Cxcl2 (Mouse) ELISA Kit

Catalog Number KA1505

96 assays

Version: 05

Intended for research use only

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Introduction

Intended Use

For quantitative detection of mouse MIP-2 in sera, plasma, body fluids, tissue lysates or cell culture supernates.

Background

MIP is a member of the aquaporin family of membrane-bound water channels.[1] MIP family proteins are thought to contain 6 TM domains. Sequence analysis suggests that the proteins may have arisen through tandem, intragenic duplication from an ancestral protein that contained 3 TM domains.[2] Major intrinsic protein (MIP, also called MP26) is the predominant fiber cell membrane protein of the ocular lens.[3] The major intrinsic protein (MIP) of the vertebrate eye lens is the first identified member of a sequence-related family of cell-membrane proteins that appears to have evolved by gene duplication. Several members of the MIP family transport water (aquaporins), glycerol and other small molecules in microbial, plant and animal cells.[4] The standard used in this kit is recombinant mouse MIP-2(A28-N100), consisting of 73 amino acids with the molecular mass of 8 KDa.

Principle of the Assay

Cxcl2 (Mouse) ELISA Kit was based on standard sandwich enzyme-linked immune-sorbent assay technology. Mouse MIP-2 specific-specific monoclonal antibodies were precoated onto 96-well plates. The mouse specific detection monoclonal antibodies were biotinylated. The test samples and biotinylated detection antibodies were added to the wells subsequently and then followed by washing with PBS or TBS buffer. Avidin-Biotin-Peroxidase Complex was added and unbound conjugates were washed away with PBS or TBS buffer. HRP substrate TMB was used to visualize HRP enzymatic reaction. TMB was catalyzed by HRP to produce a blue color product that changed into yellow after adding acidic stop solution. The density of yellow is proportional to the mouse MIP-2 amount of sample captured in plate.

General Information

Materials Supplied

List of component

Component	Amount
Lyophilized recombinant mouse MIP-2 standard	10 ng x 2
Plate precoated with anti- mouse MIP-2 antibody	96 wells
Sample diluent buffer	30 ml
Biotinylated anti- mouse MIP-2 antibody, dilution 1:100	130 µl
Antibody diluent buffer	12 ml
Avidin-Biotin-Peroxidase Complex (ABC), dilution 1:100	130 µl
ABC diluent buffer	12 ml
TMB color developing agent	10 ml
TMB stop solution	10 ml

Storage Instruction

Store at 4°C for frequent use, at -20°C for infrequent use. Avoid multiple freeze-thaw cycles.
Expiration: Four months at 4°C and eight months at -20°C.

Materials Required but Not Supplied

- ✓ Microplate reader in standard size.
- ✓ Automated plate washer.
- ✓ Adjustable pipettes and pipette tips. Multichannel pipettes are recommended in the condition of large amount of samples in the detection.
- ✓ Clean tubes and Eppendorf tubes.
- ✓ Washing buffer (neutral PBS or TBS).
- Preparation of 0.01 M TBS:
  Add 1.2 g Tris, 8.5 g NaCl; 450 µl of purified acetic acid or 700 µl of concentrated hydrochloric acid to 1000 ml H_2O and adjust pH to 7.2-7.6. Finally, adjust the total volume to 1 L.
- Preparation of 0.01 M PBS:
  Add 8.5 g sodium chloride, 1.4 g Na_2HPO_4 and 0.2 g NaH_2PO_4 to 1000 ml distilled water and adjust pH to 7.2-7.6. Finally, adjust the total volume to 1 L.

Precautions for Use

- ✓ Before using Kit, spin tubes and bring down all components to bottom of tubes.
- ✓ Duplicate well assay was recommended for both standard and sample testing.
- ✓ Don't let 96-well plate dry, dry plate will inactivate active components on plate.
- ✓ In order to avoid marginal effect of plate incubation due to temperature difference (reaction may be stronger in the marginal wells), it is suggested that the diluted ABC and TMB solution will be pre-warmed in 37°C for 30 min before using.

Assay Protocol

Reagent Preparation

- ✓ Reconstitution of the mouse MIP-2 standard: MIP-2 standard solution should be prepared no more than 2 hours prior to the experiment. Two tubes of MIP-2 standard (10 ng per tube) are included in each kit. Use one tube for each experiment.
- 10,000 pg/ml of mouse MIP-2 standard solution: Add 1 ml sample diluent buffer into one tube, keep the tube at room temperature for 10 min and mix thoroughly.
- 1000 pg/ml of mouse MIP-2 standard solution: Add 0.1 ml of the above 10 ng/ml MIP-2 standard solution into 0.9 ml sample diluent buffer and mix thoroughly.
- 500 pg/ml→15.6 pg/ml of mouse MIP-2 standard solutions: Label 6 Eppendorf tubes with 500 pg/ml, 250 pg/ml, 125 pg/ml, 62.5 pg/ml, 31.3 pg/ml, 15.6 pg/ml, respectively. Aliquot 0.3 ml of the sample diluent buffer into each tube. Add 0.3 ml of the above 500 pg/ml MIP-2 standard solution into 1st tube and mix. Transfer 0.3 ml from 1st tube to 2nd tube and mix. Transfer 0.3 ml from 2nd tube to 3rd tube and mix, and so on.

