TSKgel Q-STAT and TSKgel DNA-STAT columns

Non-Porous Anion Exchange Columns for High Speed and High Resolution Analysis of Biomolecules

TSKgel
PRODUCT OVERVIEW

Introduction

TSKgel Q-STAT and TSKgel DNA-STAT anion exchange columns allow fast equilibration and analysis, as well as isolation, of complex biomolecules. Both TSKgel columns are packed with mono-disperse, non-porous resin particles of which the surface consists of an open access network of multi-layered anion exchange groups *(see Figure 1)*. The TSKgel Q-STAT columns are packed with 7 or 10µm particles, the TSKgel DNA-STAT column with 5µm particles. The innovative bonding chemistry combined with a relatively large particle size result in a respectable loading capacity and a low operating pressure, attributes not found in traditional mono-disperse, non-porous resins.

Table 1 illustrates that despite the fact that surface area decreases with increasing particle size, the larger TSKgel Q-STAT and TSKgel DNA-STAT particles have higher binding capacities than the smaller particles used in TSKgel NPR columns. The novel bonding chemistry used in the preparation of the TSKgel STAT resin resulted in a dramatic increase in static binding capacity, more than compensating for the loss in external surface area of the larger particles.

Figure 1.

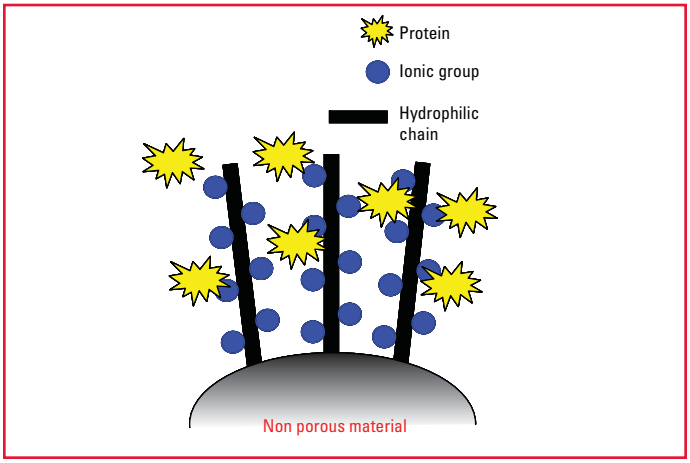


Table 1.

Property	TSKgel NPR Column	TSKgel DNA-STAT	TSKgel Q-STAT	
Particle size (µm)	2.5µm	5µm	7µm	10µm
Capacity*	9.1	38.6	27.0	20.9

* Static binding capacity, in mg BSA/g dry gel.

Product Highlights

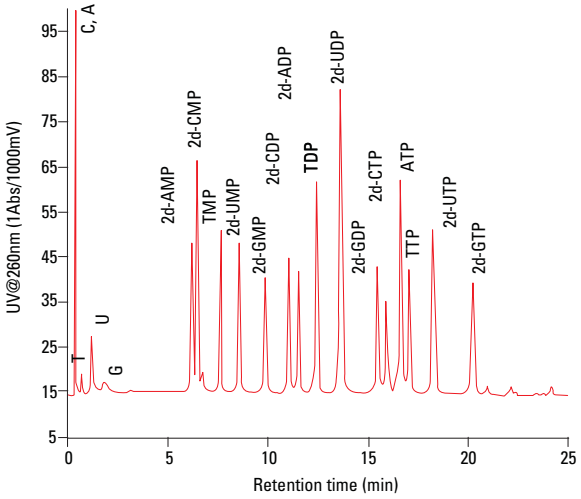
- **Very efficient chromatography for high as well as low MW solutes made possible by novel bonding chemistry and the absence of micro-pores**
- **High speed and high resolution analysis of biomolecules**
- **Higher adsorption capacities and lower pressures compared with smaller particle sized TSKgel NPR columns**
- **7 or 10µm particles (TSKgel Q-STAT) and 5µm particles (TSKgel DNA-STAT)**

Applications

Nucleotides

Mono-, di-, and tri-nucleotides were separated with excellent peak shape on a TSKgel DNA-STAT column. The narrow, symmetrical peaks, as shown in *Figure 2*, demonstrate the absence of micro-pores on this new generation of non-porous resin columns. TSKgel DNA-STAT columns are also, as the name implies, first choice for large nucleic acid fragments.

