TOSOH

interchim®

TSK-GEL® Q-STAT and DNA-STAT Columns

INTRODUCTION

TSK-GEL Q-STAT and TSK-GEL DNA-STAT anion exchange columns allow fast equilibration and analysis, as well as isolation, of complex biomolecules. Both TSK-GEL 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 TSK-GEL Q-STAT columns are packed with 7 or 10 µm particles, the TSK-GEL DNA-STAT column with 5 µm 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 TSK-GEL Q-STAT and TSK-GEL DNA-STAT particles have higher binding capacities than the smaller particles used in TSK-GEL NPR columns. The novel bonding chemistry used in the preparation of the TSK-GEL 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.

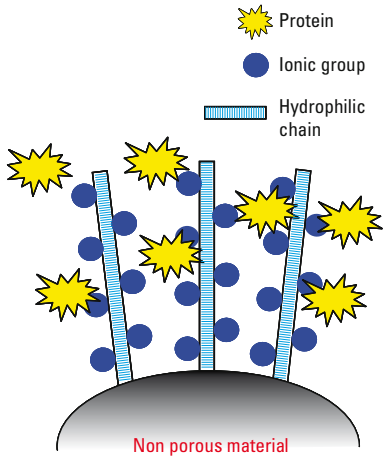

Figure 1

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

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

Table 1

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 TSK-GEL NPR columns
- 7 or 10 µm particles (TSK-GEL Q-STAT) and 5 µm particles (TSK-GEL 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. TSK-GEL DNA-STAT columns are also, as the name implies, first choice for large nucleic acid fragments.

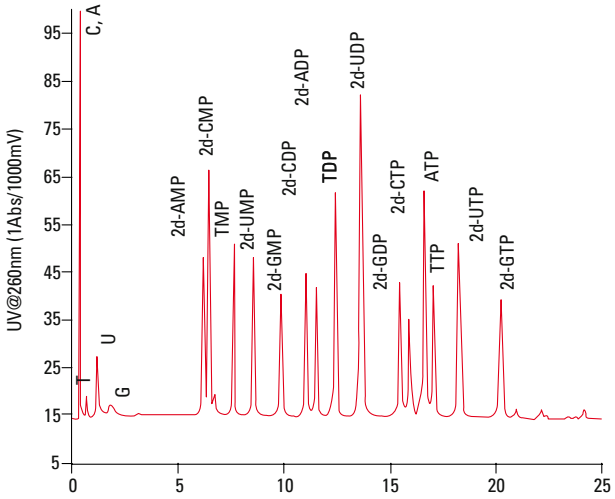

Figure 2

Column: TSKgel DNA-STAT, 5 µm, 4.6 mm ID x 10.0 cm L
Eluent: A: 20 mmol/l Tris-HCl (pH 8.5)
B: 0.75 mol/l NaCl in buffer A
Gradient: 50% B (0 min), 75% B (25 min)
Flow rate: 0.8 ml/min
Detection: UV @ 260 nm

Monoclonal Antibodies

The monoclonal antibody was digested using pepsin and separated on a TSKgel Q-STAT column and a competitive non-porous WAX 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 competitive WAX column and SDS-PAGE.

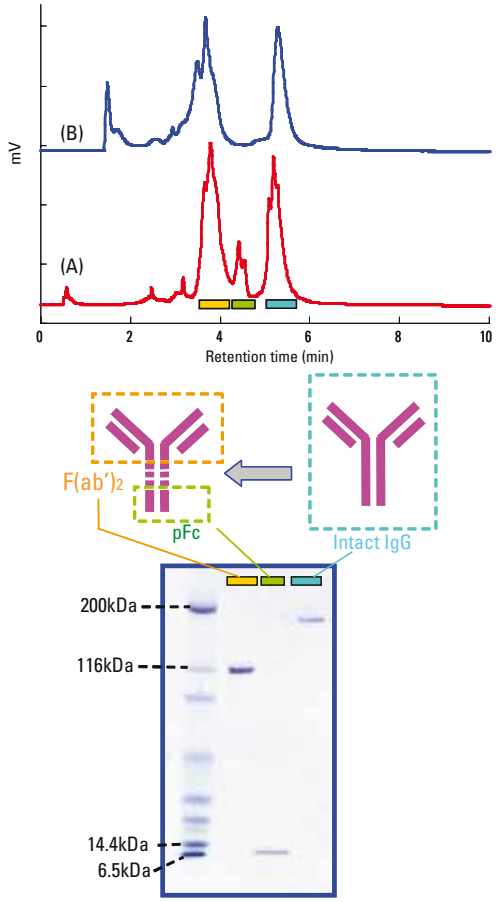

FIGURE 3

Column: A: TSKgel Q-STAT, 7 µm, 4.6 mm ID x 10 cm L
B: Competitor WAX, 10 µm, 4 mm ID x 25 cm L
Eluent: A: 20 mmol/l Tris-HCl (pH 8.5)
B: 0.5 mol/l NaCl in buffer A
Gradient: 0% B (0 min), 100% B (10 min)
Flow rate: 1.0 ml/min
Detection: UV @ 280 nm
Samples: pepsin digested mAb

For further details of choice and selection of the TSK-GEL® column that best suits your particular separation needs, please contact us:

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or

www.tskgel.com

Ordering information

TSKgel ANION STAT COLUMNS

Part-No	Description	Matrix	Housing	Dimensions
21960	TSKgel Q-STAT, 10 µm	Polymer	Stainless steel	3.0 mm ID x 3.5 cm L
21961	TSKgel Q-STAT, 7 µm	Polymer	Stainless steel	4.6 mm ID x 10 cm L
21962	TSKgel DNA-STAT, 5 µm	Polymer	Stainless steel	4.6 mm ID x 10 cm L