  Note: The standard solutions are best used within 2 hours. The 10 ng/ml standard solution may be stored at 4°C for up to 12 hours, or at -20°C for up to 48 hours. Avoid repeated freeze-thaw cycles.

- ✓ Preparation of biotinylated anti-mouse MIP-2 antibody working solution: The solution should be prepared no more than 2 hours prior to the experiment.
- The total volume should be: 0.1ml/well x (the number of wells). (Allowing 0.1-0.2 ml more than total volume)
- Biotinylated anti-mouse MIP-2 antibody should be diluted in 1:100 with the antibody diluent buffer and mixed thoroughly. (i.e. Add 1 µl Biotinylated anti-mouse MIP-5 antibody to 99 µl antibody diluent buffer.)

- ✓ Preparation of Avidin-Biotin-Peroxidase Complex (ABC) working solution: The solution should be prepared no more than 1 hour prior to the experiment.
- The total volume should be: 0.1 ml/well x (the number of wells). (Allowing 0.1-0.2 ml more than total volume)
- Avidin- Biotin-Peroxidase Complex (ABC) should be diluted in 1:100 with the ABC dilution buffer and mixed thoroughly. (i.e. Add 1 µl ABC to 99 µl ABC diluent buffer.)

Sample Preparation

✓ Sample Preparation and Storage

Store samples to be assayed within 24 hours at 2-8°C. For long-term storage, aliquot and freeze samples at -20°C. Avoid repeated freeze-thaw cycles.

- Cell culture supernate, tissue lysate or body fluids: Remove particulates by centrifugation, analyze immediately or aliquot and store at -20°C.
- Serum: Allow the serum to clot in a serum separator tube (about 30 min) at room temperature. Centrifuge at approximately 2000 X g for 20 min. Analyze the serum immediately or aliquot and store frozen at -20°C.

✓ Sample Dilution Guideline

The user needs to estimate the concentration of the target protein in the sample and select a proper dilution factor so that the diluted target protein concentration falls near the middle of the linear regime in the standard curve. Dilute the sample using the provided diluent buffer. The following is a guideline for sample dilution. Several trials may be necessary in practice. The sample must be well mixed with the diluents buffer.

- High target protein concentration (10-100 ng/ml). The working dilution is 1:100. i.e. Add 3 µl sample into 297 µl sample diluent buffer.
- Medium target protein concentration (1-10 ng/ml). The working dilution is 1:10. i.e. Add 25 µl sample into 225 µl sample diluent buffer.
- Low target protein concentration (15.6-1000 pg/ml). The working dilution is 1:2. i.e. Add 100 µl sample to 100 µl sample diluent buffer.
- Very Low target protein concentration (≤15.6 pg/ml). No dilution necessary, or the working dilution is 1:2.

Assay Procedure

The ABC working solution and TMB color developing agent must be kept warm at 37°C for 30 min before use. When diluting samples and reagents, they must be mixed completely and evenly. Standard MIP-2 detection curve should be prepared for each experiment. The user will decide sample dilution fold by crude estimation of MIP-2 amount in samples.

1. Aliquot 0.1 ml per well of the 1000 pg/ml, 500 pg/ml, 250 pg/ml, 125 pg/ml, 62.5 pg/ml, 31.3 pg/ml, 15.6 pg/ml mouse MIP-2 standard solutions into the precoated 96-well plate. Add 0.1 ml of the sample diluent buffer into the control well (Zero well). Add 0.1 ml of each properly diluted sample of mouse sera, plasma, body fluids, tissue lysates or cell culture supernatants to each empty well. See “Sample Dilution Guideline” above for details. We recommend that each mouse MIP-2 standard solution and each sample is measured in duplicate.
2. Seal the plate with the cover and incubate at 37°C for 90 min.
3. Remove the cover, discard plate content, and blot the plate onto paper towels or other absorbent material.

Do NOT let the wells completely dry at any time.

