Ion Exchange Chromatography Media

Cellufine MAX GS

Technical Data Sheet

JNC CORPORATION

2-1, Otemachi 2-Chome
Chiyoda-ku, Tokyo 100-8105 JAPAN
Phone +81-3-3243-6150 / Fax +81-3-3243-6219
e-mail: cellufine@jnc-corp.co.jp
Cellufine web: https: //www.jnc-corp.co.jp/fine/en/cellufine/

Technical DATA Sheet

Cellufine Ion Exchange Media

What is Cellufine?

Cellufine is porous and spherical chromatography medium manufactured from cellulose. Cellufine has been approved in many bio-pharmaceutical GMP production processes since 1981. Cellulose is well-known as natural product having unique crystalline molecular structure which provides chemical stability and mechanical strength. Owing to these properties, Cellufine has excellent column packing characteristics and can be packed at high flow rates due to high mechanical strength of produced particles.

Cellufine MAX GS

- ***Effective separation of antibody monomer and aggregates***
- ***High Capacity***
- ***Low Pressure Drop***

Cellufine MAX GS is a strong cation exchange chromatography medium. The basic characteristics of Cellufine media are shown in Table 1.Highly cross-linked cellulose used as a base material enables Cellufine MAX GS to operate at high velocity. The Ligand structure was designed to excellent separation of antibody monomer and aggregates. The combination of the pore size and the ligand structure was optimized for high dynamic binding capacity.

Table 1. Characteristics of Cellufine MAX GS

Matrix	Highly Cross-linked Cellulose
Particle size	40～130 μm
Ligand type	－R-$SO_3^-Na^+$
Ion Exchange Capacity (m mol/ml)	0.09~0.15
Lysozyme adsorption capacity (mg/ml)	≧100
Polyclonal IgG 10% DBC (mg/ml) at 4min residence time	≧70
Operating pressure	< 0.3 MPa
pH stability	pH 2 ~ 13
Storage	20 % ethanol

Dynamic Binding Capacities of Cellufine Max GS Media

Efficient mass-transfer characteristics of Cellufine MAX GS translate to superior dynamic binding capacities (DBC). Figures 1 shows DBC of Poly IgG at various residence times. Cellufine MAX GS is suitable for use in down-stream steps in antibody purification

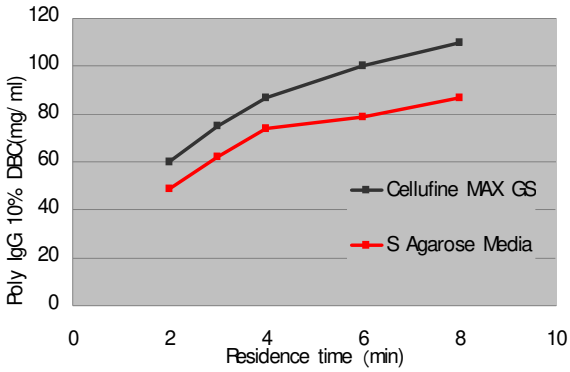

Figure 1 . Poly IgG_10%DBC , Acetate Buffer (pH5.0) + 50 mM NaCl, IgG Conc.: 1 mg/ml

Mab Monomer/Aggregate Separation

Cellufine MAX GS has a superior selectivity between Mab monomer and aggregate. Figure 2 shows monomer/aggregate separation using Cellufine MAX GS under NaCl gradient elution

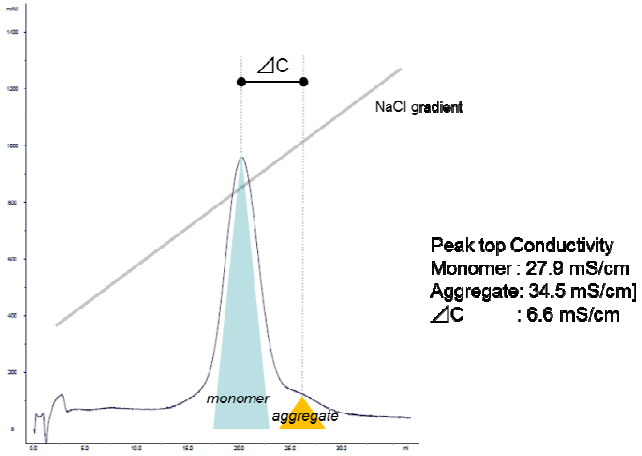

Figure 2. Mab Monomer/Aggregate Separation , Citrate Buffer (pH 5.0) NaCl: 0.2→0.5 M ,Column: 5 mm I.D. × 50 mm L Mab: 1 ml injection , Flow: 0.66 ml/min [better to express as cm/h]

Pressure-Flow Properties of Cellufine MAX GS

Figure 3 shows pressure-flow velocity curves of Cellufine MAX GS. Highly Cross-Linked cellulose offers good flow properties

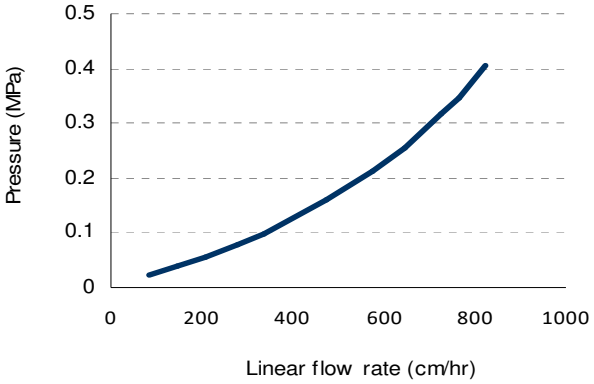

Figure 3. Pressure-flow velocity curves of Cellufine MAX GS (30 cm I.D. x 20 cm L), Mobile phase: Pure water at 24 ℃.

