



Proteomix POR50-dT20 Affinity Resin

A New Generation of Sepax Oligo dT20 Affinity Resin

— Sepax Technologies, Inc. —



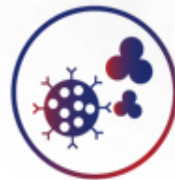
SEPAX TECHNOLOGIES



IEX



Affinity



HIC



SEC



RP

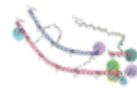


Mixed-mode

Full Life Cycle Support of Analytical and Process Chromatography



Bispecific



Insulin



Plasmid



Peptides

ADC

mRNA



MAb



Adenovirus



Recombinant Protein



AAV

Vaccine



mRNA Affinity Resins



Resin type	Monomix dT20	Proteomix POR50-dT20
Matrix	PMMA	PS/DVB
Particle size distribution D50	30 μm	50 μm
Pore size	1000 \AA	> 3000 \AA
Ligand	Oligo dT20-mer	
mRNA DBC	> 2.0 mg/mL resin	
Operating Temp. ($^{\circ}\text{C}$)	4-65	
pH range	2-12	
Operating pressure	≤ 10 bar (1 MPa)	
Mobile phase compatibility	Compatible with common salt buffers, organic/aqueous solutions (acetonitrile, ethanol, etc.), and commonly used additives for mRNA purification	
Storage	Store in a solution of 20% ethanol water and 2% benzyl alcohol at 2-8 $^{\circ}\text{C}$; Do not freeze fillers or columns	
Online CIP	0.1-0.5 M NaOH. It is recommended to start with 0.1 M NaOH to extend the life of the resin	

* DBC test on 1000 nt mRNA sample, binding condition: 10 mM Tris-HCl, 1 mM EDTA, 5 mM DTT, 1.0 M NaCl, pH 7.5



mRNA Affinity Resin Experiment



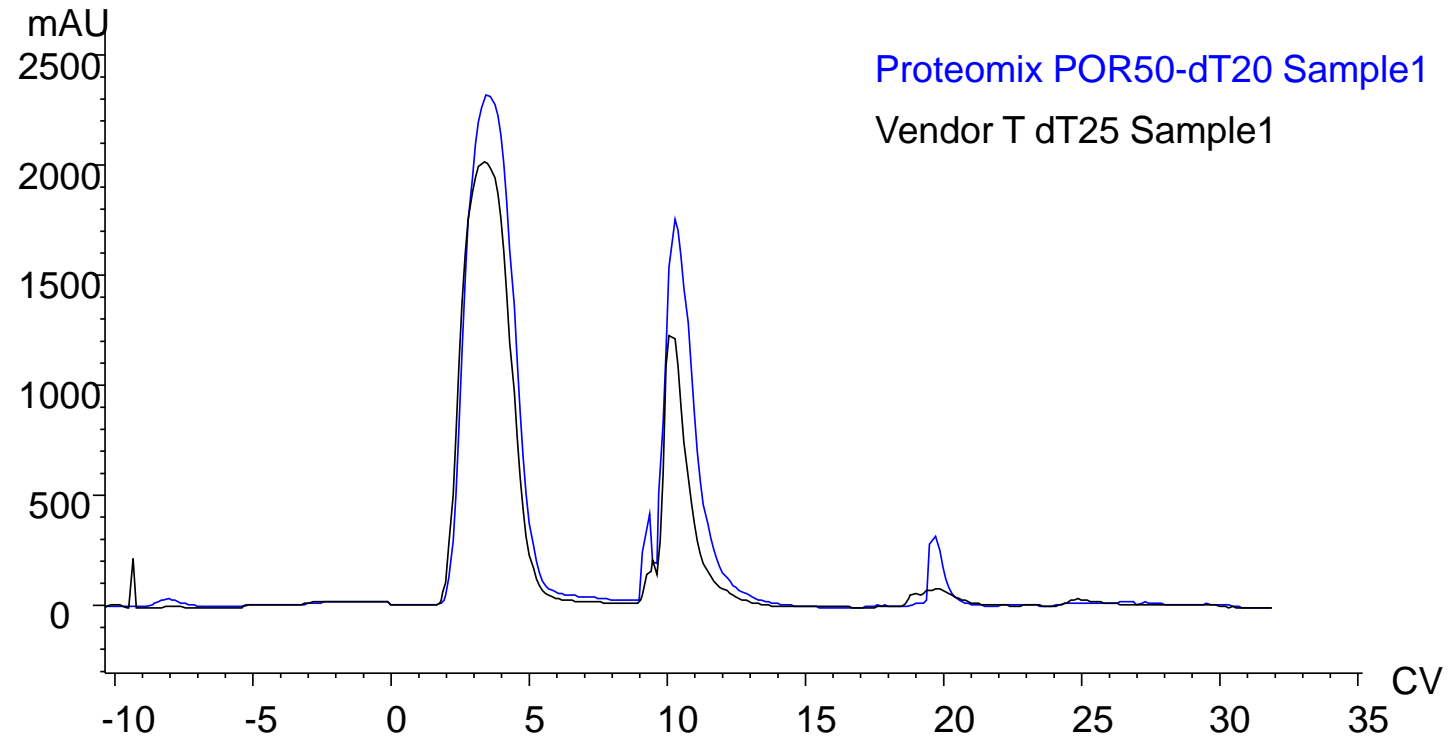
Step	Buffer	RT	CV	Remarks
CIP	0.1 M NaOH	5 min	5	
Equilibrium	10 mM Tris, 5 mM EDTA, 0.5-1.0 M NaCl, pH7.0	5 min	6	Adjust salt concentration based on the balance between load and purity
Loading		5 min	N/A	Load is related to molecular size and salt concentration
Equilibrium 1	10 mM Tris, 5 mM EDTA, 0.5-1.0 M NaCl, pH7.0	5 min	3	
Equilibrium 2	10 mM Tris, 5 mM EDTA, 0.25 -0.5 M NaCl, pH7.0	5 min	3	Salt concentration can be adjusted according to the strength of the binding
Elution	H ₂ O	5 min	10	Adjust the elution volume according to the actual situation
CIP	0.1 M NaOH	5 min	5	
Clean	H ₂ O	5 min	5	
Storage	20%ethanol	5 min	3	Ethanol backpressure is high, and the flow rate can be appropriately reduced



