

# GUINEA PIG IgM

## Immunoperoxidase Assay for Determination of IgM in Guinea Pig 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 IgM test kits are a highly sensitive two-site enzyme linked immunoassay (ELISA) for measuring IgM in biological samples of Guinea Pigs.

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

Figure 1.

### PRINCIPLE OF THE ASSAY

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

### 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  $\mu$ L of affinity purified anti-Guinea Pig IgM 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-GUINEA PIG IgM ELISA MICRO PLATE  
Twelve removable eight (8) well micro well strips in well holder frame. Each well is coated with affinity purified anti-Guinea Pig IgM.

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

## 7. GUINEA PIG IgM STANDARDS

One vial containing Guinea Pig IgM 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 (1 part buffer concentrate, 4 parts dH<sub>2</sub>O) with distilled or deionized water.

### 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 part dH<sub>2</sub>O). 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-GUINEA PIG IgM 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. Take clear plastic tape and cover tops of strips to avoid particulates from contaminating wells.

### 7. GUINEA PIG IgM STANDARDS

**The Guinea Pig IgM Calibrator should be aliquoted out and stored frozen.** It is at a concentration of 484 µg/ml and needs to be diluted in 1X diluent immediately prior to use for each run (see chart below). Mix well between each step. Avoid foaming.

Standard	ng/ml	Volume added to 1x Diluent	Volume of 1x Diluent
A	4840	5 µl Guinea Pig IgM Calibrator	495 µl
6	400	60 µl standard A	666 µl
5	200	250 µl standard 6	250 µl
4	100	250 µl standard 5	250 µl
3	50	250 µl standard 4	250 µl
2	25	250 µl standard 3	250 µl
1	12.5	250 µl standard 2	250 µl
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-IgM 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-GUINEA PIG IgM ELISA MICRO PLATE

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

## 7. GUINEA PIG IgM STANDARDS

**Aliquot Guinea Pig IgM calibrator and store them frozen, avoid repeated freeze-thaw cycles.** For storage longer than 14 days, keep frozen until the expiration date. Storage of less than 14 days can be 4°C. The working standard solutions should be prepared immediately prior to use and are stable for up to 8 hours.

### SPECIMEN COLLECTION AND HANDLING

Blood should be collected by venipuncture and the serum separated from the cells, after clot formation, by centrifugation. Care should be taken to minimize hemolysis, excessive hemolysis can impact your results. Specimens may be shipped at room temperature and then stored refrigerated at 2-8°C if testing is to take place within one week after collection. If testing is to take place later than one week, specimens should be stored 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  $\mu$ L to 200  $\mu$ L) for making and dispensing dilutions
- Test tubes
- Microtitre washer/aspirator
- Distilled or Deionized H<sub>2</sub>O
- Microtitre Plate reader
- Assorted glassware for the preparation of reagents and buffer solutions
- Timer
- Vortex mixer

## ASSAY PROTOCOL

### DILUTION OF SERUM SAMPLES

The assay for quantification of IgM in serum requires that each test sample be diluted before use. For a single step determination a dilution of serum at 1/5,000 is appropriate for most 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**

1. To prepare a 1/5,000 dilution of sample, transfer 5  $\mu$ L of sample to 495  $\mu$ L of 1X diluent. This gives you a 1/100 dilution. Next, dilute the 1/100 samples by transferring 10  $\mu$ L, to 490  $\mu$ L of 1X diluent. You now have a 1/5,000 dilution of your sample. Mix thoroughly at each stage.

### PROCEDURE

Bring all reagents to room temperature before use.

1. Add 100  $\mu$ L of Diluent to each of the wells in 1A & 2A. These will serve for an evaluation of the background associated with the assay.

2. Pipette 100  $\mu$ L of  
Standard 0 (0.0 ng/ml) in duplicate  
Standard 1 (12.5 ng/ml) in duplicate  
Standard 2 (25 ng/ml) in duplicate  
Standard 3 (50 ng/ml) in duplicate  
Standard 4 (100 ng/ml) in duplicate  
Standard 5 (200 ng/ml) in duplicate  
Standard 6 (400ng/ml) in duplicate

3. Pipette 100  $\mu$ L of sample (in duplicate) into pre designated wells.

4. Incubate the micro titer plate at room temperature for twenty (20  $\pm$  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  $\mu\text{L}$  of appropriately diluted Enzyme-Antibody Conjugate to each well. Incubate at room temperature for twenty ( $20 \pm 2$ ) minutes. Keep plate covered and level during incubation.
8. Wash and blot the wells as described in Steps 5/6.
9. Pipette 100  $\mu\text{L}$  of TMB Substrate Solution into each well.
10. Incubate in the dark at room temperature for precisely ten (10) minutes.
11. After ten minutes, add 100  $\mu\text{L}$  of Stop Solution to each well.
12. Determine the absorbance (450 nm) of the contents of each well. Calibrate the plate reader to air.

#### 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 IgM concentration in original sample.

#### 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.

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