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#434

TOYOPEARL® Q-600C AR

INTRODUCTION

Ion exchange Chromatography (IEC) is one of the most frequently used chromatographic modes for the separation and purification of biomolecules. It is used at all stages and scales of purification of therapeutic proteins: from laboratory scale purification to industrial scale downstream processing. Toyopearl IEC resins are hydrophilic, macroporous media available with various ligands and in different particle and pore sizes.

Due to the high dynamic binding capacities of ion exchange resins relative to those of the other chromatographic modes, IEC is frequently used for the capture chromatographic step. Toyopearl Q-600C AR is a strong anion exchange resin designed for efficient and robust capturing in large scale biopurification. It is more alkaline resistant (AR) than other quaternary amino type anion exchange resins and offers high dynamic binding capacities.

HIGHLIGHTS

- Excellent tolerance to caustic exposure up to 1 N NaOH for improved CIP robustness
- High dynamic binding capacities for efficient capturing out of high-titer feedstocks
- Fast elution kinetics generating low elution pool volumes for improved process efficiency

FEATURES

Toyopearl Q-600C AR is a highly alkaline stable capture resin. It was designed to be more alkaline resistant than the well established Toyopearl QAE-550C resin. Toyopearl Q-600C AR tolerates caustic cleaning solutions up to 1N NaOH with essentially no change in dynamic binding capacity (DBC) for BSA (Figure1). Both, retention (Figure 2) and ion exchange capacity (Figure 3) are not significantly altered after 100 days storage in 1N NaOH as well.

Toyopearl Q-600C AR has a slightly larger pore diameter (750 Å) than Toyopearl QAE-550C, but nevertheless a higher dynamic binding capacity for proteins. It has the third highest DBC for bovine serum albumin among all Toyopearl anion exchange resins (Table 1).

FEATURES OF ANION EXCHANGE RESINS

Resin	Particle size (µm)	IEC (meq/mL)	DBC BSA 66 kDa (g/L)	DBC h IgG 160 kDa (g/L)	DBC Thyroglobulin 660 kDa (g/L)
TOYOPEARL Q-600C AR	50-150	0.18	108	90	26
TOYOPEARL QAE-550C	50-150	0.36	29	32	6
TOYOPEARL GigaCap Q-650M	50-100	0.17	173	108	71
TOYOPEARL SuperQ-650M	40-90	0.24	145	13	3
TOYOPEARL DEAE-650M	40-90	0.11	25	31	3

Table 1

Dynamic binding capacities were determined at 10% breakthrough

Column size:	6 mm ID x 40 mm L
Sample:	bovine serum albumin BSA, human IgG, thyroglobulin (1 mg/mL)
Loading buffer (BSA):	0.05 M Tris-HCl buffer (pH 8.5)
Loading buffer (h IgG):	0.015 M Tris-HCl buffer (pH 8.7)
Loading buffer (thyroglobulin):	0.015 M Tris-HCl buffer (pH 8.7) + 0.15 M NaCl
Elution buffer:	Loading buffer + 1.0 M NaCl
Linear velocity:	212 cm/hr
Detection:	UV @ 280 nm

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DYNAMIC BINDING CAPACITY AFTER EXPOSURE TO 1 N NaOH

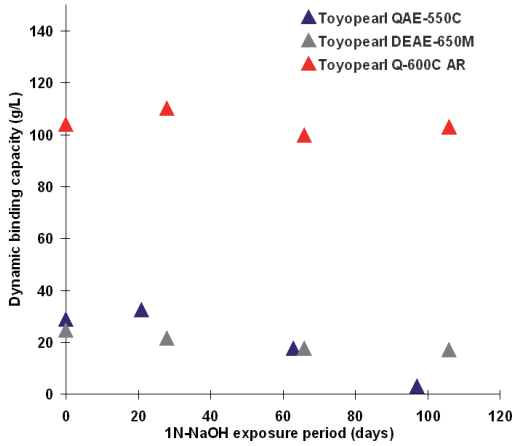

Figure 1

ION EXCHANGE CAPACITY AFTER EXPOSURE TO 1 N NaOH

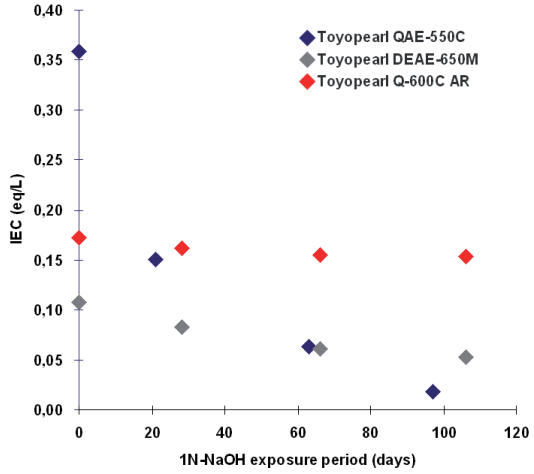

Figure 3

RETENTION TIME STABILITY AFTER EXPOSURE TO 1 N NaOH

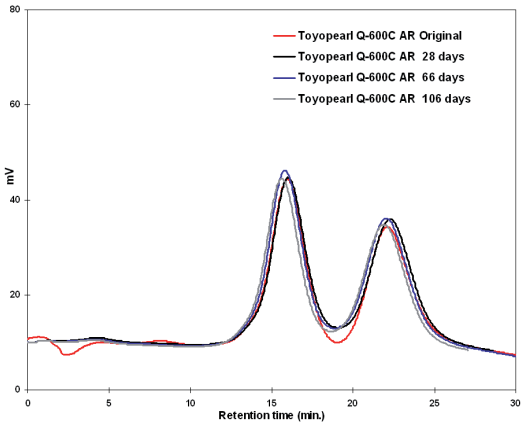

Figure 2

Column:	6.0 mm ID x 4 cm L
Flow rate:	1.0 mL/min
Elution:	Buffer A: 0.05 M Tris-HCl buffer (pH 8.5) Buffer B: 0.05 M Tris-HCl buffer + 1.0 M NaCl (pH 8.5)
Gradient:	60-min linear gradient from buffer A to buffer B
Detection:	UV @ 280 nm

Similar to the recently introduced Toyopearl GigaCap IEC resins, Toyopearl Q-600C AR shows fast elution kinetics resulting in low pool volumes for the target molecule. The combination of high binding capacity, low elution pool volume and high caustic stability supports both, high process efficiency and improved robustness. This makes Toyopearl Q-600C AR the ideal choice for anion exchange capture steps.

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For further details of choice and selection of the TOYOPEARL® resin that best suits your particular separation needs, please contact us:

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Ordering information

TOYOPEARL Q-600C AR

Part-No	Description	Resin volume	Pore size	Particle size
21985	Toyopearl Q-600C AR	100 mL	750 Å	100 µm
21986	Toyopearl Q-600C AR	250 mL	750 Å	100 µm
21987	Toyopearl Q-600C AR	1 L	750 Å	100 µm
21988	Toyopearl Q-600C AR	5 L	750 Å	100 µm
21989	Toyopearl Q-600C AR	50 L	750 Å	100 µm
21992	ToyoScreen Q-600C AR	1 mL x 6 (each)	750 Å	100 µm
21993	ToyoScreen Q-600C AR	5 mL x 6 (each)	750 Å	100 µm

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