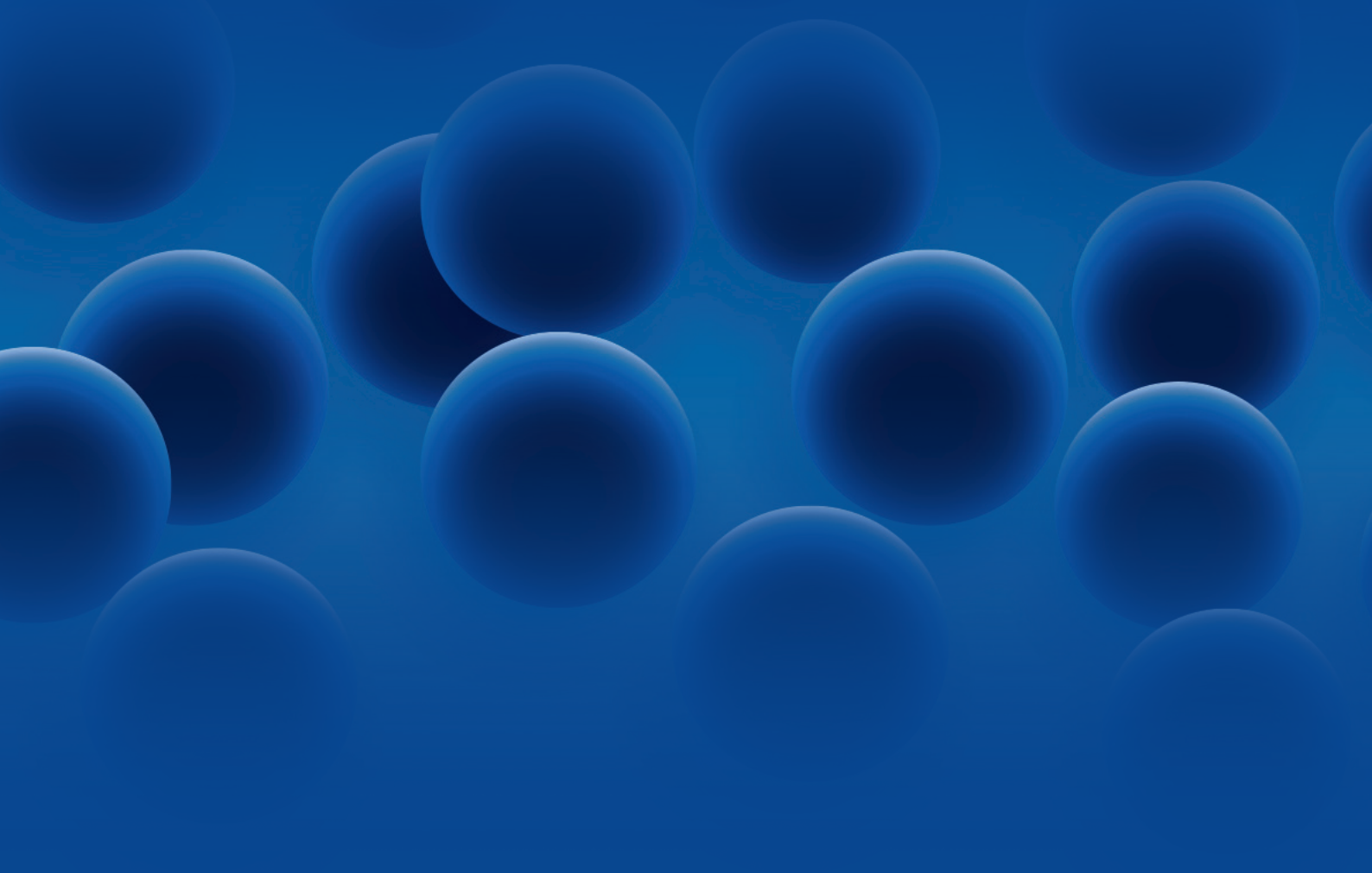


Chromatography Media for Biopharmaceuticals

Product Catalog



About JNC

As a pioneer of our nation's chemical industry since our founding in 1906 as Sogi Electric Company, JNC Group operates under the guiding philosophy of being "a leading chemical company that contributes to society's progress through superior technology." Our mission is to create a healthier and more affluent global community by addressing our customer's challenges with technology to fulfill societal needs. We are committed to environmentally harmonious manufacturing and the development of scientifically rigorous talent to help establish a truly sustainable society.



OUR COMMITMENT

We at JNC Group provide joy for tomorrow to realize a sustainable future through technologies, products, and services.

About Cellufine

Cellufine chromatography media is designed for the purification of therapeutic proteins, enzymes, viruses, and other biomolecules. Based on porous, spherical cellulose beads, Cellufine is inherently biocompatible and exhibits significantly lower leachables than synthetic polymers, minimizing potential contaminants. Its high chemical stability ensures a long media lifetime by withstanding repeated and aggressive cleaning-in-place (CIP) cycles, to reduce overall costs and maximize process uptime. These combined advantages make Cellufine the ideal choice for the robust purification of today's most demanding biomolecules.

Cellufine chromatography media is based on a porous, spherical cellulose bead architecture optimized for large-scale biopharmaceutical purifications.



We offer a wide range of Cellufine chromatography products to meet a diversity of chromatography modes. Gel Filtration, Ion Exchange, Affinity, and Hydrophobic Interaction chromatography media are available for purification of a broad range of target molecules. For your especially unique or challenging purification processes, JNC Corp. can provide custom media, including larger bead sizes, custom pore sizes, or special affinity ligands.

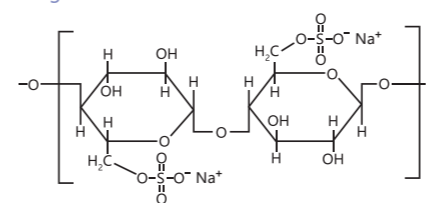
Virus & Viral Vaccine Purification

AFFINITY CHROMATOGRAPHY

Cellufine™ Sulfate

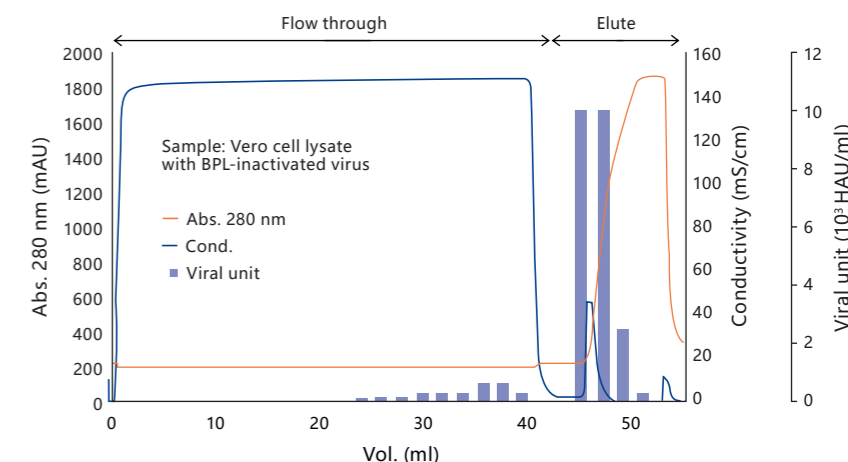
Cellufine Sulfate is a pseudo affinity ligand that mimics heparin. This resin has been used to purify viral vaccines and upstream cell cultures. Adsorbed viral particles are recovered by mild high salt conditions.

