

RayBio Protein G Magnetic Beads

Catalog #: 801-105

User Manual
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Caution:
Extraordinarily useful information enclosed



ISO 13485 Certified

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RayBiotech, Inc.

RayBio Protein G Magnetic Beads Protocol

Table of Contents

| Section | Page # |
|---|--------|
| I. General Description | 3 |
| II. Safety Instructions | 3 |
| III. Storage and Stability | 3 |
| IV. How it Works | 4 |
| V. Warnings and Precautions | 5 |
| VI. Characteristics | 5 |
| VII. Antibody Isolation | 5 |
| A. Materials Provided | 5 |
| B. Additional Materials | 5 |
| C. Procedure | 6 |
| VIII. Binding Capacities for IgG Proteins Table | 7 |

Please read the entire manual carefully before starting your experiment

I. General Description

RayBio's superparamagnetic nanoparticles are coupled with a biomolecule, such as Protein G, and are utilized in the magnetic separation and isolation of antibodies from serum or cell culture supernatants. The particles have a large surface area with high capture efficiencies.

II. Safety Instructions

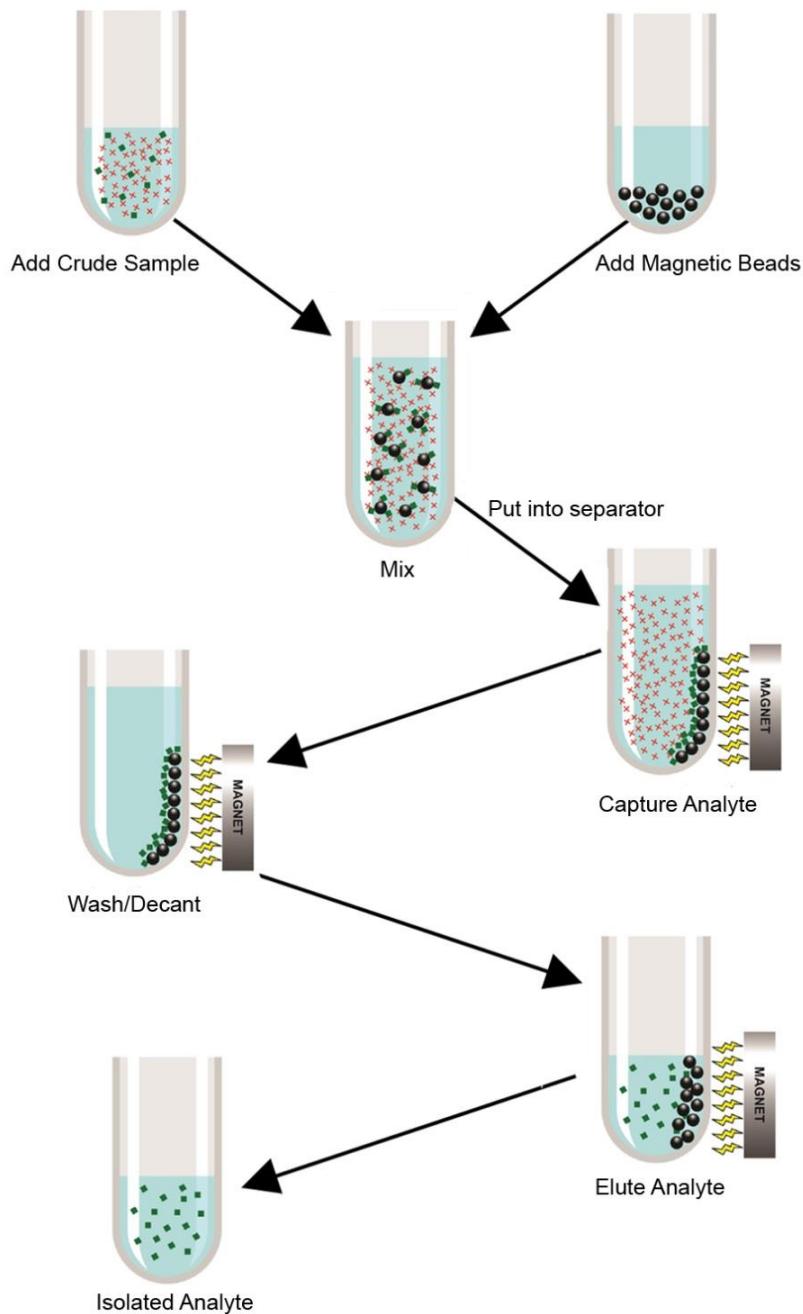
Reagents contain 0.05-0.1% sodium azide as a preservative. Sodium azide may react with lead or copper plumbing to produce metal azides which might cause explosion. To prevent azide accumulation in plumbing, flush with copious amounts of water immediately after disposal.

III. Storage and Stability

The Protein G Magnetic Beads should be stored in the refrigerator (4-8°C). The reagent must be allowed to reach room temperature (20-25°C) before use and may be used until the expiration date on the box. Do not freeze, dry, or centrifuge the beads as they may result in loss of binding activity and aggregation.

