

**ProteoSpin™ Abundant Serum Protein Depletion Kit**  
**Product # 17300****Product Insert**

The ProteoSpin™ Abundant Serum Protein Depletion Kit provides a fast and simple procedure for the effective depletion of major serum proteins including albumin,  $\alpha$ -antitrypsin, transferrin and haptoglobin from serum and plasma samples. The kit is unique in that it is based on an ion-exchange mechanism and not the use of specific antibodies. As a result, the kit can be used to deplete serum proteins from a wide variety of samples, including human and various animals. Albumin has been found to be depleted by 70%, transferrin and haptoglobin by 50% and  $\alpha$ -antitrypsin by 90%. The complexity of the sample is thus greatly reduced, allowing for the detection of less abundant proteins present in the sample. Eluted samples are ready for use in various downstream applications including 2D gel electrophoresis, LC/MS and microarrays.

The ProteoSpin™ Abundant Serum Protein Depletion Kit contains sufficient materials for 25 preparations. Each spin column can deplete up to 500  $\mu$ g of abundant serum proteins. Preparation time for 10 samples is less than 30 minutes. The kit has a shelf life of at least 1 year when stored as suggested.

**Kit Components**

Component	Product # 17300 (25 samples)
Wash Solution G	125 mL
Elution Buffer C	8 mL
Protein Neutralizer	4 mL
Mini Spin Columns	25
Collection Tubes	25
Elution tubes (1.7 mL)	25
Product Insert	1

**Storage Conditions and Product Stability**

All solutions should be kept tightly sealed and stored at room temperature. Once opened, the solutions should be stored at 4°C. This kit is stable for 2 years after the date of shipment.

**Precautions and Disclaimers**

This kit is designed for research purposes only. It is not intended for human or diagnostic use.

Ensure that a suitable lab coat, disposable gloves and protective goggles are worn when working with chemicals. For more information, please consult the appropriate Material Safety Data Sheets (MSDSs). These are available as convenient PDF files online at [www.norgenbiotek.com](http://www.norgenbiotek.com).

**Customer-Supplied Reagents and Equipment**

- Benchtop microcentrifuge
- Micropipettors

## Procedure

All centrifugation steps are carried out in a benchtop microcentrifuge at 6,700 x g (~10,000 RPM) except where noted. Please check your microcentrifuge specifications to ensure proper speed. Performance of the kit is not affected by temperature, and thus the procedure may be performed at room temperature, 4°C, or on ice.

### Notes prior to use:

- A variable speed centrifuge should be used for maximum kit performance. If a variable speed centrifuge is not available a fixed speed centrifuge can be used, however reduced yields may be observed.
- Ensure that all solutions are at room temperature prior to use, and that no precipitates have formed. If necessary, warm the solutions and mix well until the solutions become clear again.
- Each column is able to deplete up to 500 µg of serum or plasma protein. We recommend that between 200 µg and 500 µg of protein be applied to each column. Thus it is necessary to determine the amount of protein present in your sample prior to starting the procedure.

### 1. Column Activation

- a. Assemble a spin column with a provided collection tube, and open the cap on the column.
- b. Add 500 µL of Wash Solution G to the column and close the cap.
- c. Centrifuge for one minute and discard the flowthrough.
- d. Repeat steps **1b** and **1c** to complete the column activation step.

### 2. Sample Preparation

- a. Dilute 10 µL of the serum or plasma sample in 490 µL of Wash Solution G.
- b. Mix well.

**Note:** The procedure is outlined for 10 µL inputs. To process larger serum or plasma volumes please check Table 1 for the appropriate volume of Wash Solution G that should be added for inputs of 10 µL to 50 µL of serum or plasma.

### 3. Protein Binding

- a. Apply the 500 µL of diluted serum or plasma sample onto the activated column and centrifuge for one minute.
- b. Discard the flowthrough. Reassemble the spin column with its collection tube.

**Note:** You can save the flowthrough in a fresh tube for assessing albumin and high abundance protein depletion.

### 4. Column Wash

- a. Apply 500  $\mu\text{L}$  of Wash Solution G to the column and centrifuge for one minute.
- b. Discard the flowthrough and reassemble the spin column with its collection tube.
- c. Add another 500  $\mu\text{L}$  of Wash Solution G to the column and centrifuge for one minute.
- d. Inspect the column to ensure that the liquid has passed through into the collection tube. There should be no liquid in the column. If necessary, spin for an additional minute to dry.