Figure A: Partial structure of Cellufine Sulfate



Characteristics	
Ligand	Sulfate Ester
Ligand Conc.	~8 µM/mL
Adsorption Cap.	Lysozyme > 3 mg/mL; HBsAg 6 - 8 mg/mL

Figure B: Purification of human coronavirus (OC43) with Cellufine Sulfate



Conditions

Column: 5 mm ID x 15 mm L (0.3 mL)
Flow rate: 0.3 mL/min (residence 1 min)
Equilibration: 10 mM Na₃PO₄, 150 mM NaCl (pH 7.4)
Elution: 10 mM Na₃PO₄, 2 M NaCl (pH 7.4)

Cellufine™ MAX DexS-HbP & DexS-VirS

Cellufine MAX DexS is a new pseudo affinity ligand based on dextran sulfate modification. This non-animal derived affinity ligand can be used instead of immobilized Heparin. JNC offers two different DexS resins, -HbP and -VirS, by adapting different polymer lengths of dextran sulfate. MAX DexS-HbP is mainly designed for heparin binding proteins. MAX DexS-VirS is used for purifying virus and virus-like particles.

Characteristics	Cellufine™ MAX DexS-HbP	Cellufine™ MAX DexS-VirS
Ligand	Dextran Sulfate	
Sulfur Contents	≥36 µmol/mL	≥74 µmol/mL
Lactoferrin Adsorption Capacity	≥50 mg/mL	≥56 µmol/mL

Figure C: 10% DBC of Inactivated Influenza Virus with Cellufine MAX DexS-VirS

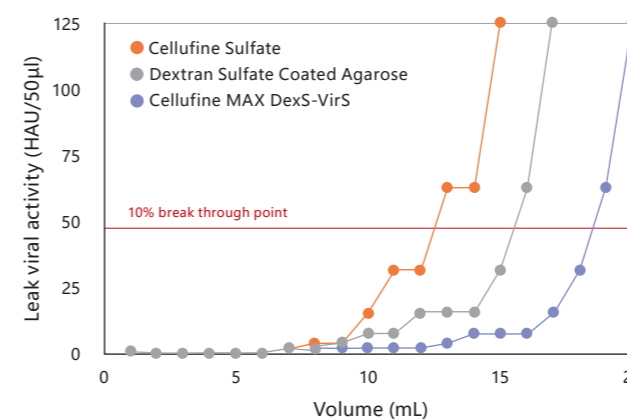
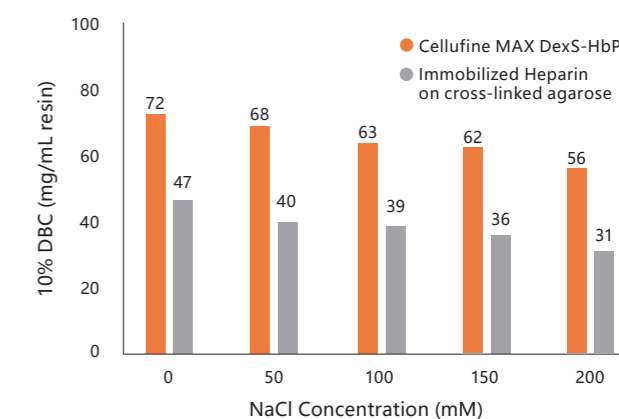


Figure D: Lactoferrin binding to Cellufine MAX DexS-HbP + Heparin Cross-Linked Agarose

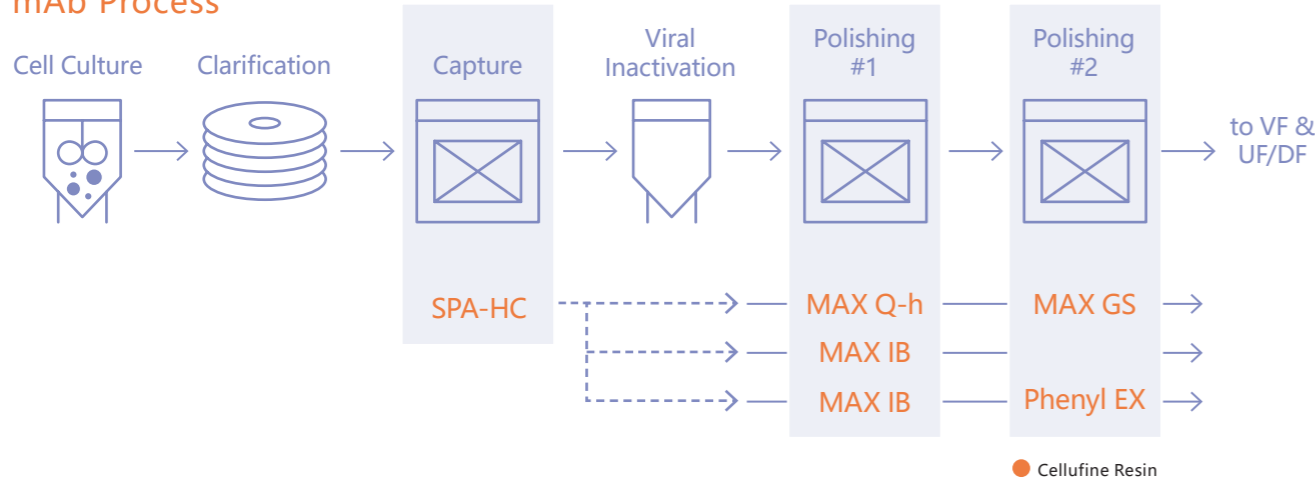


Y. Sakoda, et al. Purification of human and avian influenza viruses using cellulose sulfate ester (Cellufine Sulfate) in the process of vaccine production, *Microbiol Immunol* 2012; 56: 490-495.

Monoclonal Antibody (mAb) Purification

JNC Corp offers a wide range of Cellufine chromatography resins to support antibody capture and polishing. With Protein A, IEX, HIC, and mixed mode resins all based on our biocompatible cellulose spherical beads, our mAb family of resins is ideal for the large-scale purification of mAbs.

mAb Process



PROTEIN A CHROMATOGRAPHY

Cellufine™ SPA-HC

Cellufine SPA-HC is an affinity chromatography resin designed for the isolation of mAbs. It shows excellent flow properties, low ligand leachate levels, high dynamic binding capacity, and good retention of binding after multiple cycles of base cleaning in place and re-use. This high performance affinity resin enables development of efficient purification processes for downstream purification of therapeutic mAbs.

Characteristics	
Ligand	Alkali ligand highly stable r-Protein A
Matrix	70 μm of highly cross-linked cellulose beads
Adsorption Capacity	pAb > 70 mg/mL (at R.T. = 6 min) mAb > 65 mg/mL (at R.T. = 4 min)
Rec. Elution pH	pH 3.0 - pH 3.5, acetate or citrate buffer
Rec. CIP Solution	0.1 M NaOH

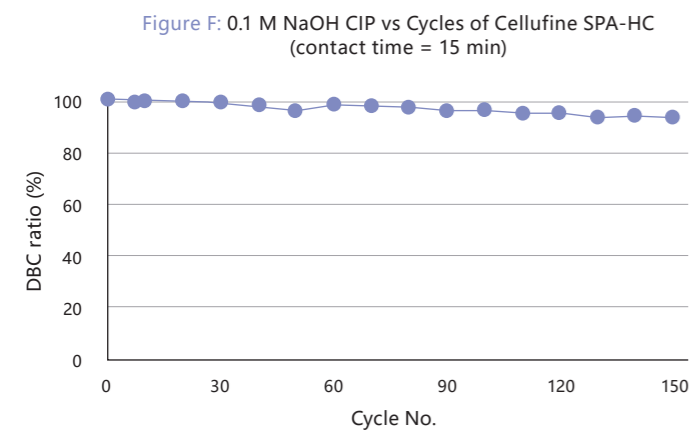
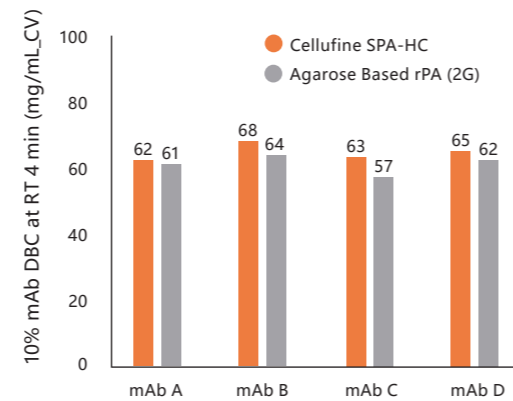


