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TSKgel® SP-STAT and CM-STAT Columns

#443

INTRODUCTION

TSKgel SP-STAT and TSKgel CM-STAT cation exchange columns allow fast equilibration and analysis, as well as isolation, of complex biomolecules. Both TSKgel columns are packed with 7 or 10 µm mono-disperse, non-porous resin particles of which the surface consists of an open access network of multi-layered cation exchange groups (see Figure 1). 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.

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 bio-molecules
- Higher adsorption capacities and lower pressures compared with competitive non-porous columns
- 7 or 10 µm particles for SP and CM chemistries

APPLICATIONS

FAST SEPARATIONS

The fast separation of protein standards was investigated using short cation exchange columns (see Figure 2). A TSKgel SP-STAT column shows superior resolution, better peak shape, and a shorter analysis time (< 60 seconds) compared to a competitive monolithic SP-type column.

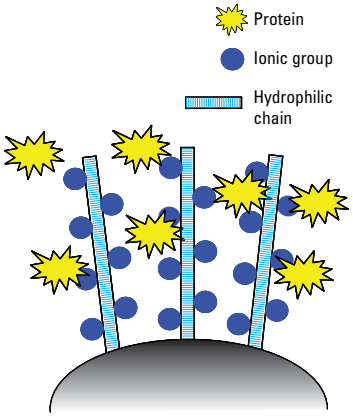


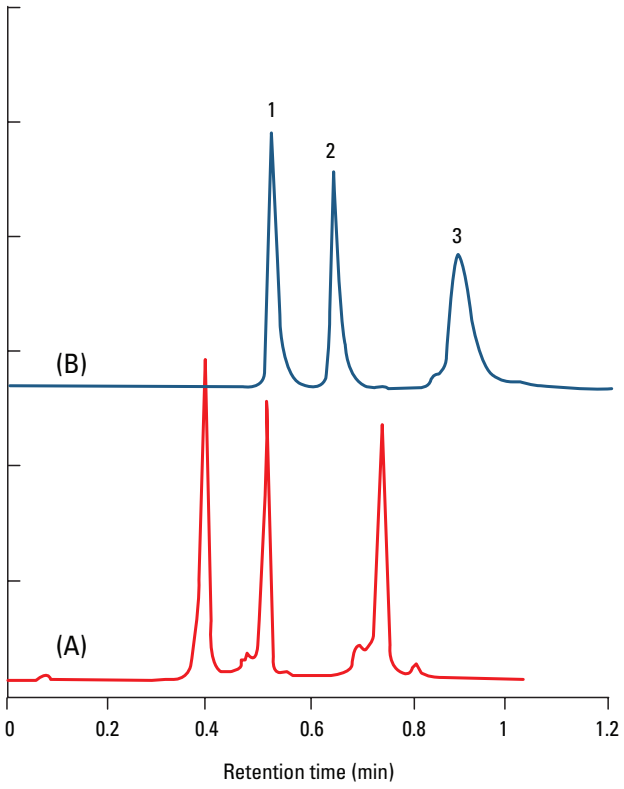
Figure 1

REACTION MONITORING

A sample of β-lactoglobulin (5 mg/mL) was reacted with polyethylene glycol (5 kDa) in a pH 6.5 phosphate buffer. The formation of PEGylated protein reaction products was monitored in 5 minute intervals on a 3.5 cm TSKgel SP-STAT column. As demonstrated in Figure 3, peak areas of mono-, di-, and tri-PEGylated β-lactoglobulin increased with reaction time, while the area of unreacted β-lactoglobulin declined.

ANTIBODY ANALYSIS

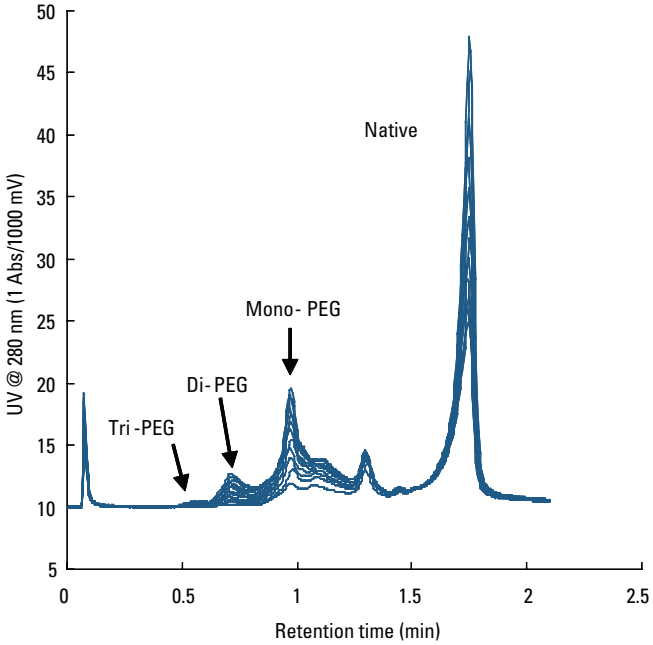
The analysis profiles for five antibodies separated on a TSKgel CM-STAT column were compared with the profiles obtained on a competitive WCX column (Figure 4). Similar or higher resolution profiles were obtained on TSKgel CM-STAT in approximately half the time.



