

Anti-Human IgM-coupled Magnetic Beads (recommended for MPCLIA)

Cat. No. MPC-A010

Size 10mg / 100mg (20mg*5)

Description (Background)

The Anti-Human IgM-coupled Magnetic Beads are 2.8 μm superparamagnetic particles covalently coupled to a highly affinity Monoclonal anti-human IgM antibody. The beads can be used to capture the Human IgM in Chemiluminescence procedures. It has no-cross-reactivity with Human IgG, IgA or IgE.

The Anti-Human IgM-coupled Magnetic Beads is easy to capture the human IgM, and the bounded antibody have no activity lost, this ready to use products could greatly save your protein coupling time and hassle, and help us get the best performance and highly reproducible results.

Specifications

Items	Details
Detection Method	Chemiluminescence
Product Type	Magnetic Beads (Monoclonal anti-human IgM antibody)
Quantity Size	10mg / 100mg
Physical Appearance	lyophilized powder mixture
Particle size	2.8 μm
Beads Surface	Hydrophilic
Amount of Coupled Protein	About 133 pmol (20 μg) Anti- Human IgM Antibody / mg Beads
Binding Capacity	3-8 μg Human IgM / mg beads
Emission Wavelength	Measured relative light units (RLU) at 430 nm
Formulation	Lyophilized from 0.22 μm filtered solution in 1 \times PBS,pH7.4 with 0.1% Tween-20, 0.5% BSA and 10% Trehalose.
Reconstitution	1mL sterile deionized water to 10mg size (10mg beads/mL) 2mL sterile deionized water to 20mg size (10mg beads/mL)
Storage temperature	This product is stable for 1 year when stored at -20 $^{\circ}\text{C}$. Please avoid more than 3 freeze-thaw cycles. Immediate use after reconstitution is highly recommended.
Transport	The product is shipped at ambient temperature.
Note	For research use only

Shipping and Storage

The product is shipped at room temperature.

Upon receipt, please store the product at -20 $^{\circ}\text{C}$ or lower away from light.

The product is stable after storage at:

-20 $^{\circ}\text{C}$ for 1 year in lyophilized state;

2-8 $^{\circ}\text{C}$ for 1 month under sterile conditions after reconstitution.

Please avoid more than 3 freeze-thaw cycles.

Do not use reagents past their expiration date.

Applications

The Anti-Human IgM-coupled Magnetic Beads is used to capture the human IgM, it can combination with Acridine ester markers in chemiluminescence technology, The Acridine ester markers such as Streptavidin Protein-Acridine ester can capture the biotinylated proteins or molecules, this allows detection of antigen and antibody binding or antibody screening.

Application Suggestion

The Anti-Human IgM-coupled Magnetic Beads can be used in combination with different Acridine ester markers, such as Streptavidin Protein-Acridine Ester or other Acridine ester markers of directly labeled proteins, this allows detection of biotinylated antigen & antibodies binding or antibody screening. The paired schemes are shown in the following table:

Anti-Human IgM-coupled Magnetic Beads can bind with	Acridine ester markers	Acridine ester markers reference	Acridine ester markers binding molecules
Human IgM	Streptavidin Protein-Acridine Ester (SA-AE)	ACRO, Cat. No. STN-NA114	Biotinylated proteins or molecules
Human IgM	Directly labeled proteins-Acridine Ester	According to your experiment	According to your experiment

General guidelines

1. The Anti-Human IgM-coupled Magnetic Beads just suit for human IgM can be captured by Anti-Human IgM, it can bind the human IgM but not human IgG, IgA or IgE.
2. Because the particle size of magnetic beads is only 2.8 μm , beads may stick to the side of the bottle in the shipping process. Before opening, tap the bottle to ensure the beads settle to the bottom of the bottle.
3. It is strongly recommended to reconstitute the Anti-Human IgM-coupled Magnetic Beads with sterile deionized water to a stock solution of 10 mg/mL, avoid vigorous shaking or vortexing, please reconstitute the protein following the COA.
4. The Anti-Human IgM -coupled Magnetic Beads should be used together with different Acridine ester markers, select suitable acridine ester markers according to the requirements of the experiment.
5. To decrease background signal, choosing a reasonable experimental condition is very important. Before the formal experiment, an optimization or a pilot test is highly recommended. Optimizing the concentrations of the antigen, antibodies, Acridine ester markers, and Anti-Human IgM-coupled Magnetic Beads may be required.
6. To limit nonspecific signal due to unsuitable reagent solutions, please choose the most appropriate buffer solution for the experiment. The Assay/Washing Buffer should be IgM free, which will interfere with samples binding to the Anti-Human IgM.
7. To reduce cross-contamination between positive samples and negative samples, please add samples in the correct way and sequence.
8. If the signal value is not available, check whether the Anti-Human IgM-coupled Magnetic Beads and other reagent are expired. Do not use an expired buffer and reagent. The components of different batch should not be mixed used because it may lead to incorrect results.

