Mouse IgG Immunoassay

Catalog Number: EA800161

For the quantitative determination of mouse IgG concentrations in cell culture supernates, serum, and plasma.

For research use only. Not for use in diagnostic procedures.

MANUFACTURED AND DISTRIBUTED BY:

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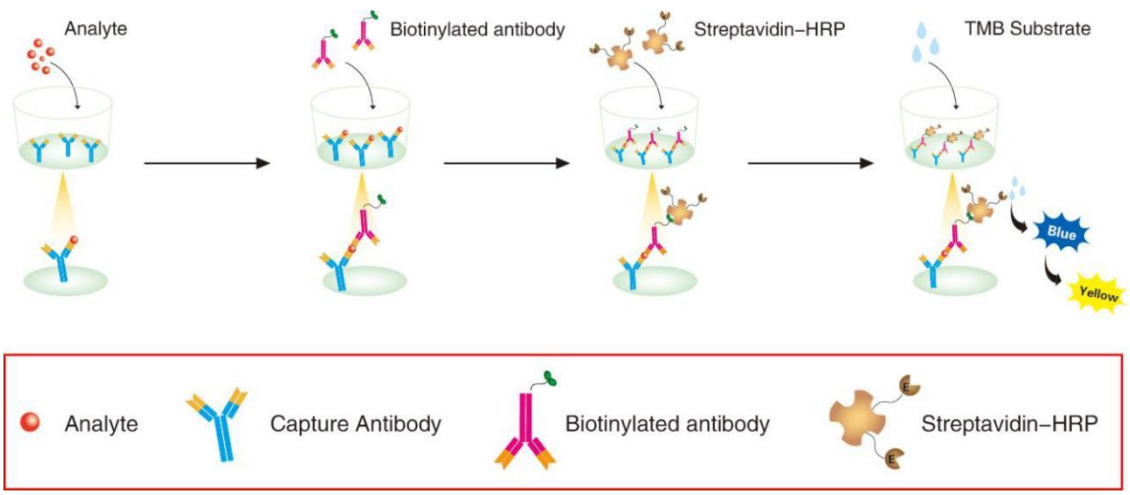
BACKGROUND

Immunoglobulin G (IgG) is a type of antibody. Representing approximately 75% of serum antibodies in humans, IgG is the most common type of antibody found in blood circulation. IgG molecules are created and released by plasma B cells. Each IgG has two antigen binding sites. Antibodies are major components of humoral immunity. IgG is the main type of antibody found in blood and extracellular fluid, allowing it to control infection of body tissues. By binding many kinds of pathogens such as viruses, bacteria, and fungi, IgG protects the body from infection.

PRINCIPLE OF THE ASSAY

This assay employs the quantitative sandwich enzyme immunoassay technique. A monoclonal antibody specific for IgG has been pre-coated onto a microplate. Standards and samples are pipetted into the wells and any IgG present is captured by the coated antibody after incubation. Following extensive washing, a biotin-conjugate antibody specific for IgG is added to detect the captured IgG protein in sample. For signal development, horseradish peroxidase (HRP)-conjugated Streptavidin is added, followed by tetramethyl-benzidine (TMB) reagent. Following a wash to remove any unbound combination, and enzyme conjugate is added to the wells. Solution containing sulfuric acid is used to stop color development and the color intensity which is proportional to the quantity of bound protein is measurable at 450nm.

Schematic diagram:



TECHNICAL HINTS AND LIMITATIONS

1. This ELISA should not be used beyond the expiration data on the kit label.
2. To avoid cross-contamination, use a fresh reagent reservoir and pipette tips for each step.
3. To ensure accurate results, some details, such as technique, plasticware and water sources should be emphasized.
4. A thorough and consistent wash technique is essential for proper assay performance.
5. A standard curve should be generated for each set of samples assayed.
6. It is recommended that all standards and samples be assayed in duplicate.
7. Avoid microbial contamination of reagents and buffers. Buffers containing protein should be made under aseptic conditions and be prepared fresh daily.
8. In order to ensure the accuracy of the results, the standard curve should be made every time.