Figure E: C_{10%} mAb DBC at RT= 4 min with Cellufine SPA-HP



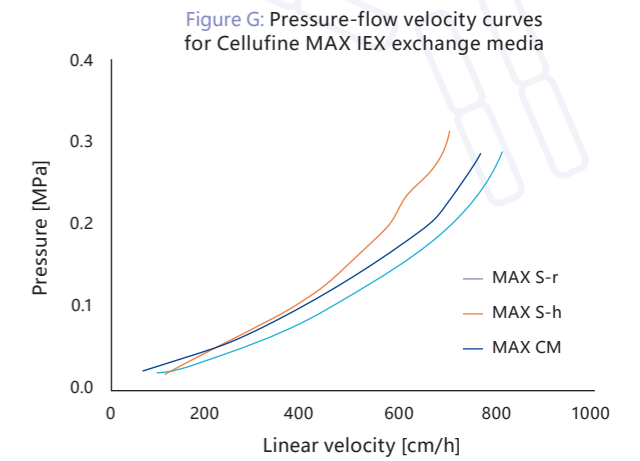
Conditions
 Column: Super Edge 1 mL
 Protein: mAb A, B, C, D
 Buffer: 20 mM Tris-HCl + 0.15 M NaCl (pH 7.5)
 Flow rate: 0.265 mL/min

ION EXCHANGE CHROMATOGRAPHY

Cellufine™ MAX IEX series (dextran based IEX coating)

Efficient mass-transfer characteristics of Cellufine MAX IEX resins translate to superior dynamic binding capacities (DBC). These resins exhibit superior dynamic binding performance and have a good stability over a range of residence times as indicated on the following page.

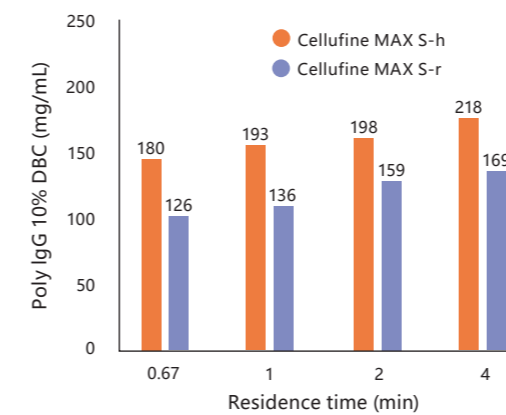
Cellufine MAX IEX resins enable high-flow operation, which is essential to efficient purification of biopharmaceuticals. Figure G shows pressure-flow velocity curves of Cellufine MAX cation IEX resin in a 30 cm column with a 20 cm bed height. All Cellufine MAX IEX resins are operable at practical flow velocities (500 cm/h) and pressures. Our "-h type" IEX resins are designed for higher binding capacities than "-r type" through ligand optimization and dextran scaffolding.



Conditions
 Column: 30 cm ID x 20 cm L
 Mobile phase: Pure water at 20 °C

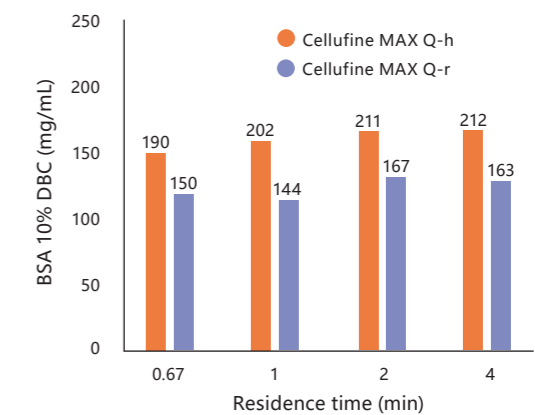
Characteristics	MAX CM	MAX S-r	MAX S-h	MAX DEAE	MAX Q-r	MAX Q-h	
Particle Size (μm)	40 - 130 μm (ca. 90 μm)						
Ligand	CM	S	S	DEAE	Q	Q	
Ion Exchange Capacity (meq / mL-gel)	0.09 - 0.22	0.09 - 0.21	0.10 - 0.22	0.12 - 0.22	0.10 - 0.20	0.13 - 0.22	
10% DBC (mg/mL)	Lysozyme / BSA	220	144	191	197	141	225
	Human-γ-globulin	104	131	216	108	74	135
pH Stability	2 - 13	2 - 13	3 - 14	2 - 12	2 - 12	2 - 12	
Operating Pressure	< 0.3 MPa						

Figure H: Dynamic Binding Capacities of Cellufine MAX cation exchange media



Conditions
 Column: 5 mm ID x 50 mm L
 IgG concentration: 1 mg/mL
 Buffer: Acetate-50mM NaCl (pH 4.3)

Figure I: Dynamic Binding Capacities of Cellufine MAX anion exchange media



Conditions
 Column: 5 mm ID x 100 mm L
 BSA concentration: 1 mg/mL
 Buffer: 50 mM Tris-HCl (pH 8.5)

Cellufine™ MAX IEX-cont.

Figure J: Model protein separation with two Cellufine IEX resins

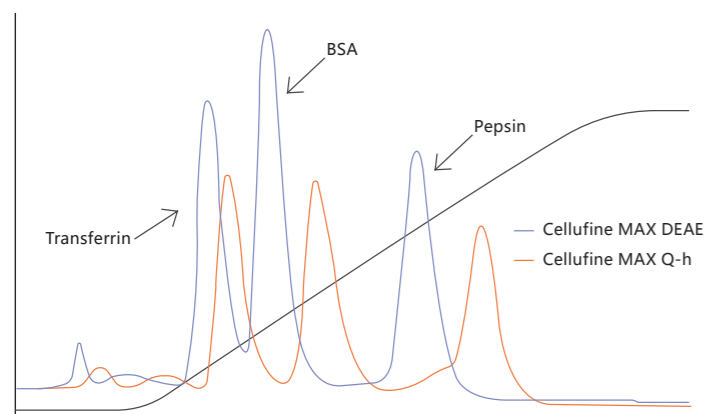


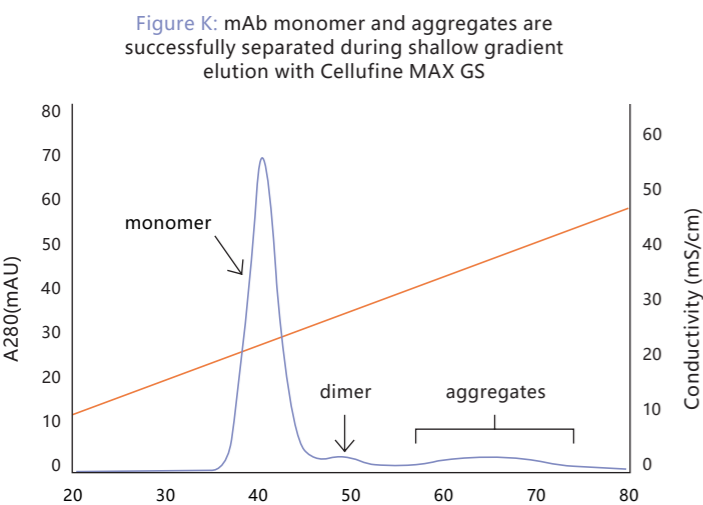
Figure J shows model protein separation with Cellufine MAX Q-h and Cellufine MAX DEAE (strong anion vs. weak anion). Cellufine MAX IEX resins are optimized for high adsorption and high resolution.