IV. How it Works

Protein G magnetic beads are incubated with the antibody solution and then separated by magnets. After the unbound particulates are washed from the beads, the bound antibodies are eluted from the beads using the elution buffer. The beads are then magnetically separated from the eluted solution, and the eluted antibodies are removed manually.



V. Warning and Precautions

- This product is for in vitro research use only, do not use in vivo.
- Prior to use, ensure that the product has not expired by verifying that the date of use is prior to the expiration date on the label.
- Ensure that reagent bottle caps are tight after each use to prevent drying of reagents.
- Mistakes in handling the test can also cause errors. Possible sources for such errors can be: Freezing reagents, Inadequate storage conditions of the test kit (or reagents), incorrect pipetting sequence or inaccurate volumes of the reagents, too short incubation times, and/or short magnetic separation times.

VI. Characteristics

| | |
|------------------------|--|
| Particle Mean Diameter | ~0.5 μ m |
| Particle Concentration | 5 mg/ml |
| Binding Capacity | \geq 60 μ g rabbit IgG/mg of beads |

VII. Antibody Isolation

A. Materials Provided

Protein G magnetic beads, 5 mg/ml

B. Additional Materials Required

1. Binding/Wash Buffer: TBS - 0.05% Tween 20 detergent
2. Elution Buffer: 0.1 M Glycine pH 2.0, 5 mL
3. Neutralization Buffer: 1M Tris pH 8.0, 1 mL
4. Micro-pipettes with disposable plastic tips (10-200 and 200-1000 μ L)
5. 1.5 mL or 2.0 mL Eppendorf or microcentrifuge vials
6. Timer
7. Rotator
8. Distilled or deionized water
9. Vortex mixer
10. Solo or Multi-6 Microcentrifuge Separator (catalog number: 801-205/801-206)

C. Procedures

1. Add 100 μ L (0.5 mg) of beads to 1 mL of binding buffer in each tube to wash particles.
2. Magnetically separate using a magnetic separator for 2 minutes or until the supernatant is clear.
3. Remove the supernatant and wash once more by adding 1 mL of binding buffer.
4. Repeat step 2 and remove the supernatant.
5. Resuspend beads by adding 450 μ L of binding buffer.
6. Add 50 μ L of serum or cell culture supernatant to the beads.

Note: Sample volume can be modified according to user preference. If the sample volume is < 500 μ L, dilute it to a final volume of 500 μ L with Binding/Wash Buffer.

7. Gently mix using vortex or rotator for 30 minutes.
8. Magnetically separate using a magnetic separator for 2 minutes or until the supernatant is clear.
9. Remove supernatant and wash with 0.5 mL Binding/Wash buffer to remove unbound proteins.
10. Repeat steps 8 and 9 once more. Remove supernatant.
11. Add 100 μ L of elution buffer to beads and mix well.
12. Incubate at room temperature for 10 minutes with occasional gentle mixing or vortex.
13. Separate for 2 minutes and remove the eluent to a new tube containing 15 μ L of neutralization buffer.

VIII. Binding Capacities for IgG Proteins Table

Antibody Binding Affinity to Protein A and Protein G*

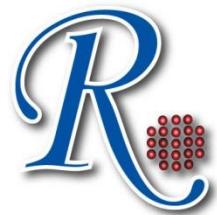
| Species | IgG Class | Protein A | Protein G |
|-------------|-------------------|-----------|-----------|
| Chicken egg | IgY | - | - |
| Cow | IgG | - | + |
| Dog | IgG | + | + |
| | IgM | + | - |
| Goat | IgG | + | +++ |
| | IgM | - | - |
| Horse | IgG | +++ | +++ |
| Rabbit | IgG | +++ | +++ |
| | IgM | - | - |
| Rat | IgG | + | ++ |
| | IgM | - | - |
| Sheep | IgG | +++ | +++ |
| | IgM | - | - |
| Mouse | IgG ₁ | + | ++ |
| | IgG _{2a} | ++ | ++ |
| | IgG _{2b} | ++ | ++ |
| | IgG ₃ | + | ++ |
| | IgM | ++ | + |
| | IgA | ++ | ++ |
| Human | IgG ₁ | +++ | +++ |
| | IgG ₂ | +++ | +++ |
| | IgG ₃ | - | +++ |
| | IgG ₄ | +++ | +++ |
| | IgA | + | - |
| | IgM | + | - |
| | IgE | + | - |

Key:

| | | | | | | | | |
|------------|--------------|------------------|----------------|----------------|--|--|--|--|
| | | | | | | | | |
| - | + | ++ | +++ | Strong Binding | | | | |
| No binding | Weak Binding | Moderate Binding | Strong Binding | | | | | |

*Data obtained from Handbook of Affinity Chromatography by David S. Hage (ISBN 0824740572). Chapter 14 "Affinity Chromatography in Antibody and Antigen Purification" by Terry M. Phillips.

This product is for research use only.



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