



Human α 2-Macroglobulin ELISA Quantitation Kit

Manual

Catalog number: 40-288-20008F

For the quantitative determination of human α 2-Macroglobulin levels in serum or other biological samples.

This kit is for research use only, and is not for use in diagnostic procedures.

GenWay Biotech, Inc.

6777 Nancy Ridge Drive

San Diego, CA 92121

Phone: 858.458.0866

Fax: 858.458.0833

Email: techline@genwaybio.com

<http://www.genwaybio.com>

Kit Contents:

Coating Antibody (Catalog # 15-288-20008F)

Affinity-purified Chicken anti-Human a2-Macroglobulin

Concentration: 0.5 mg/ml

Volume: 1 ml

Working Dilution: 1/100

Calibrator (Catalog # 10-288-20008F)

Pure Human A2-Macroglobulin Antigen

Concentration: 2.7 mg/ml

Quantity: 100 ug

Working Range: 500-7.8 ng/ml

HRP Detection Antibody (Catalog # 27-288-20008F)

Affinity-purified Chicken anti-Human a2-Macroglobulin – HRP Conjugate

Concentration: 0.497 mg/ml

Quantity: 100 ug

Buffers, Substrate and Plates not included.

Notes:

Range of Detection: 500-7.8 ng/ml

Storage: Aliquot to 10 tubes stored at -20° C. Shelf life is one year from date of receipt.

Assay Condition: The kit performance has been optimized for the stated protocol using the materials listed and standard dilutions from 500-7.8 ng/ml of human A2-Macroglobulin. *For alternative assay conditions, the operator must determine appropriate dilutions of reagents.* ELISA assay reactivity is sensitive to any variation in operator, pipetting and washing techniques, incubation time or temperature, composition or reagents, and kit age. Adjustments may be required to position the standard curve and/or samples in the desired detection range.

Specificity: By immunoelectrophoresis and ELISA the antibodies in this kit react specifically with human a2-Macroglobulin, not with other human serum proteins. The following factors prepared in the detection range of this kit, 500-7.8 ng/mL were assayed and exhibited no cross-reactivity or interference.

Human Serum Albumin
Human Transferrin
Human IgG

Country of Origin: United States of America

Assay Use: For in vitro laboratory use only. Not for any clinical, therapeutic, or diagnostic use in humans or animals. Not for animal or human consumption.

Human a2-Macroglobulin Quantitative ELISA Protocol

Buffer Preparation

1. **Prepare the following buffers:**
 - A. Coating Buffer, 0.05 M Carbonate-Bicarbonate, pH 9.6
 - B. Wash Solution, 50 mM Tris, 0.14 M NaCl, 0.05% Tween 20, pH 8.0
 - C. Blocking (Postcoat) Solution, 1% Milk in PBS
 - D. Sample/Conjugate Diluents, 1% Milk in PBS
 - E. Enzyme Substrate, TMB (OPD or ABTS can be used)
 - F. Stopping Solution, 2 M H₂SO₄ or other appropriate solution

Step-by-Step Method (Perform all steps at room temperature)

1. **Coat with Capture Antibody**
 - A. Determine the number of single wells needed. Standards, samples, blanks and/or controls should be analyzed in duplicate. Insert the required number of microtiter wells trips into a holder.
 - B. Dilute 1 mcl capture antibody to 100 mcl Coating Buffer for each well to be coated. (Example: for 32 wells dilute 34 mcl to 3.4 ml)
 - C. Incubate coated plate for 60 minutes
 - D. After incubation, aspirate the Capture Antibody solution from each well.
 - D. Wash each well with Wash Solution as follows:
 1. Fill each well with Wash Solution
 2. Remove Wash Solution by aspiration
 3. Repeat for a total of 3 washes.
2. **Blocking (Postcoat)**
 - A. Add 200 mcl of Blocking (Postcoat) Solution to each well.
 - B. Incubate 60 minutes.
 - C. After incubation, remove the Blocking (Postcoat) Solution and wash each well three times as in Step B1.5.
3. **Standards and Samples**
 - A. Dilute the standards in Sample Diluent according to the chart below:

Step	Ng/ml	Calibrator	Sample Diluent
0	27,000	5 µl	495 ul
1	500	18 ul from step 0	954 ul
2	250	500 ul from step 1	500 ul
3	125	500 ul from step 2	500 ul
4	62.5	500 ul from step 3	500 ul
5	31.25	500 ul from step 4	500 ul
6	15.625	500 ul from step 5	500 ul
7	7.8	500 ul from step 6	500 ul

- B. Dilute the samples, based on the expected concentration of the analyte, to fall within the concentration range of the standards.
- C. Transfer 100 μ l of standard or sample to assigned wells.
- D. Incubate plate 60 minutes.
- E. After incubation, remove samples and standards and wash each well 5 times as in Step B1.5.

4. HRP Detection Antibody

- A. Dilute the HRP conjugate in Conjugate Diluent. Recommended starting dilution is 1:10,000. Adjustments in dilution may be needed depending on substrate used, incubation time, and age of kit.
- B. Transfer 100 μ l to each well.
- C. Incubate 60 minutes.
- D. After incubation, remove HRP Conjugate and wash each well 5 times as in Step B1.5.

5. Enzyme Substrate Reaction

- A. Prepare the substrate solution according to the manufacturer's recommendation.
- B. Transfer 100 μ l of substrate solution to each well.
- C. Incubate plate 5-30 minutes.
- D. To stop the TMB reaction, apply 100 μ l of 2 M H_2SO_4 to each well. If using another substrate, use the stop solution recommended by manufacturer.