Conditions
 Column: 6.6 mm ID x 50 mm L
 Buffer A: 50 mM Tris-HCl (pH 8.5)
 Buffer B: 50 mM Tris-HCl (pH 8.5)-1 M NaCl (0→75 % linear gradient)
 Flow rate: 0.86 mL/min (residence time: 2 min)
 Proteins: Transferrin (5 mg/mL), BSA (10 mg/mL), Pepsin (5 mg/mL)
 Injection volume: 1.5 mL

Cellufine™ MAX GS (graft homo-polymer based IEX coating)

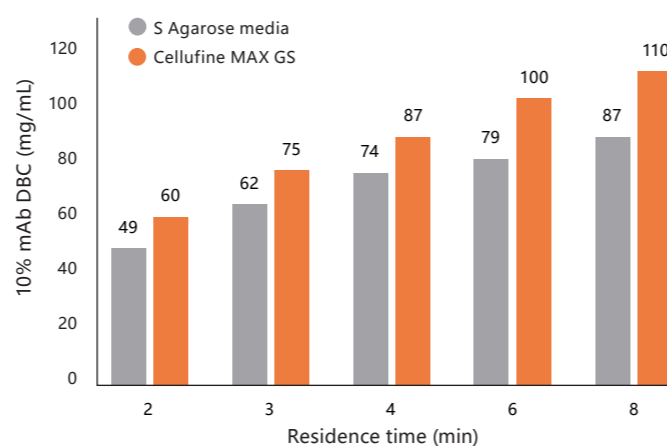
Characteristics	
Particle Size (µm)	40 - 130 µm (ca. 90 µm)
Ligand	—R-SO ₃ ⁻ Na ⁺ (Graft)
Polyclonal IgG 10% DBC	≥ 70 mg/mL (at R.T. = 4 min)
pH Stability	2 - 13
Operating Pressure	< 0.3 MPa

Cellufine MAX GS is a novel cation exchange resin designed specifically for removal of mAb aggregates after the initial Protein A capture step. Our proprietary surface modification with grafted polymeric chains containing ion exchange functionality results in a unique media that resolves aggregates from monomeric mAbs.



Conditions
 A: 10 mM Acetate pH 4.5 + 50 mM NaCl
 B: 10 mM Acetate pH 4.5 + 0.5 M NaCl
 Gradient: 75 CV
 Injection: Acid-treated mAb1

Figure L: Comparison of mAb Dynamic Binding Capacity (DBC) with S Agarose media and Cellufine MAX GS



Conditions
 mAb: monoclonal antibody (5 mg/mL)
 Column: 5 mm ID x 50 mm L
 Poly_IgG: 1 mg/mL
 Adsorption: 10 mM Acetate (pH 5.0) + 50 mM NaCl

HYDROPHOBIC INTERACTION

Cellufine™ MAX HIC / HIC series

Cellufine MAX HIC series is a second-generation Cellufine media with high flow characteristics based on our highly cross-linked base bead technology. We offer a range of hydrophobicities so that you can fine-tune the HIC separation of your antibody. Cellufine Phenyl EX, part of the HIC series, can be used in two-step antibody purifications, while MAX Phenyl, Phenyl LS, and Butyl chemistries are also available.

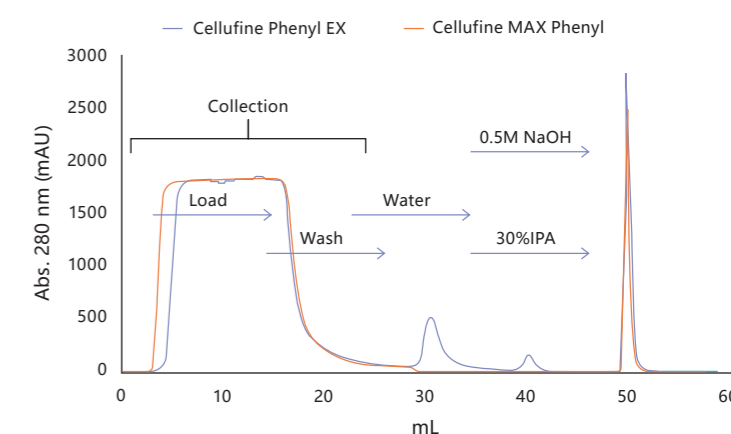
Characteristics				
Grade	Cellufine Phenyl EX	Cellufine MAX Phenyl	Cellufine MAX Phenyl LS	Cellufine MAX Butyl
Particle Diameter	ca. 40 ~ 130 µm			
Ligand	Phenyl group			Butyl
BSA Adsorption Capacity [mg/mL]	13	11	4	9
BSA Recovery [%]	30	40	90	70
Operating Pressure	< 0.2 MPa	< 0.3 MPa	< 0.3 MPa	< 0.3 MPa
pH Stability	pH 2 - 13			

Cellufine™ Phenyl EX

Cellufine Phenyl EX is ideal for removing aggregates from monoclonal antibodies in flow-through mode. In Figure M we show its aggregate removal capabilities for a monoclonal antibody that had been first purified with a Protein A column. In this study, the conductivity of the sample could be adjusted to a low strength of 6 mS / cm yet still remove aggregates. Unlike ordinary HIC resins, the low conductivity operation of Phenyl EX minimizes the risk of both chromatography equipment corrosion and buffer precipitation.

As shown in Table 1, the mAb aggregate was present at 3.6% before column loading, but it was reduced to 0.4% by passing Cellufine Phenyl EX.

Figure M: Purification of antibody aggregates with two Cellufine HIC resins



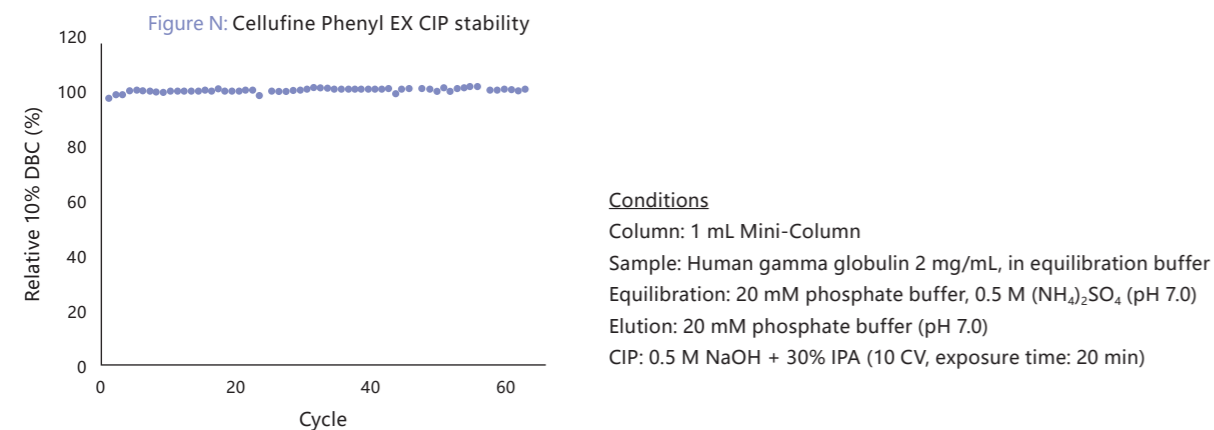
Conditions
 Column: 1 mL mini column
 Flow: Residence time 4 min (75 cm/h)
 Sample: mAb after Protein A column 6.6 mg/mL, pH 6, 6 mS/cm
 Load antibody: 93 mg_mab/mL_CV
 Equilibration: 20 mM AcOH-Tris + NaCl, pH 6, 6 mS/cm and wash

Table 1: Aggregate removal results of two Cellufine HIC resins

Resin	Aggregate % (before load)	Aggregate % (after load)	Recovery %
Cellufine Phenyl EX	3.6	0.4	87
Cellufine MAX Phenyl	3.6	1.3	99

Cellufine™ Phenyl EX-cont.