PRECAUTIONS

The Stop Solution suggested for use with this kit is an acid solution. Wear protective gloves, clothing, eye, and face protection. Wash hands thoroughly after handling.

KIT COMPONENTS& STORAGE CONDITIONS

PART	SIZE	STORAGE OF OPENED/ RECONSTITUTED MATERIAL
Microwell Plate - antibody coated 96-well Microplate (8 wells ×12 strips)	1 plate	Return unused wells to the foil pouch containing the desiccant pack. Reseal along entire edge of the zip-seal. May be stored for up to 1 month at 2 – 8℃**
Standard - lyophilized,50ng/ml upon reconstitution	2 vials	Aliquot and Store at -20°C** for six months
Concentrated Detection antibody(250X) - 50 ul/vial	1 vial	Store at 2-8°C **for six months
Assays Buffer- 30 ml/vial	1 bottle	Store at 2-8°C** for six months
Wash Buffer Concentrate (20x) - 30 ml/vial	1 bottle	Store at 2-8°C** for six months
Substrate Solution - 12 ml/vial	1 bottle	Store at 2-8°C** for six months
Stop Solution - 12 ml/vial	1 bottle	Store at 2-8°C** for six months
Plate Cover Seals	4 pieces	

**Provided this is within the expiration date of the kit.

OTHER SUPPLIES REQUIRED BUT NOT SUPPLIED

1. Microplate reader capable of measuring absorbance at 450 nm.
2. Pipettes and pipette tips.
3. Deionized or distilled water.
4. Squirt bottle, manifold dispenser, or automated microplate washer.
5. 500 mL graduated cylinder.

SPECIMEN COLLECTION & STORAGE

Cell Culture Supernates - Centrifuge cell culture media at 1000×g to remove debris. Assay immediately or aliquot and store samples at ≤ -20 °C. Avoid repeated freeze-thaw cycles.

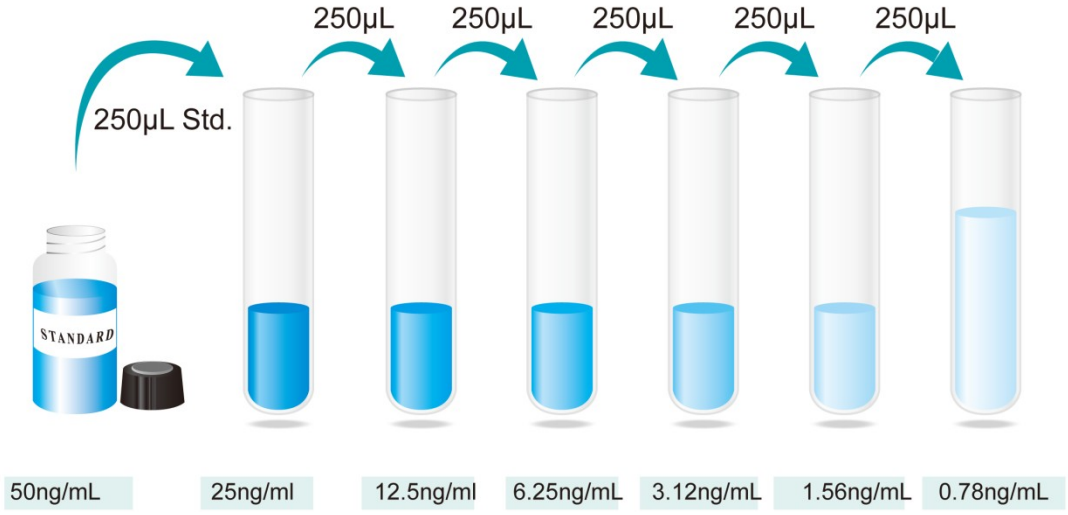
Serum - Use a serum separator tube (SST) and allow samples to clot for 2 hours at room temperature or overnight at 2-8℃. Centrifuge approximately for 15 minutes at 1000×g. Assay immediately or aliquot and store samples at ≤ -20 °C. Avoid repeated freeze-thaw cycles.

