PureSpeed Tips

RAININ
Pipetting 360°

PureSpeed™ Protein Tips

Highest purity and concentration

Fast – as little as 15 minutes

Process many samples at once

Superior Protein Purity and Concentration

Protein Purification in a Pipette Tip

METTLER TOLEDO

Faster, More Convenient Workflow
Pure, Concentrated Functional Protein

- **Superior concentration and purity compared with conventional methods**
- **From microliter to milliliter purification of antibodies and recombinant proteins**
- **Parallel processing of 1 - 12 protein samples with Rainin's E4 XLS electronic pipette**
- **Faster than conventional methods – pure samples in as little as 15 minutes**
- **Gentle on proteins – superior protein activity**
- **No additional concentration steps required**

Rainin PureSpeed™ Protein Tips radically simplify purification of antibodies and recombinant proteins. This innovative approach produces the highest concentration of purified protein, allowing many options for downstream functional assays.

Unlike gravity-fed affinity columns and spin columns, PureSpeed Protein Tip's unique process draws sample repeatedly over a low dead volume, packed resin bed offering controlled contact time with the resin and higher binding kinetics. An efficient wash step removes any contaminants that can produce false positives and the final low volume elution step produces highly concentrated functional protein.

Using the protein purification protocol offered on Rainin's E4 XLS electronic pipette, PureSpeed tips offer a convenient, low-cost method of purifying micro-scale volumes of target protein in as little as 15 minutes. PureSpeed tips are supplied in clamshells containing 12 tips each and are available with three resin types: ProA and ProG, for antibody purification; IMAC for recombinant proteins.

Expand Your Applications with PureSpeed Tips

With their fast set-up time, improved workflow and reduced reagent requirements, many proteomic applications can benefit from Rainin's PureSpeed Protein Tips:

Functional assays
Structural determination
Target expression screening
Protein-protein interactions
Assay development
Process development

Immuno-precipitation assays
Purification screening
Biomarker discovery
Biomarker validation
Library screening & selection

Lead characterization
Lead optimization
Structural analysis
Protein analytics
Pre-clinical assays
Immunogenicity

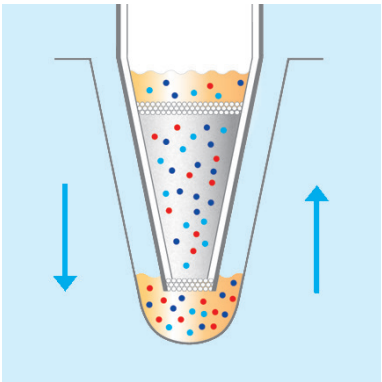
Prepare multiple samples simultaneously
Multiple samples can be purified simultaneously using Rainin's 8- or 12-channel E4 XLS electronic pipettes. The figure here shows how 1–6 protein samples, positive and negative controls can be highly purified and enriched quickly and simply.

Each microplate row represents a phase in the purification process. Rainin's E4 XLS electronic pipette automatically aspirates and dispenses the solutions and guides the user through the process.

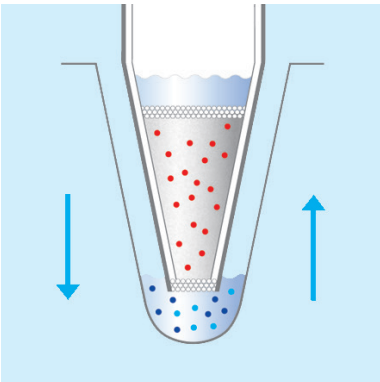
Capture, Purify and Enrich
PureSpeed Simplifies Your Workflow

PureSpeed Protein Tips offer a faster, more convenient and reliable purification workflow for obtaining highly concentrated and pure functional proteins.
The result: higher productivity, less waste and reduced risk.

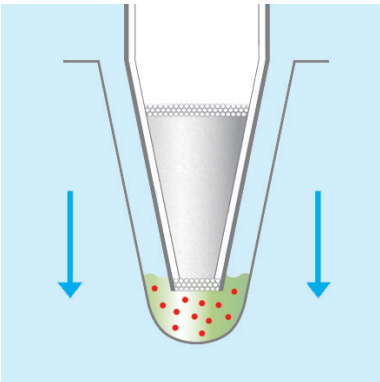
- The unique, patented design of the packed resin bed retains the affinity resin in the PureSpeed tip.
- In PureSpeed mode, Rainin's E4 XLS guides users through the protocol as the purification steps are executed
- With only a small buffer volume needed to release the target protein, eluted protein is the highest concentration possible



Capture the target protein
The unique, patented design of the packed resin bed retains the affinity resin in the PureSpeed Protein Tip. As sample is aspirated into the tip, target protein binds to the resin, while non-binding proteins and contaminants pass through. The sample is repeatedly drawn through the resin, reaching equilibrium binding.