Materials and Reagents Preparation

The required materials and reagents are prepared according to the below table.

Name	Specifications	Details	Remark

Anti-Human IgM-coupled Magnetic Beads (used for MPCLIA)	10 mg Beads or 100 mg Beads (20 mg*5)	About 133 pmol (20 µg) Anti-Human IgM / mg Beads	Reconstitute the Beads with sterile deionized water to 10mg beads/mL
Magnetic separator stand	For 1.5mL, 2mL or 15mL tubes	Under 2000 to 4000 Gs of magnetic field intensity, the beads can be completely attracted to the separator and separation from supernatant within 2 minutes.	If the storage solution or formulation buffer of beads have any interference, please wash the magnetic beads with appropriate washing buffer first, and this time, we need a Magnetic separator.
Acridine ester markers	According to your experiment	-	Such as Streptavidin Protein-Acridine Ester, you can also use a directly acridine ester labeled proteins.
Washing Buffer	1×PBST, pH7.2-7.4	1×PBS, pH 7.3, 0.05% Tween-20	If your sample could be disturbed by BSA, you can omit it. For many applications, adding a detergent such as 0.01–0.1% Tween™ 20 to the Assay/washing buffers could reduce non-specific binding.
Assay Buffer	0.5% BSA in 1×PBST, pH7.2-7.4	0.5g BSA in 100mL 1×PBST	The Buffer often used in serum-free Binding Assays.
Chemiluminescent Substrate Solution	-	Trigger A (Oxidant solution) and Trigger B (Enhancer solution)	Such as Chemiluminescent Substrate Solution (AE Marker) from ACRO, cat. No. ABK-001
Bovine Serum Albumin (IgG-Free, Protease-Free)	IgG-Free, Protease-Free	-	It is recommended to use IgG-Free, and protease-Free BSA, such as Jackson, Cat. No. 001-000-162
Tubes	According to your experiment		If no BSA protectant is added to your reaction system, please select low adsorption tubes.
Some other Materials and Reagents	According to your experiment		For example, magnetic separation column and Pipette and reagent bottles that comes with your equipment.

General Protocols

1. Magnetic Beads Reconstitution

To make sure the beads entirely removed, you can reconstitute the beads following the COA. For example, when dealing with 10 milligrams of magnetic beads, you can add 1 mL sterile deionized water to the beads to 10mg Beads/mL.

2. Wash the magnetic beads

When do the chemiluminescence experiment, make sure the storage solution or formulation buffer of beads buffer is suitable for the reaction, if there is any interference, please wash the magnetic beads with appropriate washing buffer first. In most cases, we don't need this bead washing step, if you need this step, please follow the steps below.

1) Place the tube with reconstituted beads on a magnetic separator for 2 min. Remove the supernatant.

- 2) Remove the tube from the magnetic separator and resuspend the pelleted beads in a reasonable volume of Assay/Washing Buffer (when you take 100µL of 10mg/mL beads, you need at least 400µL washing buffer to wash the beads each time). Mix by vortex for approximately 10 sec.
- 3) Place the tube on the magnetic separator for 2 min. Remove the supernatant.
- 4) Wash the beads for three times in total by repeating steps 2) and 3).
- 5) Resuspend the Beads to a suitable volume.