Cellufine Phenyl EX can be used repeatedly. Below we show repeated cycles after performing cleaning-in-place using a solution containing 0.5 M sodium hydroxide and 30% isopropanol. The adsorption performance did not change even after 60 cycles.

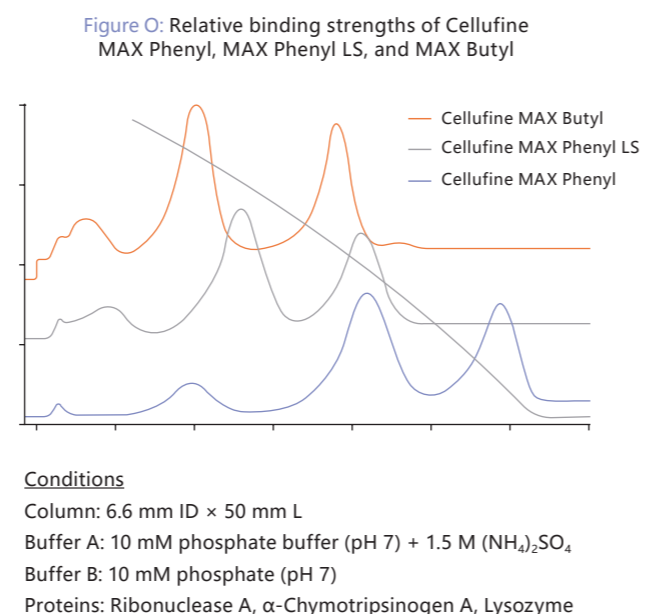


Our various ligand design concepts allow for flexibility in applying Cellufine MAX HIC resins to a wide range of applications in antibody purification

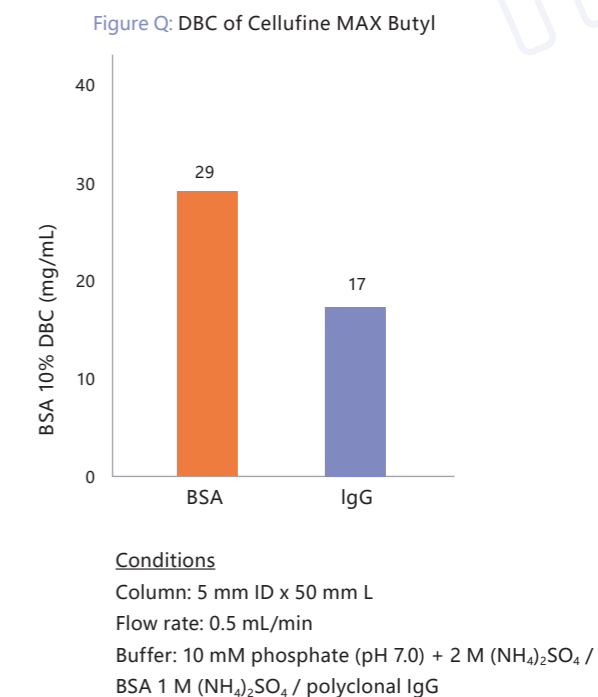
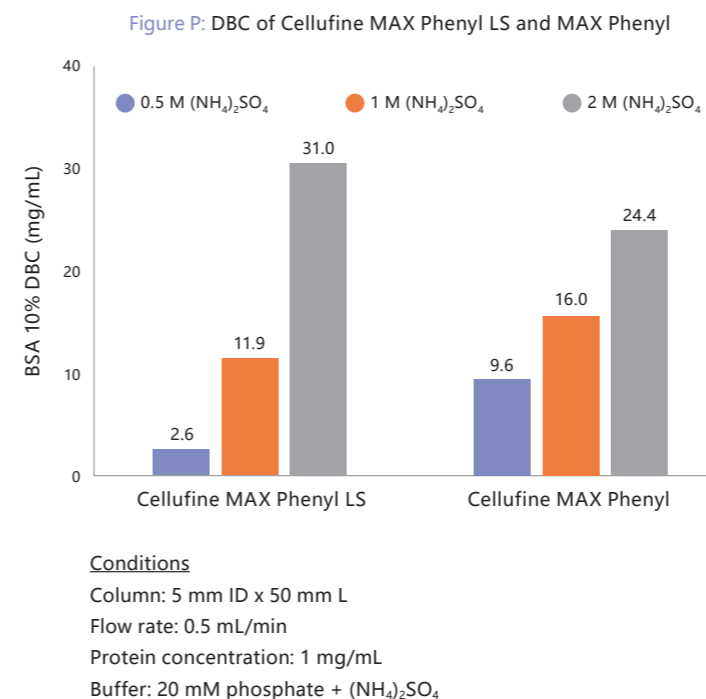
Cellufine™ MAX Butyl, Phenyl, & Phenyl LS

Figure O demonstrates the optimized high resolution of Cellufine MAX Phenyl (standard), MAX Phenyl LS (low substitute), and MAX Butyl. Protein separation studies show that their relative binding strengths are MAX Phenyl > MAX Phenyl LS > MAX Butyl.

The efficient mass transfer characteristics of Cellufine MAX HIC resins translate to superior dynamic binding capacities (DBC). Figures on the following page show DBC of model proteins for Cellufine MAX Phenyl LS and Phenyl resin (left), and MAX Butyl resin (right), respectively. The ligand design concepts allow for flexibility in applying Cellufine MAX HIC resins to a wide range of applications in antibody purification.



Cellufine™ MAX Butyl, Phenyl, and Phenyl LS-cont.



MIXED MODE

Cellufine™ MAX IB

Cellufine MAX IB is a mixed mode resin developed specifically for mAb purification after the Protein A step. This resin has a salt-tolerant polyamine surface modification that has been partially modified with butyl groups. The ligand structure of Cellufine MAX IB is described in Figure R.

Characteristics	
Particle Size	40 - 130 μm (ca. 90 μm)
Ligand	Polyallyl amine partial mod. with a butyl group
Adsorption Capacity	64 mg/mL (low salt) 59 mg/mL (high salt)
Operation Pressure	< 0.3 MPa

This research is partially supported by the developing key technology for discovering and manufacturing pharmaceuticals used for next-gen treatments and diagnoses both from the Ministry of Economy, Trade and Industry, Japan and from Japan Agency for Medical Research and Development.