Case 1: Proteomix POR50-dT20 VS. Vendor T dT25



4300 nt mRNA



Sample 1: mRNA, 4300nt; Load: 2mg/mL Resin

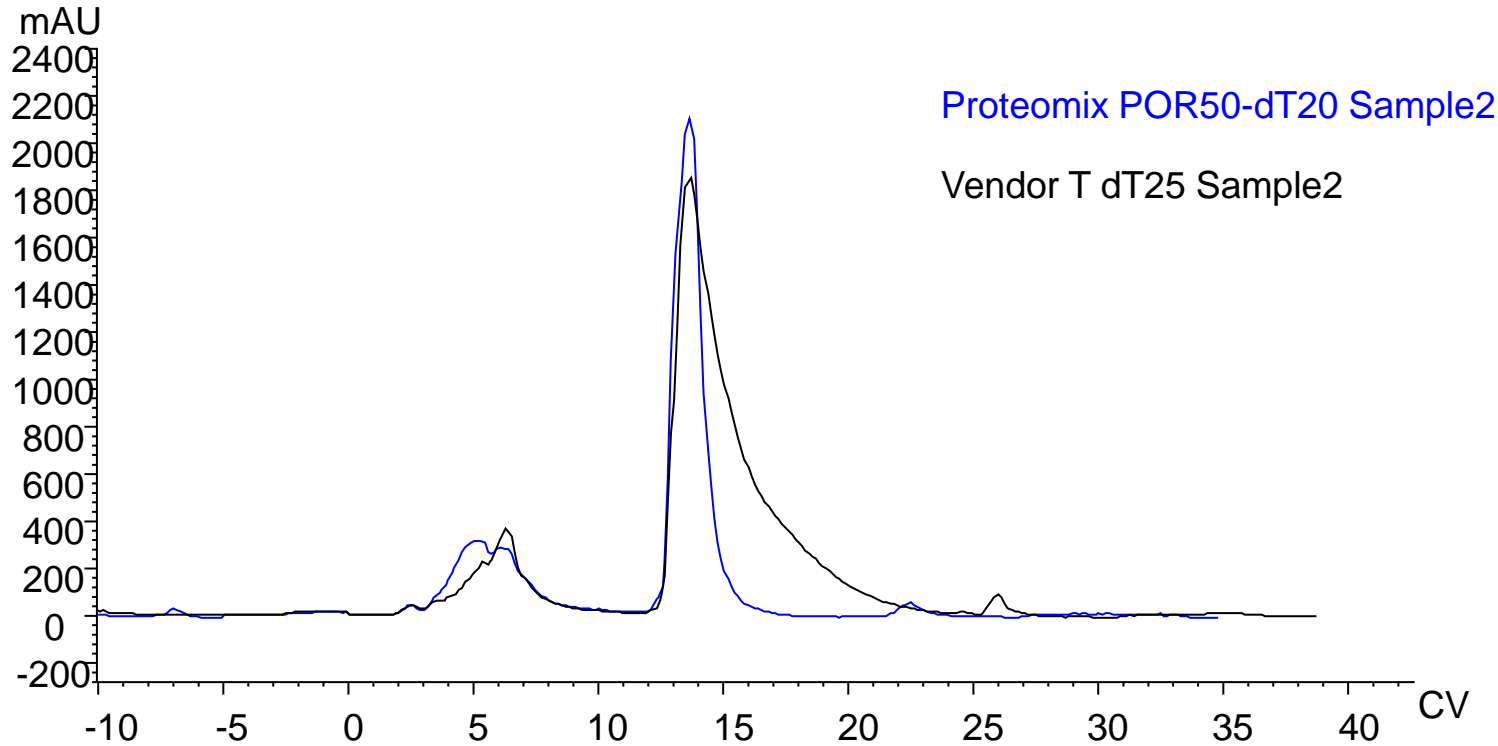
Resin	Yield%
Proteomix POR50-dT20	74.3
Vendor T dT25	61.1



