



Product Information & Manual

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Protein G Sepharose Purification Kit

Catalogue Number LDG0012RD

For Research Use Only. Not for use in diagnostic and therapeutic procedures.

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Store at 2-8°C

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Leadgene® Protein G Sepharose Purification Kit

1. Introduction

Protein G is a 65 kDa (G148 Protein G) and a 58 kDa (C40 Protein G) surface protein found in the surface of Streptococcal bacteria. Recombinant protein G were conjugated to NHS-sepharose at over 5 mg per mL of 50% slurry and this kit allows a rapid and efficient affinity purification of active IgG proteins.

2. Test principle

Like Protein A, Protein G also has a high affinity to human IgG, mouse IgG and others and is therefore suitable for purification and detection of immunoglobulins. Therefore, the protein G sepharose is an efficient technique for IgG purification. The affinity resin allows an efficient binding of IgG proteins without the need for preliminary steps and calibrations. The affinity bound IgG proteins can be efficiently eluted from the resin by acid condition. The eluted IgG proteins can be used for characteristic analysis.

3. Reagents provided and reconstitution

Reagents (Store at 2-8°C)	Quantity for 5 rxns (LMRD012005C040)	Quantity for 10 rxns (LMRD012010C040)	Composition	Reconstitution
Protein G sepharose	1 vial (1 mL)	1 vial (2 mL)	50% slurry of Protein G sepharose in 1X PBS	The PBS must be removed before use and the resin should be equilibrated with 1X Wash Buffer.
Wash Buffer (10X concentration)	1 vial (2.5 mL)	1 vial (5 mL)	100 mM Tris/Cl pH 7.5; 1.5 M NaCl; 5 mM EDTA	Dilute to 1X working concentration with distilled water.
Elution Buffer	1 vial (5 mL)	1 vial (10 mL)	0.1 M Glycine pH 2.7	Ready for use
Neutralization Buffer	1 vial (1 mL)	1 vial (2 mL)	2 M Tris pH 8.0	Ready for use
spin column	5 pcs	10 pcs	-	-
collection tube	5 tubes	10 tubes	-	-

4. Materials required but not provided

- (1) High quality distilled water

- (2) 5 μ L to 1000 μ L adjustable single-channel micropipettes with disposable tips
- (3) Micro-centrifuge capable of 15,000 x g
- (4) 1.5 mL microcentrifuge tubes
- (5) CoIP Lysis Buffer (mild reaction): 10 mM Tris/Cl pH 7.5; 150 mM NaCl; 0.5mM EDTA; 0.5% NP-40
- (6) RIPA (vigorous reaction): 100 mM Tris/Cl pH 7.5; 300 mM NaCl; 0.2% Sodium Deoxycholate (or 0.1% SDS); 2% NP-40
- (7) Beakers, flasks, cylinders necessary for preparation of reagents
- (8) Timer
- (9) Clean paper towels
- (10) Disposable gloves
- (11) Discard container for bio-medical waste

5. Reagent preparation

- **Working wash buffer (1 X):** Dilute 1 volume of **10 X Wash buffer** with 9 volumes of distilled water and homogenize by using micropipette.

6. Storage of reagents

- Before opened or reconstituted, all kit reagents should be kept properly at 2-8°C.
- For sustainable use and long term storage, store at 2 °C to 8 °C. **DO NOT FREEZE.**
- All working reagents should be prepared freshly and used on the same day.
- Alterations in physical appearance of kit components may indicate instability or deterioration.
- To minimize protein degradation, protease inhibitor cocktails are highly recommended.

7. Precautions & warnings

In order to obtain reproducible test results, the following rules should be strictly obeyed:

- All reagents and specimens should be considered as potentially hazardous. We therefore recommend that this product is handled by those persons who have been properly trained.
- Wear suitable protective clothing and disposable gloves.
- Care should be taken to avoid reagents contacting with skin or eyes. If contacted, wash immediately and thoroughly with plenty of clean water.
- The assay should be performed as outlined in this manual, and in accordance with all instructions.
- Do not use expired or damaged products.
- This product is intended for *Research use only* and is not for use in diagnostic and therapeutic procedures.
- Do not mix or substitute reagents with those from different lots or other sources.
- Thoroughly and gently mix all the reagents and specimens prior to use.
- Use disposable graduated pipettes and tips to avoid cross-contamination of reagents or specimens which may invalidate the test.
- After use, all the reagents and specimens should be regarded as medical waste with risk of biological infection and

properly disposed of in accordance with national regulations.