Figure R: Partial structure of Cellufine MAX IB

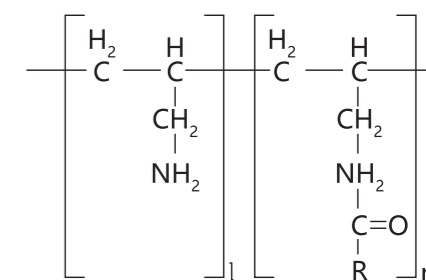
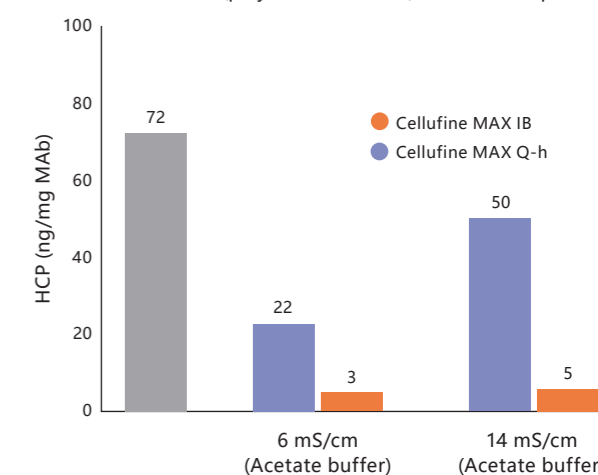


Figure S: HCP removal by Cellufine MAX IB and Cellufine MAX Q-h (polymer modified Q) after ProA step



Activated Supports for Immobilization

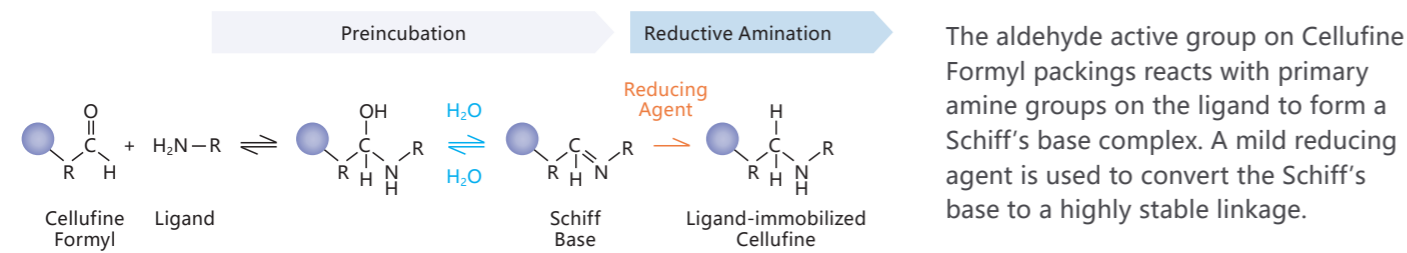
AFFINITY

Cellufine™ Formyl

Cellufine Formyl is an activated support for immobilization of antibodies and antigens that provides state-of-the-art laboratory performance at process-scale. Based on rigid spherical cellulose beads with large pore size and high ligand density, the cellulose backbone offers very low non-specific adsorption without the ligand leakage problems of agarose.

Characteristics	
Particle Size	125 - 210 μm
Substrate/Support	Crosslinked cellulose / Formyl
Active Group	Aldehyde
Density	15 - 20 μmol/mL

Figure T: Coupling procedure of protein ligands to Cellufine Formyl



Endotoxin Removal

AFFINITY

Cellufine™ ET Clean L/S

Cellufine ET Clean is poly(ε-lysine) immobilized Cellufine. The resin binds and removes endotoxin from your sample solution. The poly(ε-lysine) is a microbial poly (amino acid) that consist of 30-35 lysine residues produced by *Streptomyces albus*.

Characteristics		
Products	Ligand Conc.	Pore Size
Cellufine ET Clean S	> 1 μmol/mL	M _{lim} 2000
Cellufine ET Clean L	> 1 μmol/mL	>M _{lim} 2x10 ⁶

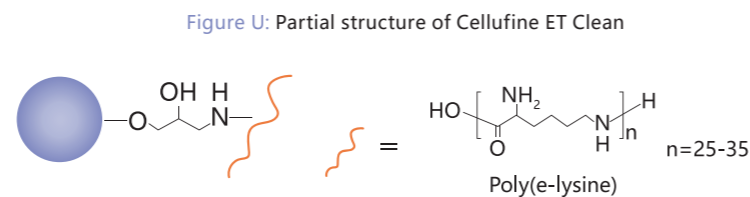


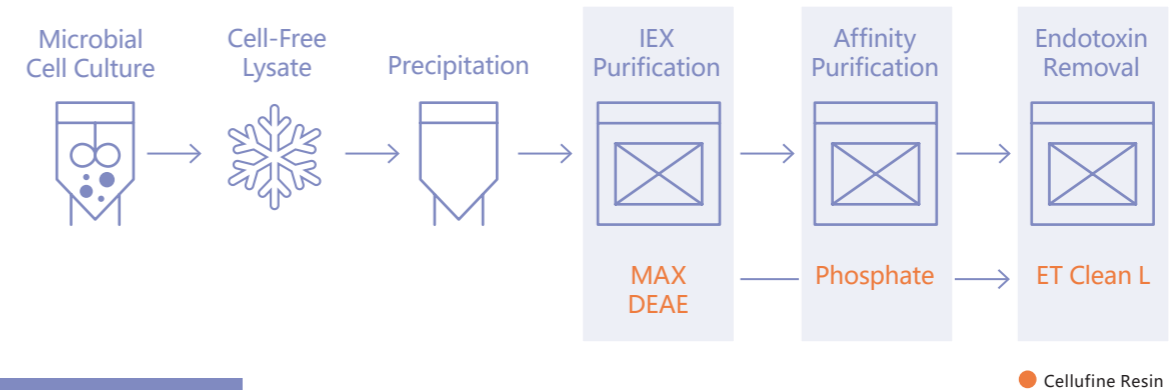
Table 2: Removal of Lipopolysaccharides (LPS) from a Protein Solution by Cellufine ET Clean

Sample Solution			ET Clean S (NaCl 50 mM, pH7.0)		ET Clean L (NaCl 50 mM, pH7.0)	
Protein	pI	LPS conc. in protein solution (pg mL ⁻¹)	Remaining LPS (pg /mL ⁻¹)	Recovery of Protein (%)	Remaining LPS (pg/mL)	Recovery of Protein (%)
BSA	4.9	32,000	45	99	<10	97
γ-Globulin	7.4	5,600	20	99	<10	97
Cytochrome C	10.6	1,500	15	99	<10	98

mRNA-Related Enzyme Purification

In vitro transcription (IVT) for mRNA production utilizes enzymes such as T7 RNA polymerase to synthesize RNA from a DNA template. JNC Corp. has developed a range of chromatography resins that are ideal for the purification of these nucleic acid-related enzymes.

T7 RNA Polymerase Process

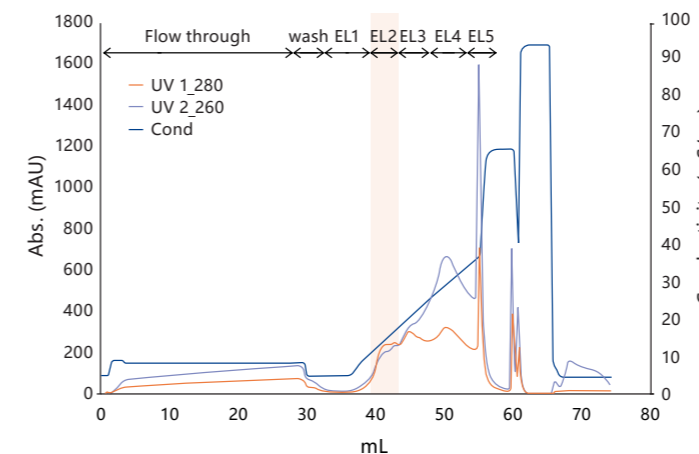


ION EXCHANGE

Cellufine™ MAX DEAE

Cellufine MAX DEAE is a weak anion exchange resin that is suitable for DNA removal as well as the reduction of contaminated protein. It can be applied as an initial IEX purification step for mRNA-related enzymes. Figure V below demonstrates the purification of T7 RNA polymerase in bind and elute mode.