Procedure for assay

1. **Prepare materials and tools for your experiment**, such as Anti-Human IgM-coupled Magnetic Beads, protein or antibodies, Acridine ester markers, Chemiluminescent Substrate Solution, assay buffer, washing buffer, Magnetic Separator and so on.
2. **Prepare the protein**, if the sample protein needs to be reconstructed, please reconstitute the protein following the COA. To avoid surface adsorption loss and inactivation, the reconstituted protein must NOT be aliquoted to less than 10 µg per vial.
3. **Prepare Anti-Human IgM-coupled Magnetic Beads with target Human IgM**
When you use the Anti-Human IgM-coupled Magnetic Beads, the Human IgM can be captured to Anti-Human IgM on beads. Dilute the Anti-Human IgM-coupled Magnetic Beads (used for MPCLIA) (Cat. No. MPC-A010) to required concentration (such as 200 µg/mL) with Assay Buffer (such as 0.5% BSA in 1×PBST, pH7.2-7.4), add into Magnetic beads bottle, add 50 µL (10 µg) to each test.
4. **Prepare Acridinium ester markers according to correct experimental procedures.** if you choose an acridine ester marker that directly labeled with protein, please select appropriate labeling conditions to ensure that the protein remains active after labeling, you can also choose Acridinium ester markers that are labeled, such as Streptavidin Protein-Acridine Ester.
5. It is recommended to dilute the Acridine ester markers to an appropriate concentration. For example, when you use the Streptavidin Protein-Acridine Ester (Cat. No. STN-NA114) to bind biotinylated protein, you can dilute the Streptavidin Protein-Acridine Ester to 0.8 µg/mL with Assay Buffer in R2 bottle (Acridine ester bottle), add 50 µL (0.04 µg) to each test.
If take the Human IgM as samples, dilute the test sample with the Assay Buffer to a series of concentrations or to a certain dilution ratio. Then add the series of concentration samples to the tests in the system. And meanwhile dilute the biotinylated protein to a reasonable concentration with Assay Buffer in R1 bottle (such as 0.8 µg/mL, add 50 µL (0.04 µg) to each test).
If take the biotinylated protein as samples, dilute the biotinylated protein with the Assay Buffer to a series of concentrations, and dilute Human IgM to a reasonable concentration with Assay Buffer, add the samples into the system.
6. Prepare the Chemiluminescent Substrate Solution (AE Marker) (ACRO, Cat. No. ABK-001), take out the equal volume of the Trigger A (Oxidant solution) and Trigger B (Enhancer solution) required for the experiment, and add them to the reagent bottles accompanying the equipment, after the experiment, do not pour the remaining solution back to the original packaging bottle to avoid contamination.
Note: Exposure to the sun or any other intense light can harm the Chemiluminescent Substrate Solution For best results, keep the Substrate Solution in an amber bottle and avoid prolonged exposure to any intense light Short-term exposure to typical laboratory lighting will not harm the Substrate Solution.
7. Get your Chemiluminescence Immunoassay System ready and set up the running program. Confirm equipment readiness. Each instrument is programmed differently, make the correct program settings according to your own equipment design and experimental requirements.

8. Check your program, samples, beads, reagents, buffer and others details, make sure there are no problems and start the program.
9. Add an appropriate volume of Working Solution to each test, such as add 100µL to each test.
10. Measure the relative light units (RLU, ~430nm) on your equipment, due to equipment differences, the final read value of relative light units (RLU) may be different, the operator should be familiar with their own equipment program Settings.

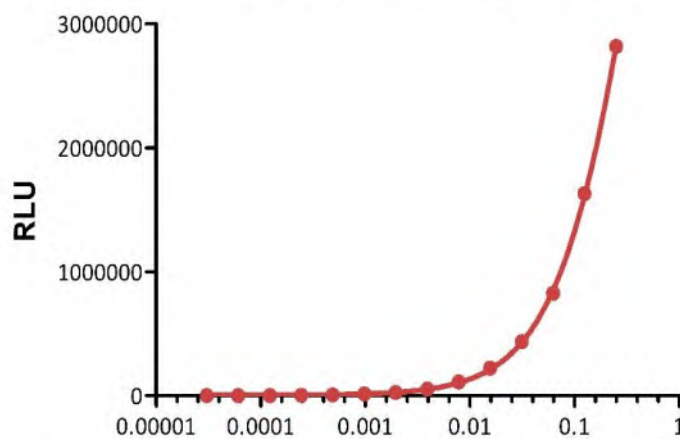
Figures

Anti-Human IgM-coupled Magnetic Beads paired with Streptavidin Protein-Acridine Ester:

