



# **Human BETA 2- MICROGLOBULIN**

Catalog Number: B2M39-K01 ( 1 X 96 Wells )  
*For Research Use Only. Not for use in diagnostic procedures.*  
v. 2.1 (04 OCT 23)

---

EAGLE BIOSCIENCES, INC.  
20A Northwest Blvd., Suite 112, Nashua, NH 03063  
Phone: 617-419-2019 Fax: 617-419-1110  
[WWW.EAGLEBIO.COM](http://WWW.EAGLEBIO.COM)



## INTENDED USE

The Beta 2-Microglobulin test kit is a highly sensitive two-site enzyme linked immunoassay (ELISA) for measuring Beta 2-Microglobulin in biological fluids of Human.

*For further information about this kit, its application, or the procedures in this insert, please contact the Technical Service Team at Eagle Biosciences, Inc at [www.EagleBio.com](http://www.EagleBio.com) or at 866-411-8023.*

## INTRODUCTION

Beta 2-Microglobulin (B2M) is an 11 kDA protein. It forms the subunit of the MHC class I molecule and associates with the outer membrane of many cells including lymphocytes. It is present in low levels in serum and urine of normal people, but at a higher concentration in patients with renal diseases, kidney transplants and various other inflammatory and infectious conditions.

## PRINCIPLE OF THE ASSAY

The principle of the double antibody sandwich ELISA is represented in Figure 1. In this assay the Beta 2Microglobulin present in samples reacts with the antiBeta 2-Microglobulin antibodies which have been adsorbed to the surface of polystyrene microtitre wells. After the removal of unbound proteins by washing, anti-B2M antibodies conjugated with horseradish peroxidase (HRP), are added. These enzyme-labeled antibodies form complexes with the previously bound B2M. 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 B2M in the sample tested; thus, the absorbance, at 450 nm, is a measure of the concentration of B2M in the test sample. The quantity of B2M in the test sample can be interpolated from the standard curve constructed from the standards, and corrected for sample dilution.

## MATERIALS PROVIDED

### **Diluent Concentrate –**

One bottle containing 50 ml of a 5X concentrated diluent running buffer.

### **Wash Solution Concentrate –**

One bottle containing 50 mL of a 20X concentrated wash solution.

### **Enzyme-Antibody Conjugate 100X –**

One vial containing 150 µL of affinity purified anti Human Beta 2-Microglobulin antibody conjugated with horseradish peroxidase in a stabilizing buffer.

### **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.

### **Stop Solution –**

One vial containing 12 ml 0.3M Sulfuric acid.

**WARNING: Avoid contact with skin.**

**Anti-Human B2M ELISA Micro plate –**

Twelve removable eight (8) well micro well strips in well holder frame. Each well, is coated with affinity purified anti-Human B2M.

**Human B2M Calibrator –**

One vial containing a lyophilized Human Beta 2Microglobulin calibrator.

**REAGENT PREPARATION****Diluent Concentrate –**

The Diluent Solution supplied is a 5X Concentrate and must be diluted 1/5 distilled or deionized water (1 part buffer concentrate, 4 parts dH<sub>2</sub>O).

**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 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.

**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.

**Chromogen-Substrate Solution –**

Ready to use as supplied.

**Stop Solution –**

Ready to use as supplied.

**Anti-Human -**

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.

**Human B2M Calibrator –**

Add 1.0 ml of distilled or de-ionized water to the Human Beta 2-Microglobulin calibrator and mix gently until dissolved. The calibrator is now at a concentration of 172.67 ng/ml (the reconstituted calibrator should be aliquoted and frozen if future use is intended). Human Beta 2-Microglobulin 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
6	100	300 µL Human B2M Calibrator	218 µL
5	50	250 µL standard 6	250 µL



4	25	250 µL standard 5	250 µL
3	12.5	250 µL standard 4	250 µL
2	6.25	250 µL standard 3	250 µL
1	3.125	250 µL standard	250 µL
0	0		500 µL

## **STORAGE AND STABILITY**

### **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.

### **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-°C.

### **Enzyme-Antibody Conjugate –**

Undiluted horseradish peroxidase anti-B2M conjugate should be stored at 4-8°C and diluted immediately prior to use. The working conjugate solution is stable for up to 1 hour when stored in the dark.