Plasma - Collect plasma using EDTA, heparin, or citrate as an anticoagulant. Centrifuge for 15 minutes at 1000×g within 30 minutes of collection. Assay immediately or aliquot and store samples at ≤ -20 °C. Avoid repeated freeze-thaw cycles.

Note: It is recommended to conduct a pre-test before the formal experiment to determine the dilut ion ratio.

REAGENTS PREPARATION

1. **Temperature returning** - Bring all kit components and specimen to room temperature (20-25℃) before use.
2. **Wash Buffer** - Dilute 30mL of Wash Buffer Concentrate with 570mL of deionized or distilled water to prepare 600mL of Wash Buffer. If crystals have formed in the concentrate Wash Buffer, warm to room temperature and mix gently until the crystals have completely dissolved.
3. **Standard/Sample** - Reconstitute the Standard with 570uL of Assays Buffer. This reconstitution produces a stock solution of 50ng/mL. Allow the standard to sit for a minimum of 15 minutes with gentle agitation prior to making dilutions. Pipette 250μL of Standard/Sample Diluent into 25ng/ml tube and the remaining tubes. Use the stock solution of 50ng/mL to produce a 2-fold dilution series (below). Mix each tube thoroughly and change pipette tips between each transfer. The 50ng/mL standard serves as the high standard. The Assays Buffer serves as the zero standard (0 pg/mL).



Preparation of IgG standard dilutions

***If you do not run out of re-melting standard, store it at -20℃. Diluted standard shall not be reused.**

4. **Working solution of Conjugate Detection antibody:** Make a 1:250 dilution of the solution with the Assays Buffer in a clean plastic tube.

   ***The working solution should be used within one day after dilution.**

ASSAY PROCEDURE

Prepare all reagents and standards as directed. Wash the plate 2 times before assay.

⇩

Add 100μl standard or samples to each well, Add 50μl working solution of Detection antibody to each well incubate 90 minutes room temperature(25±2℃).

⇩ Aspirate and wash 4 times

Add 100μl Substrate solution to each well, incubate 15 minutes, room temperature(25±2℃).

⇩

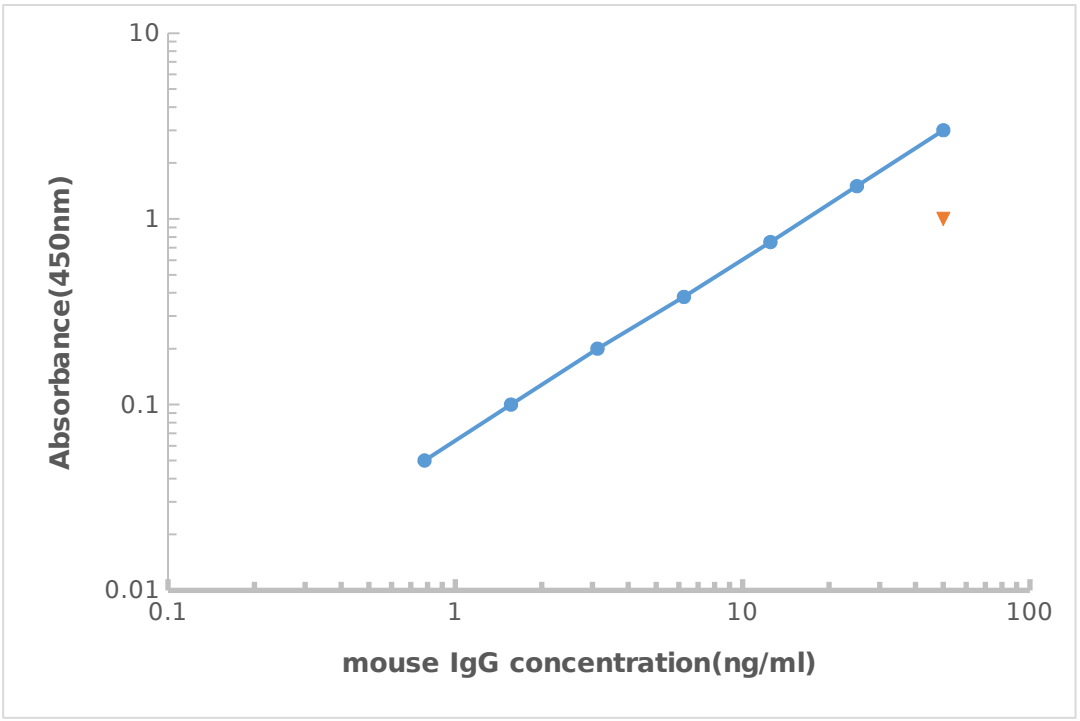
Add 100μl Stop solution to each well. Read at 450nm within 5 minutes.