Beads	Beads amount	Acridine Ester (AE)-Labeled protein	AE-Labeled protein amount	R1 reagent
Anti-Human IgM-coupled Magnetic Beads (Cat. No. MPC-A010)	10 µg Beads /Test	Streptavidin Protein-Acridine Ester (Cat. No. STN-NA114)	0.04 µg /Test	Biotinylated SARS-CoV-2 Spike RBD, His,Avitag (Cat. No. SPD-C82E9)
R1 reagent amount	Sample	Sample Conc.	sensitivity	
0.04 µg /Test	Anti-SARS-CoV-2 Spike RBD Neutralizing Antibody, Chimeric mAb, Human IgM (AM122) (Cat. No. SPD-M162)	0.25-0.000244 µg/mL	0.244 ng/mL	

Detection of Anti-SARS-CoV-2 Spike RBD Neutralizing Antibody, Chimeric mAb, Human IgM (AM122) by MPCLIA

Anti-Human IgM-coupled Magnetic Beads : Streptavidin Protein-Acridine ester



Anti-SARS-CoV-2 Spike RBD Neutralizing Antibody, Chimeric mAb, Human IgM (AM122) Conc. (µg/mL)

Immobilized 0.04 µg /Test of Biotinylated SARS-CoV-2 Spike RBD, His,Avitag (Cat. No. SPD-C82E9) to the Streptavidin Protein-Acridine ester (Cat. No. STN-NA114, 0.04 µg /Test), incubated with 100 µL /Test of Anti-SARS-CoV-2 Spike RBD Neutralizing Antibody, Chimeric mAb, Human IgM (AM122) (Cat. No. SPD-M162) at increasing concentration coupled to Anti-Human IgM-coupled Magnetic Beads (recommended for MPCLIA) (Cat. No. MPC-A010, 10 µg /Test). Detection was performed with sensitivity of 0.244 ng/mL in Magnetism particulate chemiluminescence immunoassay (MPCLIA) (KEYSMILE, SMART 6500S) (QC tested).

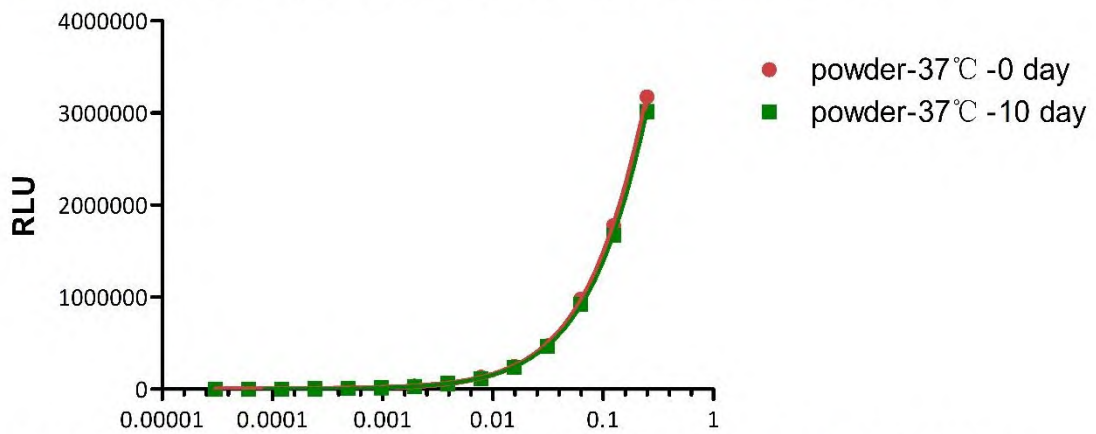
Stability of Anti-Human IgM-coupled Magnetic Beads (used for MPCLIA) (Cat. No. MPC-A010):