Purify the protein sample
Similar to the capture step, repetitive multiple wash steps remove unbound, nonspecific proteins and contaminants from the PureSpeed tip, leaving the concentrated target protein bound to the affinity resin bed.



Elute the enriched protein
Repeatedly drawing the elution buffer through the PureSpeed tip moves the concentrated target protein from the resin back into a fresh sample well. For this phase, a minimal volume of elution buffer is required to release the pure target protein, producing the highest concentration possible.

Rainin's E4 XLS Makes it Easy

Master your protein purification application with Rainin's E4 XLS electronic pipette. Whether you are purifying single or multiple samples, the E4 XLS not only guides you through the purification protocol, but automatically executes the capture, purification and elution steps.

Select the mode
Once installed, PureSpeed becomes a standard mode on the options carousel of the E4 XLS.

Customize the protocol
Whether it is sample volume, flow rate or number of cycles, every step in the protein purification protocol is easy to access and optimize for specific applications.

Run the protocol
PureSpeed protocols take full advantage of the E4's intuitive, easy-to-use joystick control and carousel-like menu structure. The E4's soft keys enable the user to navigate through a protocol's various steps.

IgG Purification Using PureSpeed
High Performance with the E4 XLS

PureSpeed Protein Tips provide the highest concentration of pure protein when compared with conventional spin column and gravity column techniques.

In a parallel experiment, a master mix of sample was prepared and purified by typical spin and gravity column technology, using the manufacturer's instructions and PureSpeed Protein Tips. Comparing final concentrations and purities, PureSpeed tips provided significantly superior results.

Experiment

E.coli lysate was spiked with hIgG (Sigma-Aldrich®) to a final concentration of 0.5 mg/mL. 100 µL or 500 µL of lysate was purified using the recommended PureSpeed protocols and Rainin E4 XLS pipette. As a comparison, similar purification experiments using the same spiked starting material were performed with conventional spin columns using manufacturer's recommendedprotocols for maximum purity andconcentration. A similar experiment was conducted using E.coli lysate spiked with 0.01 mg/mL hIgG using PureSpeed tips and traditional gravity columns.

Results

The gels pictured opposite in Figures 1 and 2 are NuPAGE®4–12% Bis-Tris electrophoresis gels using MES running buffer. From the total elution, 4 or 10 µL sample was loaded onto each gel. Recovery and yield was determined using HPLC. Up to 75% of the original IgG mass was recovered using the PureSpeed Protein Tips, which were found to be over 95% pure, as shown in the gels. In addition, the final concentration of eluted protein from the PureSpeed tips was 2–3 times higher than the original starting protein sample.

Point of discussion

By comparison, the spin and gravity columns used much larger volume of affinity resin and yet resulted in lower concentrations of less pure product. Taking advantage of the PureSpeed Protein Tips, samples generally reserved for gravity columns now have the benefits of less hands-on time and the ability to process up to 12 samples in parallel. Additionally, researchers can obtain high yields and concentrations using less resin than is required to pack a gravity column, resulting in a significant cost savings.

Protein quantitation was done on 10 µL of final eluant using HPLC and the total mass and final concentration of purified protein was assessed (see tables).

HPLC data showing final protein concentration and total yield from PureSpeed tips and competitive technologies.

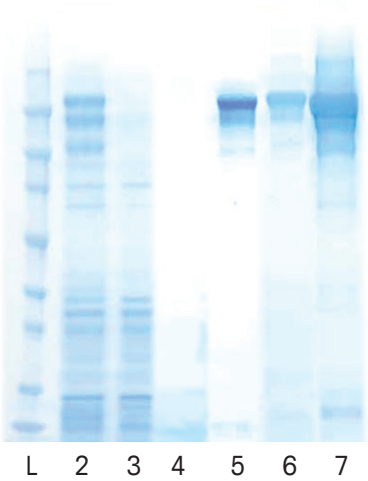


Figure 1

NuPAGE gel showing E.coli lysate spiked with 0.5 mg/mL hIgG and purified using PureSpeed tips and spin column.