CALCULATION OF RESULTS

1. The standard curve is used to determine the amount of specimens.
2. First, average the duplicate readings for each standard, control, and sample. All O.D. values are subtracted by the mean value of blank control before result interpretation.
3. Construct a standard curve by reducing the data using computer software capable of generating a four parameter logistic (4-PL) curve-fit. As an alternative, construct a standard curve by plotting the mean absorbance for each standard on the y-axis against the concentration on the x-axis and draw a best fit curve through the points on the graph.
4. The data may be linearized by plotting the log of the IgG concentrations versus the log of the O.D. and the best fit line can be determined by regression analysis. This procedure will produce an adequate but less precise fit of the data. If samples have been diluted, the concentration read from the standard curve must be multiplied by the dilution factor.
5. This standard curve is provided for demonstration only. A standard curve should be generated for each set of samples assayed.

Typical data using the IgG ELISA

Standard(ng/ml)	OD.	OD.	Average	Corrected
0	0.045	0.047	0.046	-
0.78	0.177	0.180	0.179	0.133
1.56	0.204	0.208	0.206	0.160
3.1	0.303	0.310	0.307	0.261
6	0.482	0.492	0.487	0.441
12.5	0.783	0.799	0.791	0.745
25	1.274	1.301	1.288	1.242
50	2.076	2.120	2.098	2.052



Representative standard curve for IgG ELISA.

Performance Characteristics

SENSITIVITY: The minimum detectable dose was 0.4ng/mL.

SPECIFICITY: This assay recognizes both natural and recombinant mouse IgG. The factors listed below were prepared at 100ng/ml in Standard /sample Diluent and assayed for cross-reactivity and no significant cross-reactivity or interference was observed.

Factors assayed for cross-reactivity

Recombinant mouse	Natural proteins	Recombinant human
IL-1β	IL-1β	
IgE	IgG	
IgA	IL-2	
IL-2	IL-4	
IL-4	IL-6	

REPEATABILITY: The coefficient of variation of both intra-assay and inter-assay were less than 10%.

RECOVERY： The recovery of IgG spiked to three different levels in four samples throughout the range of the assay in various matrices was evaluated.

Recovery of IgG in two matrices

Sample Type	Average % of Expected Range (%)	Range (%)
Citrate plasma	**93**	**86－99**
Cell culture supernatants	**106**	**95－116**

LINEARITY: To assess the linearity of the assay, three samples were spiked with high concentrations of IgG in various matrices and diluted with the appropriate Sample Diluent to produce samples with values within the dynamic range of the assay. (The plasma samples were initially diluted 1:1)

Dilution ratio	Recovery (%)	Citrate plasma	Cell culture supernatants
1:2	Average% of Expected	**101**	**101**
	Range (%)	**89－112**	**93－108**
1:4	Average% of Expected	**104**	**103**
	Range (%)	**94－113**	**96－109**
1:8	Average% of Expected	**106**	**99**
	Range (%)	**99－112**	**92－105**
1:16	Average% of Expected	**109**	**100**
	Range (%)	**101－117**	**94－106**

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