### 5. Protein Elution and Neutralization

The supplied Elution Buffer C consists of 10 mM sodium phosphate pH 12.5. It is necessary to adjust the pH of the eluted serum or plasma sample to neutral by pre-adding Protein Neutralizer to the elution tube. This step is necessary before running downstream applications including 2D gel electrophoresis.

- a. Add 18.6  $\mu\text{L}$  of Protein Neutralizer to a fresh 1.7 mL Elution Tube.
- b. Transfer the spin column from the Column Wash procedure into the Elution Tube.
- c. Apply 100  $\mu\text{L}$  of the Elution Buffer C to the column and centrifuge for one minute to elute bound proteins.
- d. Add another 100  $\mu\text{L}$  of Elution Buffer C and centrifuge for one minute into the same microcentrifuge tube.

**Note:** Approximately 70% of albumin, 90% of  $\alpha$ -antitrypsin, and 50% of transferrin and haptoglobin are depleted from the serum or plasma sample at this point.

The serum or plasma samples are now ready for downstream applications.

**Table 1. Volume of Wash Solution G to be added to Different Serum or Plasma Sample Volumes**

Serum or Plasma Sample Volume ( $\mu\text{L}$ )	Wash Solution G ( $\mu\text{L}$ ) (Step 2a)
10	490
20	480
30	470
40	460
50	450

### Troubleshooting Guide

<b>Problem</b>	<b>Possible Cause</b>	<b>Solution and Explanation</b>
Protein solution does not flow through the column	Centrifugation speed was too low	Check the centrifuge to ensure that it is capable of generating 6,700 x g. Sufficient centrifugal force is required to move the liquid phase through the resin.
	Protein solution is too viscous.	Dilute protein solution as described in protocol.
	Cellular debris is present in protein solution.	Filter the sample in a 0.45 $\mu$ M filter or spin down insoluble materials and transfer liquid portion to the column. Solid, insoluble materials can cause severe clogging problems.
	Inadequate spin time.	Spin an additional minute to ensure that the liquid is able to flow completely through the column.
Insufficient depletion of major proteins	Column was overloaded with proteins.	Decrease the amount of serum or plasma that is loaded onto the column.
	Improper sample preparation.	Ensure that the serum or plasma sample is properly prepared by diluting it in the provided Wash Solution G.
Eluted protein is degraded	Eluted protein solution was not neutralized.	Add 18.6 $\mu$ L of Protein Neutralizer to each 200 $\mu$ L of eluted protein in order to adjust the pH to neutral. Some proteins are sensitive to high pH, such as the Elution Buffer C at pH 12.5.
	Eluted protein was not neutralized quickly enough.	If eluted proteins are not used immediately, degradation will occur. We strongly suggest adding Protein Neutralizer in order to lower the pH.
	Proteases may be present.	Use protease inhibitors during all steps of sample preparation, and during storage of the serum, if desired.
	Bacterial contamination of the protein solution.	Prepare the serum samples with 0.015% sodium azide.
Low protein concentration in the elution	Low levels of serum proteins present in the initial sample.	Increase the amount of serum or plasma that is loaded onto the column. The input amount can be verified using a reliable colorimetric assay.

<b>Related Products</b>	<b>Product #</b>
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ProteoSpin™ Total Protein Concentration and Detergent Clean-Up Mini Kit	23350
ProteoSpin™ Total Protein Concentration and Detergent Clean-Up Maxi Kit	17150

**Technical Support**

Contact our Technical Support Team between the hours of 8:30 and 5:30 (Eastern Standard Time) at (905) 227-8848 or Toll Free at 1-866-667-4362.

Technical support can also be obtained from our website ([www.norgenbiotek.com](http://www.norgenbiotek.com)) or through email at [techsupport@norgenbiotek.com](mailto:techsupport@norgenbiotek.com).

Norgen's purification technology is patented and/or patent pending. See [www.norgenbiotek.com/patents](http://www.norgenbiotek.com/patents)

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