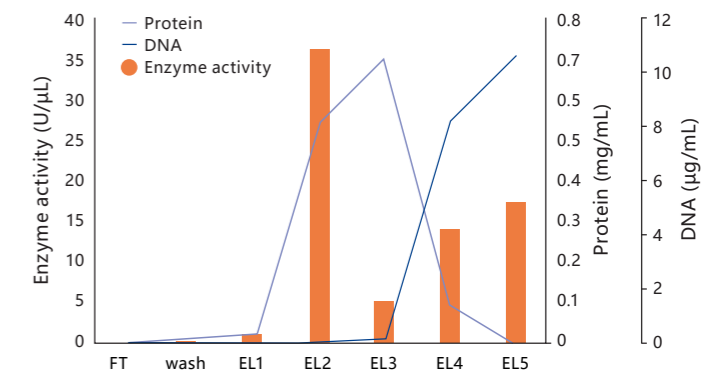
Figure V: EX purification of T7 RNA polymerase with Cellufine MAX DEAE



Conditions: Fig V
 Bind and Elute Mode
 Column: Super Edge 1 mL, 6.7 mm ID x 30 mm L, CV = 1.06 mL
 Flow rate: 0.5 mL/min (residence time 2 min)
 Loading + Wash Buffer: 10 mM Tris-HCl pH 7.5, 50 mM NaCl, 0.1 mM EDTA 0.5 mM DTT, 10% (v/v) glycerol + protease inhibitors
 Elution buffer: 1 M NaCl in the loading buffer
 Sample: (NH₄)₂SO₄ precipitation cell culture (adjusted 10 mS/cm)

Analytical Method: Fig W
 Enzyme activity: T7 RNA polymerase assay kit (ProFoldin)
 Total protein: Bradford assay (Bio-Rad)
 Total DNA: PicoGreen™ assay kit (Thermo Fisher Scientific)

Figure W: Successful DNA removal and high enzyme activity in eluted fraction after MAX DEAE purification



Characteristics	
Particle Size (μm)	40 - 130 μm (ca. 90 μm)
Ligand	DEAE
Ion Exchange Cap. (meq / mL-gel)	0.12 - 0.22
10% DBC (mg/mL) Lysozyme/BSA	197
10% DBC (mg/mL) Human-γ-globulin	108
pH Stability	2 - 12
Operating Pressure	< 0.3 MPa

AFFINITY

Cellufine™ Phosphate

Cellufine Phosphate is preferably applicable to purification of DNA binding protein and nucleic acids related protein. The resin can work as cation exchange chromatography resin.

Characteristics	
Ligand	Phosphate ester
Ligand Conc.	0.3 - 0.8 meq/mL
Adsorption Capacity	≥ 20 mg/mL (lysozyme)

Figure Y: Partial Structure of Cellufine Phosphate

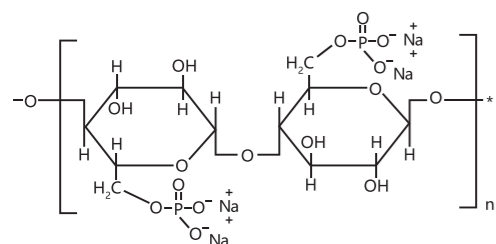
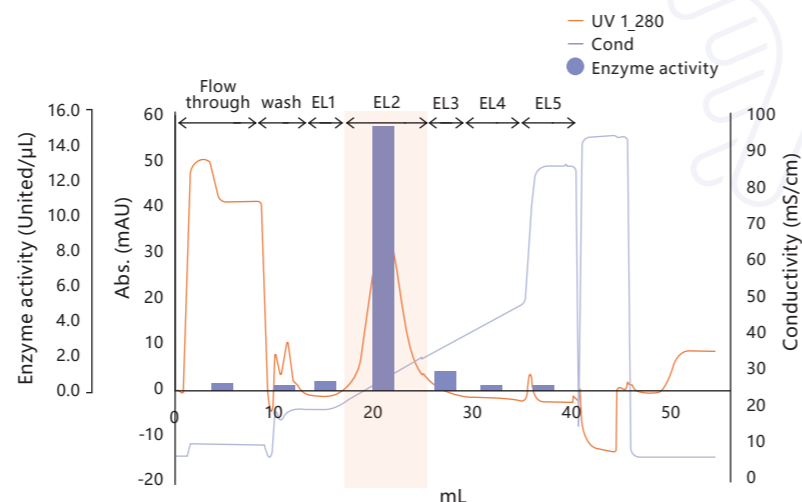


Table 3 shows the enzyme activity and protein recovery after column purification with Cellufine Phosphate (Figure X). The activity of T7 RNA polymerase in the eluted fraction was as high as 70.2%. The amount of protein was reduced to 24.7%, indicating that contaminants were efficiently removed.

Table 3: Recovery of T7 RNA polymerase in each fraction after column

Fraction	Enzyme Activity (unit/protein)	Enzyme Recovery (%)	Protein Recovery (%)
Load Sample	94043	100	100
Flowthrough Fraction	2763	1.8	59.8
Elution Fraction	267034	70.2	24.7

Figure X: Purification of T7 RNA polymerase with Cellufine Phosphate



Conditions

Column: 16 mm ID x 100 mm L (20 mL) packed w/ Cellufine Phosphate
 Flow rate: 3 mL/min (90 cm/h)
 Sample: 7.5 mg of RusA D70N obtained after Heparin-agarose media
 Gradient: 200 mL from 0.1 to 1.3 M NaCl in 50 mM tris-HCl (pH 8.0)

Complete Cellufine Lineup

ADSORPTION

ION EXCHANGE

DEAE Weak Anion

Cellufine A-200	90 μm (Avg)
Cellufine A-500	90 μm (Avg)
Cellufine A-800	90 μm (Avg)
Cellufine MAX DEAE	90 μm (Avg)

QA Strong Anion

Cellufine Q-500	90 μm (Avg)
Cellufine MAX Q-r	90 μm (Avg)
Cellufine MAX Q-h	90 μm (Avg)
Cellufine MAX Q-hv	90 μm (Avg)

CM Weak Cation

Cellufine C-500	90 μm (Avg)
Cellufine MAX CM	90 μm (Avg)

S Strong Cation

Cellufine S-500	90 μm (Avg)
Cellufine MAX S-r	90 μm (Avg)
Cellufine MAX S-h	90 μm (Avg)

mAb Aggregate Removal

Cellufine MAX GS	90 μm (Avg)
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PROTEIN A AFFINITY

mAb Capture

Cellufine SPA-HC	70 μm (Avg)
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MIXED MODE

mAb Polishing

Cellufine MAX IB	90 μm (Avg)
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AFFINITY

Virus & Heparin Binding Proteins

Cellufine Sulfate	80 μm (Avg)
Cellufine MAX DexS-Hbp	90 μm (Avg)
Cellufine MAX DexS-VirS	90 μm (Avg)

Endotoxin Removal

Cellufine ET Clean L	80 μm (Avg)
Cellufine ET Clean S	90 μm (Avg)

mRNA-Related Enzyme Purification

Cellufine Phosphate	90 μm (Avg)
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Activated Supports for Immobilization

Cellufine Formyl	150 μm (Avg)
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HYDROPHOBIC INTERACTION

Cellufine MAX Phenyl	90 μm (Avg)
Cellufine MAX Phenyl LS	90 μm (Avg)
Cellufine MAX Butyl	90 μm (Avg)
Cellufine MAX Butyl HS	90 μm (Avg)
Cellufine Phenyl EX	90 μm (Avg)

PARTITION

GEL FILTRATION

Size Exclusion MW 50 - 3000 kDa

Cellufine GCL-2000HF	90 μm (Avg)
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Desalting and Buffer Exchange

Cellufine GH-25	80 μm (Avg)
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Creating joy with chemistry.

We at JNC Group provide joy for tomorrow to realize a sustainable future through technologies, products, and services.