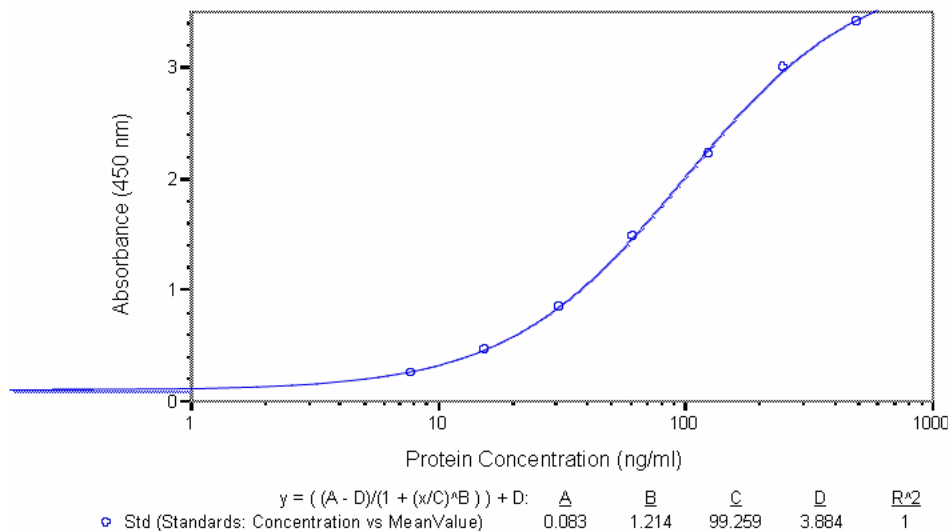
6. Plate Reading

Using a microtiter plate reader, read the plate at the wavelength that is appropriate for the substrate used (450 nm for TMB).

Calculation of Results

- 1. Average the duplicate readings from each standard, control, and sample.
- 2. Subtract the zero reading from each averaged value above.
- 3. Create a standard curve by reducing the data using computer software capable of generating a four parameter logistic (4-PL) curve-fit. Other curve fits may also be used.
- 4. A standard curve should be generated for each set of samples. See example below:

Alpha 2 Macroglobulin Standard Curve



Alpha 2 Macroglobulin Standards

Sample	Concentration	BackCalcConc	Wells	Values	MeanValue	Std.Dev.	CV%
St01	500	582.088	A1	3.487	3.401	0.122	3.6
		414.765	A2	3.315			
St02	250	257.375	B1	2.975	2.988	0.018	0.6
		265.549	B2	3.001			
St03	125	126.766	C1	2.264	2.214	0.071	3.2
		116.09	C2	2.164			
St04	62.5	64.289	D1	1.494	1.473	0.03	2
		61.816	D2	1.452			
St05	31.25	32.399	E1	0.86	0.84	0.029	3.5
		30.642	E2	0.819			
St06	15.625	15.531	F1	0.445	0.449	0.006	1.3
		15.844	F2	0.453			
St07	7.813	7.518	G1	0.242	0.244	0.003	1.2
		7.681	G2	0.246			

Smallest Standard Value: 0.244

Largest Standard Value: 3.401

Technical Hints

1. The Capture antibody should be diluted with coating buffer immediately prior to its addition to the wells. Coated plates are stable overnight at 4°C when covered.
2. Change pipette tips between each addition of standard, sample and reagents to avoid cross-contamination.
3. Standards and samples should be pipetted to the bottom of the wells and all other reagents should be added to the side of the wells to avoid contamination.
4. Ensure that all buffers are not contaminated or expired. When troubleshooting ELISA results, it is recommended to prepare all new buffers in new vessels.
5. Do not add Sodium Azide to any of the buffers.
6. Sample and Conjugate dilutions should be made shortly before use.
7. Wash buffer should be aspirated from wells, as pouring wash buffer from wells may cause cross-contamination.
8. When preparing dilutions, wipe excess antibody/analyte from pipette tips to ensure accurate dilutions.
9. Incubation time of the Enzyme Substrate will depend on the substrate used and the intensity of the color change. The high standard should have an O.D. reading of about 2.0 and the low standard should have an O.D. reading above background.
10. The Stopping solution should be added to the wells in the same order as the Enzyme Substrate.

Troubleshooting

The following are some common problems encountered with the use of ELISA kits, and some of the causes of these problems.

1. **Problem: Low absorbance**
 - Incorrect dilutions or pipetting errors.
 - Improper incubation times
 - Improper mixing of the TMB substrate. Each component is mixed in equal parts.
 - Wrong filter on microtiter reader. Wavelength should be 450 nm for TMB, 490 nm for OPD, or 405 nm for ABTS.

- Kit materials or reagents are contaminated or expired.
- Incorrect reagents used.

2. Problem: High Absorbance

- Cross contamination from other samples or positive control.
- Incorrect dilutions or pipetting errors.
- Improper washing.
- Wrong filter on microtiter reader.
- Contaminated buffers or enzyme substrate.
- Improper incubation times.
- Kit materials or reagents are contaminated or expired.

3. Problem: Poor Duplicates

- Poor mixing of specimens.
- Incorrect dilutions or pipetting errors.
- Technical error.
- Inconsistency in following ELISA protocol.
- Inefficient washing.

4. Problem: All wells are positive

- Contaminated buffers or enzyme substrate.
- Incorrect dilutions or pipetting errors.
- Kit materials or reagents are contaminated or expired.
- Inefficient washing.

5. Problem: All wells are negative

- Procedure not followed correctly.
- Contaminated buffers or enzyme substrate.
- Contaminated conjugate.
- Kit materials or reagents are contaminated or expired.