Col...n: FIGURE A: TSKgel Q-STAT, 10µm, 3.0mm ID x 3.5cm

Column: A: TSKgel SP-STAT, 10 µm, 3.0 mm ID x 3.5 cm L; B: Competitor column 4.6 mm ID x 5.0 cm L
Eluent: A: 20 mmol/l sodium acetate (pH 5.0); B: 1.0 mol/l NaCl in buffer A (pH 5.0) for column A; 1.5 mol/l NaCl in buffer A (pH 5.0) for column B;
Gradient: 0% B (0 min), 100% B (1 min); Flow rate: A: 2.0 ml/min; B: 4.73 ml/min; Detection: UV @ 280 nm;
Samples: 1. α-chymotrypsinogen A; 2. cytochrome C; 3. lysozyme

TOSOH



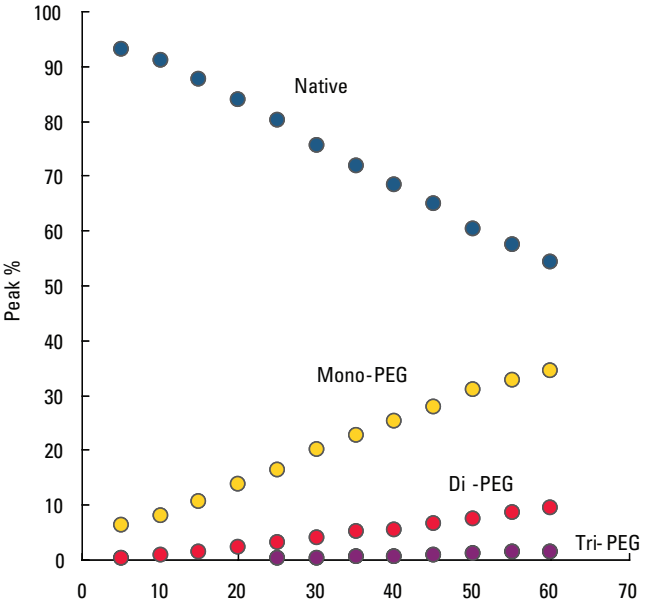
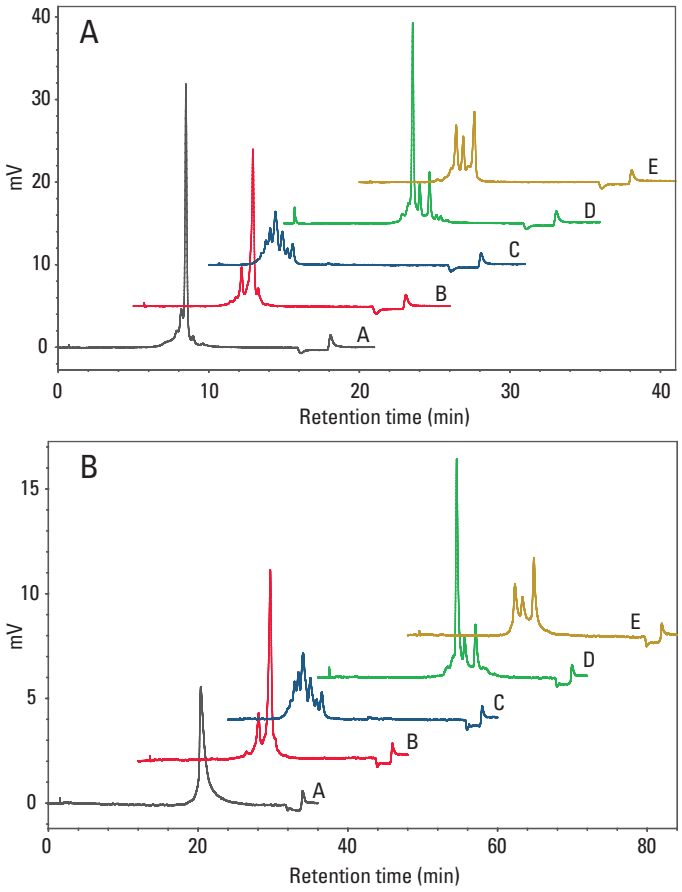


Figure 1

Column: TSKgel SP-STAT, 10 µm, 3.0 mm ID x 3.5 cm L; Eluent: A: 20 mmol/l sodium acetate (pH 5.0); B: 1.0 mol/l NaCl in buffer A (pH 5.0); Gradient: 0% B (0 min), 100% B (2 min); Flow rate: 2.0 ml/min; Detection: UV @ 280 nm; Samples: PEGylated β-lactoglobulin



Columns: A: TSKgel CM-STAT, 7µm, 4.6mm ID x 10cm

Figure 2

Column: A: TSKgel CM-STAT, 7 µm, 4.6 mm ID x 10 cm L; B: Competitor WCX, 10 µm, 4.0 mm ID x 25 cm L;
Eluent: A: 20 mmol/L MES (pH 6.0); B: 20 mmol/L MES + 0.5 mol/L NaCl (pH 6.0)
Gradient: A: 10% B (0 min), 30% B (15 min), 100% B (15 min), 100% B (17 min), 10% B (17 min), 10% B (21 min); B: 10% B (0 min), 30% B (30 min), 100% B (30 min), 100% B (32 min), 10% B (32 min), 10% B (36 min)
Flow rate: A: 1.0 mL/min B: 2.0 mL/min; Temp.: Ambient; Detection: UV @ 280 nm; Inj. Vol.: 20 µL; Sample: monoclonal antibodies (mAb A through E)

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Ordering information

TSKgel STAT COLUMNS

Part-No	Description	Matrix	Housing	Dimensions
21963	TSKgel SP-STAT, 10 µm	Polymer	Stainless steel	3.0 mm ID x 3.5 cm L
21964	TSKgel SP-STAT, 7 µm	Polymer	Stainless steel	4.6 mm ID x 10 cm L
21965	TSKgel CM-STAT, 10 µm	Polymer	Stainless steel	3.0 mm ID x 3.5 cm L
21966	TSKgel CM-STAT, 7 µm	Polymer	Stainless steel	4.6 mm ID x 10 cm L

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