Ordering Information

Product Name	Quality	Catalogue No.
PROTEIN A AFFINITY		
Cellufine SPA-HC	1 mL x 1 (Mini-Column)	21900-11
	1 mL x 5 (Mini-Column)	21900-51
	5 mL x 1 (Mini-Column)	21900-15
	10 mL	21900
	50 mL	21901
	500 mL	21902
	5 L	21903
10 L	21904	
AFFINITY		
Cellufine Sulfate	1 mL x 5 (Mini-Column)	19845-51
	5 mL x 1 (Mini-Column)	19845-15
	10 mL	676943324
	50 mL	19845
	500 mL	19846
	5 L	19847
10 L	19849	
Cellufine MAX DexS-HbP	1 mL x 5 (Mini-Column)	21700-51
	5 mL x 1 (Mini-Column)	21700-15
	10 mL	21700
	50 mL	21701
	500 mL	21702
	5 L	21703
10 L	21704	
Cellufine MAX DexS-VirS	1 mL x 5 (Mini-Column)	21800-51
	5 mL x 1 (Mini-Column)	21800-15
	10 mL	21800
	50 mL	21801
	500 mL	21802
	5 L	21803
10 L	21804	
Cellufine ET Clean L	1 mL x 5 (Mini-Column)	20051
	5 mL x 1 (Mini-Column)	20015
	10 mL	681984324
	50 mL	681984326
	500 mL	681984328
	5 L	681984330
10 L	681984335	
Cellufine ET Clean S	1 mL x 5 (Mini-Column)	20151
	5 mL x 1 (Mini-Column)	20115
	10 mL	682985324
	50 mL	682985326
	500 mL	682985328
	5 L	682985330
10 L	682985335	
Cellufine Formyl	10 mL	676944324
	50 mL	19853
	500 mL	19854
	5 L	19855
	10 L	676944335
Cellufine Phosphate	1 mL x 5 (Mini-Column)	19551
	5 mL x 1 (Mini-Column)	19515
	10 mL	19524
	50 mL	19545
	500 mL	19546
	5 L	684987330
10 L	684987335	

Product Name	Quality	Catalogue No.
ION EXCHANGE		
Cellufine A-200	1 mL x 5 (Mini-Column)	19611-51
	100 mL	676980327
	500 mL	19611
	5 L	19612
10 L	676980335	
Cellufine A-500	1 mL x 5 (Mini-Column)	19805-51
	5 mL x 5 (Mini-Column)	19805-55
	100 mL	675980327
	500 mL	19805
	5 L	19806
10 L	675980335	
Cellufine A-800	1 mL x 5 (Mini-Column)	19865-51
	5 mL x 5 (Mini-Column)	19865-55
	100 mL	673980327
	500 mL	19800
	5 L	19801
10 L	673980335	
Cellufine Q-500	1 mL x 5 (Mini-Column)	19907-51
	5 mL x 5 (Mini-Column)	19907-55
	100 mL	675982327
	500 mL	19907
	5 L	19908
10 L	675982335	
Cellufine C-500	1 mL x 5 (Mini-Column)	19800-51
	5 mL x 5 (Mini-Column)	19800-55
	100 mL	675983327
	500 mL	19865
	5 L	19866
10 L	675983335	
Cellufine S-500	1 mL x 5 (Mini-Column)	21200-51
	5 mL x 5 (Mini-Column)	21200-55
	100 mL	21200
	500 mL	21201
	5 L	21202
	10 L	21203
Cellufine MAX DEAE	1 mL x 5 (Mini-Column)	21000-51
	5 mL x 5 (Mini-Column)	21000-55
	10 mL	21000
	500 mL	21001
	5 L	21002
10 L	21003	
Cellufine MAX Q-r	1 mL x 5 (Mini-Column)	20500-51
	5 mL x 5 (Mini-Column)	20500-55
	100 mL	20500
	500 mL	20501
	5 L	20502
10 L	20503	

Ordering Information-cont.

Products	Quantity	Catalogue No.
ION EXCHANGE-cont.		
Cellufine MAX Q-h	1 mL x 5 (Mini-Column)	20600-51
	5 mL x 5 (Mini-Column)	20600-55
	100 mL	20600
	500 mL	20601
	5 L	20602
	10 L	20603
Cellufine MAX Q-hv	1 mL x 5 (Mini-Column)	22100-51
	5 mL x 5 (Mini-Column)	22100-55
	100 mL	22100
	500 mL	22101
	5 L	22102
	10 L	22103
Cellufine MAX CM	1 mL x 5 (Mini-Column)	20900-51
	5 mL x 5 (Mini-Column)	20900-55
	100 mL	20900
	500 mL	20901
	5 L	20902
	10 L	20903
Cellufine MAX S-r	1 mL x 5 (Mini-Column)	20300-51
	5 mL x 5 (Mini-Column)	20300-55
	100 mL	20300
	500 mL	20301
	5 L	20302
	10 L	20303
Cellufine MAX S-h	1 mL x 5 (Mini-Column)	20400-51
	5 mL x 5 (Mini-Column)	20400-55
	100 mL	20400
	500 mL	20401
	5 L	20402
	10 L	20403
Cellufine MAX GS	1 mL x 5 (Mini-Column)	21300-51
	5 mL x 5 (Mini-Column)	21300-55
	100 mL	21300
	500 mL	21301
	5 L	21302
	10 L	21303

Empty Mini-Column Kit

Products	Quantity	Catalogue No.
Empty 5 mL Mini-Column Starter Kit	1 x Screw-press/Stand & Rod	EMC5SK
	1 x Packing reservoir	
	10 x Empty column set	
	4 x Easy fitting	
Empty 1 mL Mini-Column Starter Kit	1 x Screw-press/Stand & Rod	EMC1SK
	1 x Packing reservoir	
	10 x Empty column set	
	4 x Easy fitting	
Empty 5 mL Column Set	10 x Column top cap & tube	EMC5C10
	10 x Frit (top & bottom)	
	20 x Stop plug	
Empty 1 mL Column Set	10 x Column top cap & tube	EMC1C10
	10 x Frit (top & bottom)	
	20 x Stop plug	

Products	Quantity	Catalogue No.
HYDROPHOBIC INTERACTION		
Cellufine MAX Butyl	1 mL x 5 (Mini-Column)	21100-51
	5 mL x 5 (Mini-Column)	21100-55
	100 mL	21100
	500 mL	21101
	5 L	21102
	10 L	21103
Cellufine MAX Butyl HS	1 mL x 5 (Mini-Column)	22200-51
	5 mL x 5 (Mini-Column)	22200-55
	100 mL	22200
	500 mL	22201
	5 L	22202
	10 L	22203
Cellufine MAX Phenyl	1 mL x 5 (Mini-Column)	20700-51
	5 mL x 5 (Mini-Column)	20700-55
	100 mL	20700
	500 mL	20701
	5 L	20702
	10 L	20703
Cellufine MAX Phenyl LS	1 mL x 5 (Mini-Column)	20800-51
	5 mL x 5 (Mini-Column)	20800-55
	100 mL	20800
	500 mL	20801
	5 L	20802
	10 L	20803
Cellufine Phenyl EX	1 mL x 5 (Mini-Column)	22000-51
	5 mL x 5 (Mini-Column)	22000-55
	100 mL	22000
	500 mL	22001
	5 L	22202
	10 L	22003
MIXED MODE		
Cellufine MAX IB	1 mL x 5 (Mini-Column)	21600-51
	5 mL x 1 (Mini-Column)	21600-15
	10 mL	21600
	50 mL	21601
	100 mL	21602
	500 mL	21603
	5 L	21604
	10 L	21605
GEL FILTRATION		
Cellufine GH-25	5 mL x 5 (Mini-Column)	19711-55
	100 mL	670000327
	500 mL	19711
	5 L	19712
	10 L	670000335
Cellufine GCL-2000HF	100 mL	21400
	500 mL	21401
	5 L	21402
	10 L	21403

JNC CORPORATION

PURCHASING / TECHNICAL SUPPORT

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