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PD **MiniTrap** G-10

Product Booklet

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1 Introduction

Important

Read these instructions carefully before using the products.

Intended use

The products are intended for research use only, and shall not be used in any clinical or *in vitro* procedures for diagnostic purposes.

Safety

For use and handling of the products in a safe way, refer to the Safety Data Sheets.

PD MiniTrap G-10 contains

- 50 prepacked disposable PD MiniTrap™ columns containing 2.1 mL of Sephadex™ G-10
- Instructions for use

Purpose

PD MiniTrap G-10 columns are prepacked and designed for rapid, convenient sample clean-up of small proteins, peptides, oligosaccharides and other large biomolecules (>700 Mr).

PD MiniTrap G-10 columns can be used in a wide range of applications such as desalting, buffer exchange and removal of low-molecular weight compounds

2 Principle

PD MiniTrap G-10 columns contain Sephadex G-10, which allows rapid group separation of high molecular weight substances from low molecular weight substances.

PD MiniTrap G-10 columns are used for desalting, buffer exchange and sample clean up. Small molecules like salt, free labels and other impurities are efficiently separated from the high molecular weight substances of interest.

The chromatography technique is gel filtration and molecules are separated on the basis of differences in size.

- Molecules larger than the largest pores in the Sephadex matrix are excluded from the matrix and are eluted first, in or just after the void volume. The void volume is the column volume outside the Sephadex matrix.
- Molecules smaller than the largest pores in the Sephadex matrix will penetrate the pores to varying extent. They have a larger accessible column volume than the large molecules and therefore they elute after the large molecules just before one total column volume of buffer has passed through the column.

Cytiva provides an assortment of sample clean-up products. The different formats available are summarized in *Fig. 1, on page 9*.

Table 1. Product overview

Clean Up product	Exclusion limit, M_r	Bed volume	Sample volume gravity protocol[1]	Sample volume spin protocol[1]
PD SpinTrap™ G-25	5000	0.5 mL	-	100 to 180 µL
PD MultiTrap™ G-25	5000	0.5 mL	-	70 to 130 µL
PD PD MiniTrap™ G-25	5000	2.1 mL	0.1 to 0.5 mL	0.2 to 0.5 mL
PD MidiTrap™ G-25	5000	3.5 mL	0.5 to 1.0 mL	0.75 to 1.0 mL
PD-10 Desalting Columns	5000	8.3 mL	1.0 to 2.5 mL	1.75 to 2.5 mL
PD MiniTrap G-10	700	2.1 mL	0.1 to 0.3 mL	-
PD MidiTrap G-10	700	5.3 mL	0.4 to 1.0 mL	-

[1] Recommended sample volumes.

3 Advice on handling

Recovery

- The recovery of applied amount sample is dependent on type of peptide or other biomolecule. Typically the recovery is in the range 70% to 90%. An increase in sample concentration can improve recovery.

Equilibration

- It is critical to equilibrate the column to remove the storage solution completely. Follow the protocol to ensure that a equilibration volume corresponding to 3 packed bed volumes are used.

Sample Application

- The MiniTrap column is intended for sample volumes up to 0.3 mL.
- Allow the sample to enter the packed bed completely and then add equilibration buffer (stacker volume) so that the total volume of sample and buffer added equals 0.7 mL.
- Allow the sample to enter the packed bed completely before any addition of buffer for elution.

Optimization

For optimisation of recovery/desalting capacity, make an elution profile of the studied peptide/biomolecule, see example in *Fig. 1, on page 9*.

- Add for example 100 µL aliquots of equilibration buffer and collect fraction in separate tubes.
- Study the fractions by a suitable analysis method.

4 Gravity protocol

Step	Action
1	**PD MiniTrap G-10 preparation**
	a. Resuspend the resin by shaking the column. Allow the resin to settle.
	b. Remove the top and bottom caps.
	c. Allow the column storage solution to flow out.
2	**Column equilibration**
	a. Fill up the column with equilibration buffer and allow the equilibration buffer to enter the packed bed completely.
	b. Repeat twice.
	c. Discard the flowthrough.
	Note: *About 8 mL equilibration buffer should be used in total for all three steps.*
3	**Sample application**
	a. Add maximum 0.3 mL of sample to the column.
	b. Allow the sample to enter the packed bed completely.
	c. Add equilibration buffer (stacker volume) so that the total volume of sample and buffer added equals 0.7 mL.
	d. Let the equilibration buffer enter the packed bed completely.
	e. Discard the flowthrough.

Step	Action
4	**Elution** **a.** Place a test tube for sample collection under the column. **b.** Elute with 0.5 mL buffer and collect the eluate. A typical elution profile is shown in *Fig. 1, on page 9*.

5 Recovery and desalting capacity

The following experiment is included as an example of a desalting experiment. A PD MiniTrap G-10 column was equilibrated with Milli-Q™ water. 100 µL of a 3H-Heparan octamer (M_r 2400) solution in 0.5 M NaCl was applied onto the column. The oligo-saccharide recovery was 95% and the desalting capacity was above 94%, see Figure below.

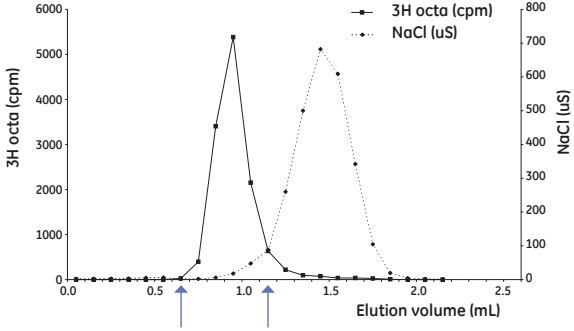

Fig 1. Removal of NaCl from a 3H-Heparan Sulfate octamer solution with PD MiniTrap G-10. The oligo-saccharide is eluted in volume fractions between 0.7 mL to 1.2 mL (indicated by arrows).

6 Column characteristics

Property	Value
Matrix	Sephadex G-10 resin
Particle size range	55 to 165 µm
Packed bed dimensions	0.97 × 2.8 cm (2.1 mL)
Maximum sample volume	0.3 mL
Volume of eluted sample gravity	0.5 mL
Desalting capacity	>75%
Exclusion limit	M_r 700
Chemical stability	All commonly used buffers
Working pH range	2 to 13
Storage temperature	4°C to 30°C
Storage solution	20% ethanol

7 Ordering information

Product	Pack size	Product code
PD MiniTrap G-10	50	28918010

Related products	Pack size	Product code
PD-10 Desalting Columns	30	17085101
PD SpinTrap G-25	50	28918004
PD MultiTrap G-25	4 × 96-well filter plates	28918006
PD MiniTrap G-25	50	28918007
PD MidiTrap G-25	50	28918008
PD MidiTrap G-10	50	28918011
HiTrap™ Desalting	5 × 5 mL	17140801
HiTrap Desalting[1]	100 × 5 mL	11000329
HiPrep™ 26/10 Desalting	1	17508701
HiPrep 26/10 Desalting	4	17508702

[1] Pack size available by special order

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