Lane 1: Protein ladder

Lane 2: E.coli lysate spiked with hIgG

Lane 3: Flow through

Lane 4: 100 µL lysate purified on spin column with 200 µL ProA

Lane 5: 100 µL lysate purified on PureSpeed tips with 5 µL ProA

Lane 6: 500 µL lysate purified on spin column with 200 µL ProA

Lane 7: 500 µL lysate purified on PureSpeed tips with 20 µL ProA

Column Type/Resine Volume/ Starting Sample Volume	Elution Volume (µL)	Concentration (mg/mL)	Total Yield (µg)
Spin Column 200 µL – 100 µL	434.1	0.08	35
Spin Column 200 µL – 100 µL	440.4	0.07	30
Spin Column 200 µL – 100 µL	441.1	0.06	26
PureSpeed 200 µL Protein Tip 5 µL – 100 µL	15.4	1.45	22
PureSpeed 200 µL Protein Tip 5 µL – 100 µL	16.6	1.35	22
PureSpeed 200 µL Protein Tip 5 µL – 100 µL	17.3	1.45	25
Spin Column 200 µL – 500 µL	414.3	0.44	182
Spin Column 200 µL – 500 µL	423.0	0.49	207
Spin Column 200 µL – 500 µL	425.1	0.43	183
PureSpeed 1000 µL Protein Tip 20 µL – 500 µL	70.1	1.92	134
PureSpeed 1000 µL Protein Tip 20 µL – 500 µL	70.6	1.98	140
PureSpeed 1000 µL Protein Tip 20 µL – 500 µL	79.4	1.73	137

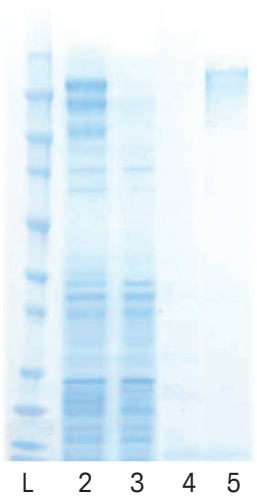


Figure 2

NuPAGE gel showing E.coli lysate spiked with 0.01 mg/mL hIgG and purified using PureSpeed tips and gravity column.

Lane 1: Protein ladder

Lane 2: E.coli lysate spiked with hIgG

Lane 3: Flow through

Lane 4: 5 mL lysate purified on gravity column with 1mL ProA resin

Lane 5: 5 mL lysate purified on PureSpeed tips with 80 µL ProA

Column Type/Resine Volume/ Starting Sample Volume	Elution Volume (µL)	Concentration (mg/mL)	Total Yield (µg)
Gravity Column 1 mL – 5 mL	1000	0.002	2.1
Gravity Column 1 mL – 5 mL	1000	0.002	2.2
PureSpeed 1000 µL Protein Tip 80 µL – 5 mL	294	0.11	32.3

From Milliliter to Microliter …
Radically Simplified Protein Purification

Rainin's PureSpeed Starter Kit has everything you need to get started. It includes the state-of-the-art E4 XLS electronic pipette configured with the automated purification protocol, an instruction manual and all accessories needed to run protein purifications.

Catalog No.	MT Order No.	Description
PureSpeed Tips and Accessories		
PT-2-A5	17012561	ProA 5 µL Resin, 200 µL tip, 12 tips
PT-2-A20	17012562	ProA 20 µL Resin, 200 µL tip, 12 tips
PT-2-G5	17012563	ProG 5 µL Resin, 200 µL tip, 12 tips
PT-2-G20	17012564	ProG 20 µL Resin, 200 µL tip, 12 tips
PT-2-N5	17012566	IMAC 5 µL Resin, 200 µL tip, 12 tips
PT-2-N20	17012567	IMAC 20 µL Resin, 200 µL tip, 12 tips
PT-10-A20	17012568	ProA 20 µL Resin, 1000 µL tip, 12 tips
PT-10-A80	17012569	ProA 80 µL Resin, 1000 µL tip, 12 tips
PT-10-G20	17012570	ProG 20 µL Resin, 1000 µL tip, 12 tips
PT-10-G80	17012571	ProG 80 µL Resin, 1000 µL tip, 12 tips
PT-10-N20	17012572	IMAC 20 µL Resin, 1000 µL tip, 12 tips
PT-10-N80	17012573	IMAC 80 µL Resin, 1000 µL tip, 12 tips
PT-ACC	17012588	PureSpeed Accessories
LR-P2-96P-5	17012623	2.2 µL 96-Deepwell Plate
PureSpeed Starter Kits		
PT-S2-A20	17012577	PureSpeed Starter Kit with E4-200XLS + ProA
PT-S2-G20	17012578	PureSpeed Starter Kit with E4-200XLS + ProG
PT-S2-N20	17012576	PureSpeed Starter Kit with E4-200XLS + IMAC
PT-S10-A20	17012579	PureSpeed Starter Kit with E4-1000XLS + ProA
PT-S10-G20	17012580	PureSpeed Starter Kit with E4-1000XLS + ProG
PT-S10-N20	17012581	PureSpeed Starter Kit with E4-1000XLS + IMAC

Rainin PureSpeed tips fit E4 XLS pipettes with LTS only.

www.mt.com/rainin

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