Model Protein Separation Performance for Cellufine MAX GS

Figure 4 displays the optimized high resolution of Cellufine Strong Cation media.

Protein separation studies show that relative binding strengths are MAX GS > S-500 > MAXS-h

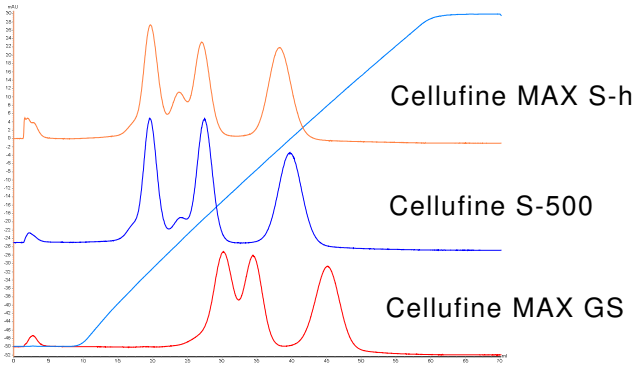

Figure4. Model Proteins Separation for Cellufine Strong Cation media

Column: 6.6 mm ID × 50 mm L

Buffer A: 10 mM phosphate buffer (pH 7)

Buffer B: 10 mM phosphate (pH 7) + 0.5M NaCl

Proteins: Ribonuclease A, Cytochrome C, Lysozyme

Chemical Stability and Cleaning-In-Place

Cellulose is a well-known natural product with high chemical and physical stability. Thus, since Cellufine is derived from cellulose, it also is stable to chemicals, caustic and acidic solutions. CIP of all Cellufine IEX media can be carried out with 0.5 M NaOH solution. Used media should be stored in 20 % ethanol at 2-25 ℃ after cleaning.

Figure 5 shows excellent stability of Cellufine MAX GS with 0. 5M NaOH CIP

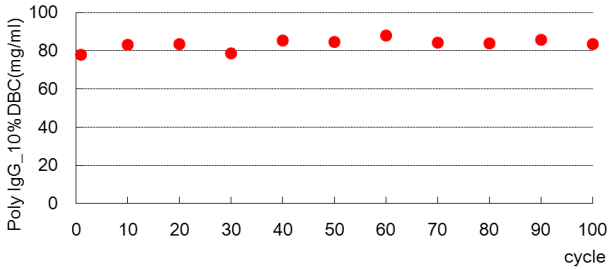

Figure5.The change of Poly IgG 10% DBC during CIP

Column: 5 mm I.D. × 5 cm L

Poly IgG Conc.: 1 mg/ml

Adsorption Buffer: 10 mM Acetate (pH 5.0) + 50 mM NaCl

Elution Buffer: 10 mM Acetate (pH 5.0) + 1 M NaCl

CIP Agent: 0.5 M NaOH (10 CV, Contact time: 10 min.)

Ordering Information

Product Name	Pack Size	Catalogue No.	Product Name	Pack Size	Catalogue No.
Cellufine MAX GS	1ml x 5 (Mini-Column)	21300-51			
	5ml x 5 (Mini-Column)	21300-55			
	100 ml	21300			
	500 ml	21301			
	5 lt	21302			
	10 lt	21303			

Technical Support contacts

(North & South America & Europe) JNC America Incorporated 411 Theodore Fremd Avenue, Suite 206 South Rye, NY 10580 USA TEL: 914-921-5400 FAX: 914-921-8822 E-mail: cellufine@jncamericany.com	(Asia & Others) JNC Corporation Life Chemicals Division 2-1, Otemachi 2-Chome, Chiyoda-ku Tokyo 100-8105 Japan Tel: +81-3-3243-6150 Fax: +81-3-3243-6219 E-mail: cellufine@jnc-corp.co.jp

Please Send Purchase Orders to:

(North America & Europe) JNC America Incorporated 411 Theodore Fremd Avenue, Suite 206 South Rye, NY 10580 USA TEL: 914-921-5400 FAX: 914-921-8822 E-mail: Cellufine@chissony.com	(Asia & Others) JNC Corporation Life Chemicals Division 2-1, Otemachi 2-Chome, Chiyoda-ku Tokyo 100-8105 Japan Tel: +81-3-3243-6150 Fax: +81-3-3243-6219 E-mail: cellufine@jnc-corp.co.jp

Please visit our web site for more information

https: //www.jnc-corp.co.jp/fine/en/cellufine/