Figure 2.

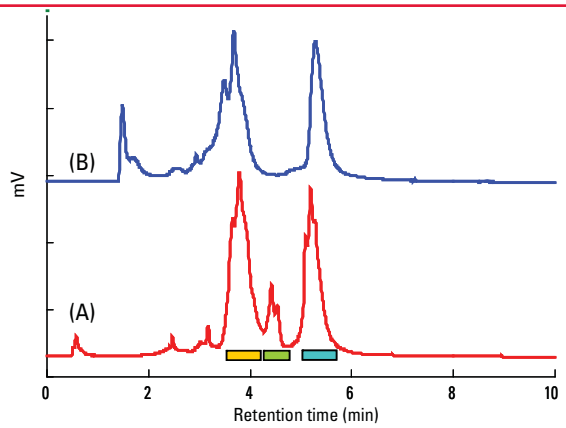


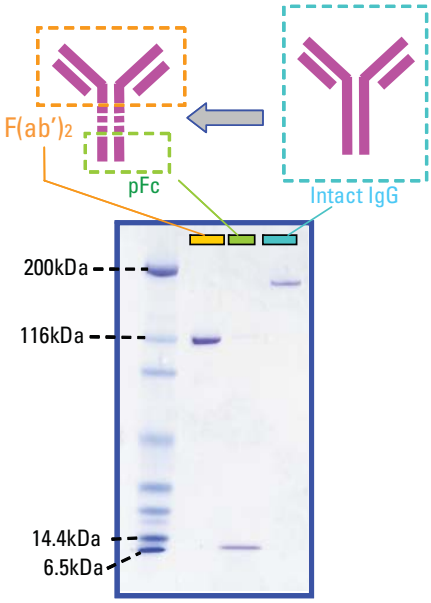
Column:	TSKgel DNA-STAT, 5µm, 4.6mm ID x 10cm
Eluent:	A: 20mmol/L Tris-HCl (pH8.5)
	B: 0.75mol/L NaCl in buffer A
Gradient:	50% B (0min), 75% B (25min)
Flowrate:	0.8mL/min
Detection:	UV@260nm

Monoclonal Antibodies

The monoclonal antibody, IgG, was digested using pepsin and separated on a TSKgel Q-STAT column and a competitive non-porous WAX-10 column. As shown in *Figure 3*, three peaks were isolated from the TSKgel Q-STAT column and assigned as F(ab')2, pFc and intact IgG by SDS-PAGE. There wasn't any correlation between the peaks obtained on the WAX-10 column and SDS-PAGE.

Figure 3.





Non-reduced SDS-PAGE

Columns:	A: TSKgel Q-STAT, 7µm, 4.6mm ID x 10cm B: ProPac WAX-10, 10µm, 4mm ID x 25cm
Eluent:	A: 20mmol/L Tris-HCl (pH8.5) B: 0.5mol/L NaCl in buffer A
Gradient:	0% B (0min), 100% B (10min)
Flow-rate:	1.0mL/min
Detection:	UV@280nm
Sample:	pepsin digested mAb

Ordering Information

Part #	Description	Matrix	Housing	ID (mm)	Length (cm)
21960	TSKgel Q-STAT, 10µm	Polymer	Stainless Steel	3	3.5
21961	TSKgel Q-STAT, 7µm	Polymer	Stainless Steel	4.6	10
21962	TSKgel DNA-STAT, 5µm	Polymer	Stainless Steel	4.6	10

TOSOH

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