Immobilized 0.04 µg /Test of Biotinylated SARS-CoV-2 Spike RBD, His,Avitag (Cat. No. SPD-C82E9) to the Streptavidin Protein-Acridine ester (Cat. No. STN-NA114, 0.04 µg /Test), incubated with 100 µL /Test of Anti-SARS-CoV-2 Spike RBD Neutralizing Antibody, Chimeric mAb, Human IgM (AM122) (Cat. No. SPD-M162) at increasing concentration coupled to Anti-Human IgM-coupled Magnetic Beads (recommended for MPCLIA) (Cat. No. MPC-A010, 10 µg /Test). Detection was performed with sensitivity of 0.244 ng/mL in Magnetism particulate chemiluminescence immunoassay (MPCLIA) (KEYSMILE, SMART 6500S) (QC tested).

Beads	Beads amount	Acridine Ester (AE)-Labeled protein	AE-Labeled protein amount	R1 reagent
Anti-Human IgM-coupled Magnetic Beads (Cat. No. MPC-A010)	10 µg Beads /Test	Streptavidin Protein-Acridine Ester (Cat. No. STN-NA114)	0.04 µg /Test	Biotinylated SARS-CoV-2 Spike RBD, His,Avitag (Cat. No. SPD-C82E9)
R1 reagent amount	Sample	Sample Conc.	sensitivity	
0.04 µg /Test	Anti-SARS-CoV-2 Spike RBD Neutralizing Antibody, Chimeric mAb, Human IgM (AM122) (Cat. No. SPD-M162)	0.25-0.000244 µg/mL	0.244 ng/mL	

Detection of Anti-SARS-CoV-2 Spike RBD Neutralizing Antibody, Chimeric mAb, Human IgM (AM122) by MPCLIA

Anti-Human IgM-coupled Magnetic Beads : Streptavidin Protein-Acridine ester

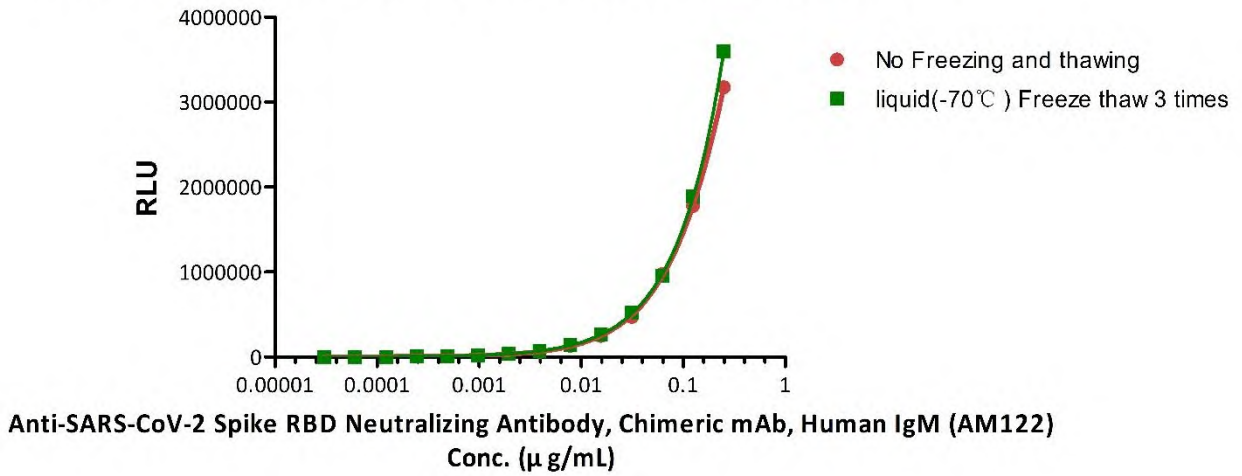


Anti-SARS-CoV-2 Spike RBD Neutralizing Antibody, Chimeric mAb, Human IgM (AM122) Conc. (µg/mL)

The Product Anti-Human IgM-coupled Magnetic Beads (used for MPCLIA) (Cat. No. MPC-A010) is high stability. The accelerated stability of the product within 10 days at 37°C with no more than 10% performance decrease.