Case 2: Proteomix POR50-dT20 VS. Vendor T dT25



4000 nt mRNA



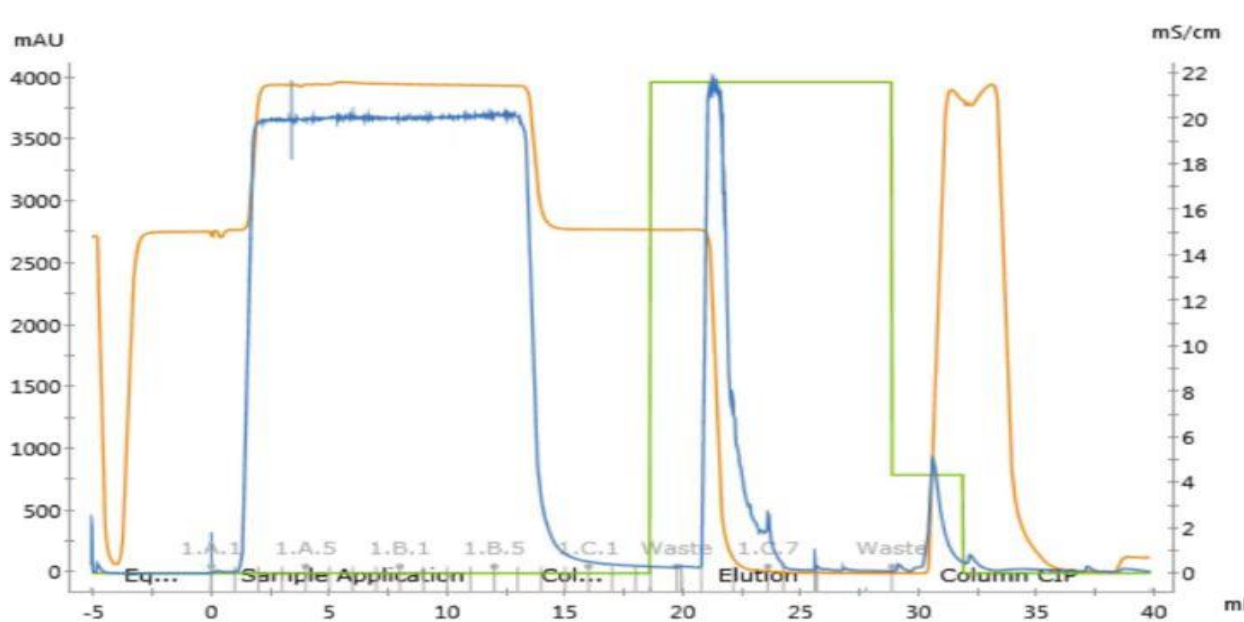
Sample 2: mRNA, 4000nt; Load: 2mg/mL Resin	
Resin	Yield%
Proteomix POR50-dT20	85.5
Vendor dT25	83.1 (Bigger Tailing)



Case 3: mRNA affinity-Proteomix POR50-dT20



Client feedback



Purification chromatogram is taken at 0.2M NaCl mRNA lading condition

This mRNA sample was tested with three Resin Brands: Sepax, Vendor T and Vendor N

The results show similar yield (~65%)
Loading test: Sepax and Vendor T both >2.0 mg/mL, while Vendor N is ~1.7 mg/mL

Evaluated mRNA purification at 0.1, 0.2, 0.5M NaCl loading condition. Best loading condition evaluated is 0.5M NaCl: 2.6mg/mL, 65% recovery. Higher loading capacity was achieved under higher salt concentration.