4. Add 0.1 ml of biotinylated anti-mouse MIP-2 antibody working solution into each well and incubate the plate at 37°C for 60 min.
5. Wash plate 3 times with 0.01 M TBS or 0.01 M PBS, and each time let washing buffer stay in the wells for 1 min. Discard the washing buffer and blot the plate onto paper towels or other absorbent material. (Plate Washing Method: Discard the solution in the plate without touching the side walls. Blot the plate onto paper towels or other absorbent material. Soak each well with at least 0.3 ml PBS or TBS buffer for 1~2 minutes. Repeat this process two additional times for a total of THREE washes. *Note: For automated washing, aspirate all wells and wash THREE times with PBS or TBS buffer, overfilling wells with PBS or TBS buffer. Blot the plate onto paper towels or other absorbent material.)*
6. Add 0.1 ml of prepared ABC working solution into each well and incubate the plate at 37°C for 30 min.
7. Wash plate 5 times with 0.01 M TBS or 0.01 M PBS, and each time let washing buffer stay in the wells for 1-2 min. Discard the washing buffer and blot the plate onto paper towels or other absorbent material. (See Step 5 for plate washing method).
8. Add 90 µl of prepared TMB color developing agent into each well and incubate plate at 37°C in dark for 25-30 min *(Note: For reference only, the optimal incubation time should be determined by end user. And the shades of blue can be seen in the wells with the four most concentrated mouse MIP-2 standard solutions; the other wells show no obvious color).*
9. Add 0.1 ml of prepared TMB stop solution into each well. The color changes into yellow immediately.
10. Read the O.D. absorbance at 450 nm in a microplate reader within 30 min after adding the stop solution.

✓ Summary

1. Add samples and standards and incubate the plate at 37°C for 90 min. Do not wash.
2. Add biotinylated antibodies and incubate the plate at 37°C for 60 min. Wash plate 3 times with 0.01 M TBS.
3. Add ABC working solution and incubate the plate at 37°C for 30 min. Wash plate 5 times with 0.01 M TBS.
4. Add TMB color developing agent and incubate the plate at 37°C in dark for 25-30 min.
5. Add TMB stop solution and read.

Data Analysis

Calculation of Results

For calculation, (the relative $O.D._{450}$) = (the $O.D._{450}$ of each well) - (the $O.D._{450}$ of Zero well). The standard curve can be plotted as the relative $O.D._{450}$ of each standard solution (Y) vs. the respective concentration of the standard solution (X). The mouse MIP-2 concentration of the samples can be interpolated from the standard curve.

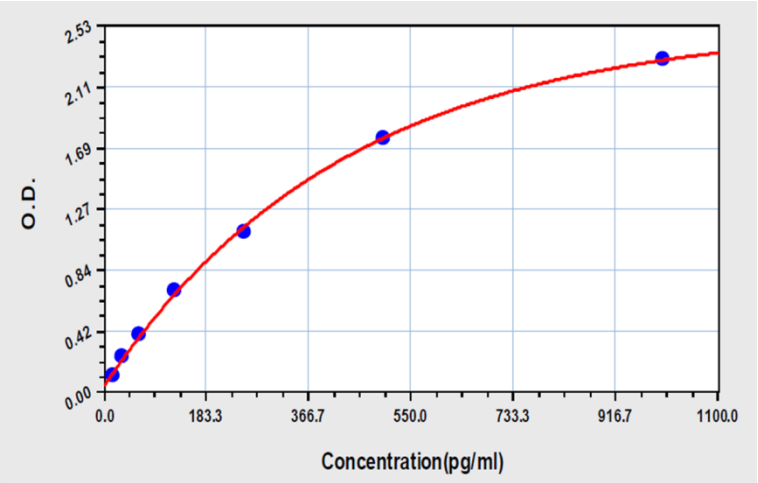
Note: if the samples measured were diluted, multiply the dilution factor to the concentrations from interpolation to obtain the concentration before dilution.

✓ Typical result

Typical Data Obtained from Mouse MIP-2

(TMB reaction incubate at 37°C for 25 min)

Concentration (pg/ml)	0.0	15.6	31.3	62.5	125	250	500	1000
O.D.	0.007	0.121	0.251	0.405	0.702	1.109	1.755	2.301



This standard curve was generated for demonstration purpose only. A standard curve must be run with each assay.

Performance Characteristics

✓ Range

15.6 pg/ml-1000 pg/ml

✓ Sensitivity

< 5 pg/ml

✓ Specificity

No detectable cross-reactivity with any other cytokine.

Resources

References

1. Berry, V., Francis, P., Kaushal, S., Moore, A., Bhattacharya, S. Missense mutations in MIP underlie autosomal dominant 'polymorphic' and lamellar cataracts linked to 12q. Nature Genet. 25: 15-17, 2000.
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3. Pisano, M. M., Chepelinsky, A. B. Genomic cloning, complete nucleotide sequence, and structure of the human gene encoding the major intrinsic protein (MIP) of the lens. Genomics 11: 981-990, 1991.
4. Shiels, A., Bassnett, S. Mutations in the founder of the MIP gene family underlie cataract development in the mouse. Nature Genet. 12: 212-215, 1996.

Plate Layout

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