Detection of Anti-SARS-CoV-2 Spike RBD Neutralizing Antibody, Chimeric mAb, Human IgM (AM122) by MPCLIA

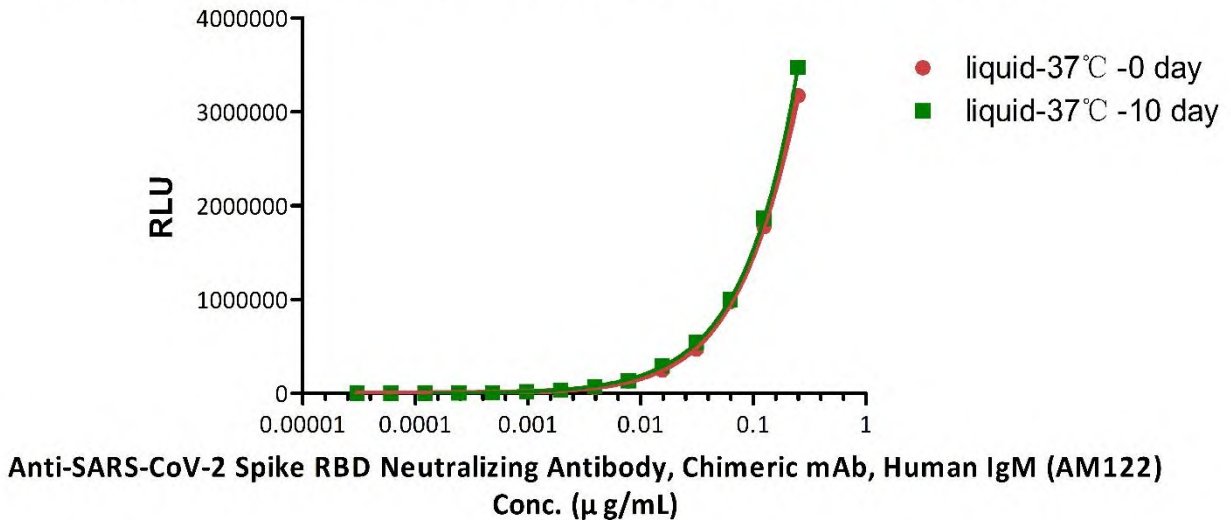
Anti-Human IgM-coupled Magnetic Beads : Streptavidin Protein-Acridine ester



The Product Anti-Human IgM-coupled Magnetic Beads (used for MPCLIA) (Cat. No. MPC-A010) is high stability. After freezing and thawing for 3 times, the activity of the product has no more than 10% performance decrease.

Detection of Anti-SARS-CoV-2 Spike RBD Neutralizing Antibody, Chimeric mAb, Human IgM (AM122) by MPCLIA

Anti-Human IgM-coupled Magnetic Beads : Streptavidin Protein-Acridine ester



The Product Anti-Human IgM-coupled Magnetic Beads (used for MPCLIA) (Cat. No. MPC-A010) is high stability. After reconstitution, the beads can be stored at 2-8°C for 1 month at liquid state, the activity of the product has no more than 10% performance decrease.

Frequently asked questions (FAQs)

1. What should be paid attention to in the application of Anti-Human IgM-coupled Magnetic Beads in chemiluminescence immunoassay?

The Anti-human IgM-Magnetic Beads should be used together with different Acridine ester markers such as Streptavidin Protein-Acridine ester, the magnetic beads should not bind to Acridine ester markers, this is very important for experimental design to decrease background signal.

For example, when using Streptavidin Protein-Acridine ester to capture biotinylated antigen protein, the Acridine ester markers should not cross-react with Anti-human IgM -Magnetic Beads or the Human IgM, and the Anti-human IgM-Magnetic Beads should only bind to the Human IgM.

2. How long can Anti-human IgM-Magnetic Beads be used in a system reagent bottle after being diluted into a certain concentration?

After diluting Anti-human IgM-Magnetic Beads to a certain concentration for experiments, it is recommended to use it within one month.

3. What should be attention to when Anti-human IgM-Magnetic Beads capture Human IgM?

The Anti-Human IgM-coupled Magnetic Beads is easy to capture the most human IgM antibodies, nonbinding to human IgG, IgA or IgE antibodies, make sure the antibodies can bind to Anti-human IgM.