### **Chromogen-Substrate Solution –**

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

### **Stop Solution –**

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

### **Anti-Human B2M ELISA Micro Plate –**

Anti-Human B2M coated wells are stable until the expiration date, and should be stored at 4-8°C in sealed foil pouch with desiccant pack.

### **Human B2M-**

The lyophilized Human Beta 2-Microglobulin calibrator should be stored at 4°C or frozen until reconstituted. The reconstituted calibrator should be aliquoted out and stored frozen (Avoid multiple freeze-thaw cycles). The working standard solutions should be prepared immediately prior to use and are stable for up to one hour.

## **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.

### **Precautions**

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

### **Additives and Preservatives**

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

### **Known interfering substances**

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

### **MATERIALS REQUIRED BUT NOT PROVIDED**

- Precision pipette (2 µL to 200µL) 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

### **ASSAY PROTOCOL**

#### **Dilutions of samples**

The assay for quantification of B2M requires that each test sample be diluted before use. For a single step determination a dilution of serum/plasma at 1/200 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, a serial dilution with one or two representative samples before running the entire plate is highly recommended.

1. Bring all reagents to room temperature before use.
2. Pipette 100µL of
  - Standard 0 (0.0 ng/ml) in duplicate
  - Standard 1 (3.125 ng/ml) in duplicate
  - Standard 2 (6.25 ng/ml) in duplicate
  - Standard 3 (12.5 ng/ml) in duplicate
  - Standard 4 (25 ng/ml) in duplicate
  - Standard 5 (50 ng/ml) in duplicate
  - Standard 6 (100 ng/ml) in duplicate
3. Pipette 100µL of sample (in duplicate) into pre designated wells.
4. Incubate the micro titer plate at room temperature for sixty (60 ± 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  $\mu$ L of appropriately diluted Enzyme Antibody Conjugate to each well. Incubate at room temperature 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 $\mu$ 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 $\mu$ L of Stop Solution to each well.
12. Determine the absorbance (450nm) of the contents of each well. Calibrate the plate reader to manufacturer's specifications.

### **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 Beta 2-Microglobulin concentration in original samples.

### **LIMITATION OF 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.



## Condensed Assay Protocol

---

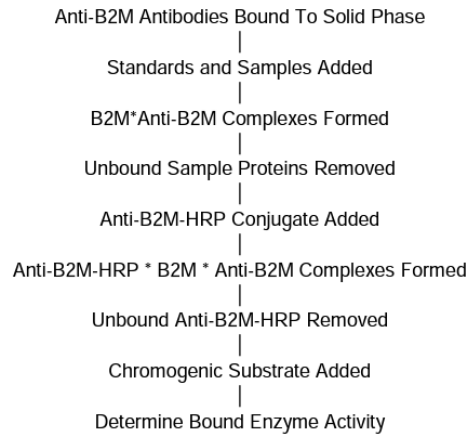


Figure 1.

## WARRANTY INFORMATION

Eagle Biosciences, Inc. warrants its Product(s) to operate or perform substantially in conformance with its specifications, as set forth in the accompanying package insert. This warranty is expressly limited to the refund of the price of any defective Product or the replacement of any defective Product with new Product. This warranty applies only when the Buyer gives written notice to the Eagle Biosciences within the expiration period of the Product(s) by the Buyer. In addition, Eagle Biosciences has no obligation to replace Product(s) as result of a) Buyer negligence, fault, or misuse, b) improper use, c) improper storage and handling, d) intentional damage, or e) event of force majeure, acts of God, or accident.

Eagle Biosciences makes no warranties, either expressed or implied, except as provided herein, including without limitation thereof, warranties as to marketability, merchantability, fitness for a particular purpose or use, or non-infringement of any intellectual property rights. In no event shall the company be liable for any indirect, incidental, or consequential damages of any nature, or losses or expenses resulting from any defective product or the use of any product. Product(s) may not be resold, modified, or altered for resale without prior written approval from Eagle Biosciences, Inc.

*For further information about this kit, its application or the procedures in this kit, please contact the Technical Service Team at Eagle Biosciences, Inc. at [info@eaglebio.com](mailto:info@eaglebio.com) or at 866-411-8023.*