8. Procedure

- The Protein G sepharose is stored in Phosphate Buffered Saline containing 0.05% sodium azide. The PBS must be removed before use and the resin should be equilibrated with 1X Wash Buffer. The equilibration can be performed at room temperature or at 2-8 °C.
- In the case of bulk reaction. Users can make a pre-reaction through mixing sample and sepharose in 15 mL / 50 mL tube, and then transfer the mixture into the column for binding.
- The binding and elution capacity of 1 mL settled Protein G sepharose are commonly more than 1 mg of IgG proteins. Trying different elution buffers for optimal results is recommended.
- Cellular debris and particulate matter must be removed by centrifugation or filtration prior to purification on the column.
- Highly viscous samples which may contain chromosomal DNA or RNA should be sonicated or treated with nuclease to decrease the viscosity.
- Perform all steps on ice.

Purification of IgG protein

● Sample preparation (Lysis of Mammalian Cells)

- (1) Detach the cells from the culture dish and collect the cell suspension into the centrifuge tube.
- (2) Centrifuge the cell suspension at 400 x g for 5 minutes to pellet the cells. Carefully remove and discard the supernatant.
- (3) Wash cells by re-suspending the cell pellet in ice-cold PBS.
- (4) Centrifuge the cell suspension at 400 x g for 5 minutes to pellet the cells. Carefully remove and discard the supernatant.
- (5) Add 200 µL of Lysis buffer to the cell pellet and vortex.
- (6) Incubate the sample for 15 minutes on ice.
- (7) Remove cell debris by centrifugation at 15,000 x g for 5 minutes at 4°C.

● Column preparation

- (1) Place an empty spin column on the collection tube.
- (2) Wash the column with 200 µL Wash Buffer.
- (3) Allow the buffer to drain from the column and leave residual Wash Buffer in the column to aid in packing the Protein A sepharose, then discard the buffer in the collection tube.

● Packing the Column

- (Note: Make sure the column filter is fixed in the correct position before transferring the sepharose).
- (1) Completely suspend the vial of Protein G sepharose.
 - (2) Transfer 200 µL volume to an empty centrifuge tube and wash the sepharose with 1 mL Wash Buffer.
 - (3) Spin down the sepharose with 100 x g for 30 seconds and discard supernatant.
 - (4) Immediately transfer the sepharose to the spin column. Allow the sepharose bed to settle. Please prevent the sepharose bed from getting dried.

● Binding IgG protein to the column

- (1) Dilute the sample with Wash Buffer in 1:3 proportion.
- (2) Load the sample on the spin column and centrifuge the column at 100 x g for 30 seconds. Users can also perform this binding reaction in a new 1.5 mL centrifuge tube.
 - (Note: Depending upon the IgG protein and the flow rate, not all of the protein may bind. Repeat loading the sample to increase binding efficiency).
- (3) Collect the fractions using empty centrifuge tube.
- (4) Wash the spin column with 300 μ L Wash Buffer more than 6 times.
 - (Note: To eliminate the noisy band in sample, more washing step is recommended).
- **Elution of IgG protein**
 - (1) Add 5 x 100 μ L Elution Buffer to elute the bound IgG from the spin column to the collection tube. This step can be supported by a centrifugation at 100 x g for 30 seconds.
 - (2) Immediately neutralize the eluted sample by adding 10 μ L Neutralization Buffer. Assay sample concentration by measuring the absorbance at 280 nm and combine the fractions with highest absorbance. (1 OD₂₈₀ = 0.73 mg/mL IgG).
 - (Note: Measuring the absorbance after each Elution move can help collecting the sample more accurately).
- **Optional instead of elution step**
 - (1) Resuspended Protein G sepharose in 100 μ L 2 x SDS-Sample Buffer for 10 minutes at 95°C to dissociate the complexes from Protein G sepharose.
 - (2) Protein G sepharose can be collected by centrifugation at 2500 x g for 2 minutes at 4°C and SDS-PAGE is performed with the supernatant.

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