reagents to the assay plate should not exceed 10 minutes.
4. It is recommended measuring each standard and sample in duplicate.
5. Do not let the wells uncovered for extended periods between incubation. Once reagents are added to the wells, avoid letting the strips dry as this can inactivate the biological material on the plate. Incubation time and temperature must be controlled.
6. Ensure plates are properly sealed or covered during incubation steps.
7. Complete removal of all solutions and buffers during wash steps is necessary for accurate measurement readings.
8. Do not reuse pipette tips and tubes to avoid cross contamination.
9. Do not use expired components or components from a different kit.
10. Store the substrate A and B in the dark.

D. Precision

Intra-assay Precision (Precision within an assay): 3 samples with low, medium and high levels of ADMA were tested 20 times on one plate, respectively.

Inter-assay Precision (Precision between assays): 3 samples with low, medium and high levels of ADMA were tested on 3 different plates, 8 replicates in each plate.

CV (%) = (Standard Deviation / mean) × 100

Intra-Assay: CV<10%

Inter-Assay: CV<12%