Sample: mRNA, 2000 nt
Prepacked 1mL column 7mm*25mm
DBC 2.6 mg/mL, Yield 65%



Case 4: 10,000 nt mRNA Purification



Client Feedback

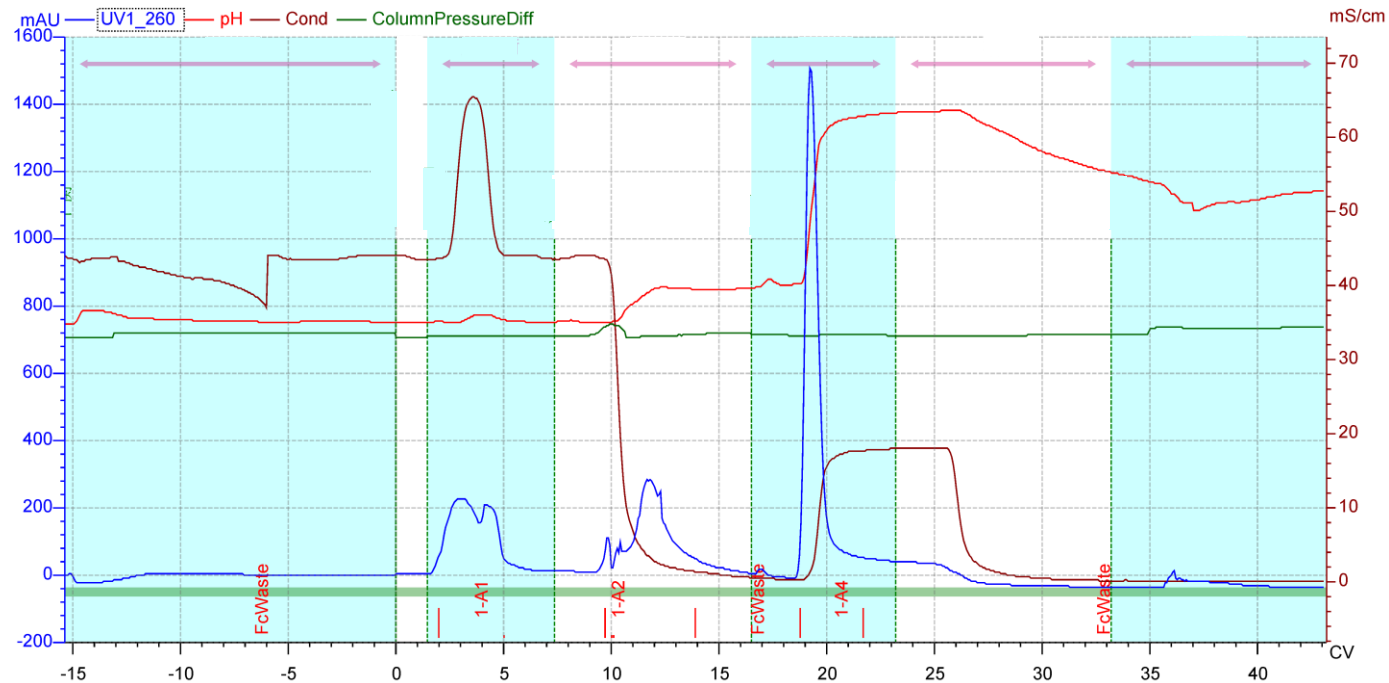
Column: Proteomix POR50-dT20 (4000Å, 6.6*30mm, CV=1.026mL)

Mobile phase A: 10 mM Tris, 1mM EDTA, 5mM DTT, 0.5M NaCl, pH7.4; B: Water-DEPC

Flow rate: 0.205 mL/min (5 min residence time) Detector: UV 260

Column temperature: RT

Sample: mRNA(0.1739mg/mL+0.5M NaCl in mobile phase A)



- ~1mg mRNA (10,000nt) was loaded
- Higher loading capacity, easier elution, higher mRNA recovery. Compared with Monomix dT20 resin product. Proteomix POR50-dT20 resin product works better for larger size mRNA.



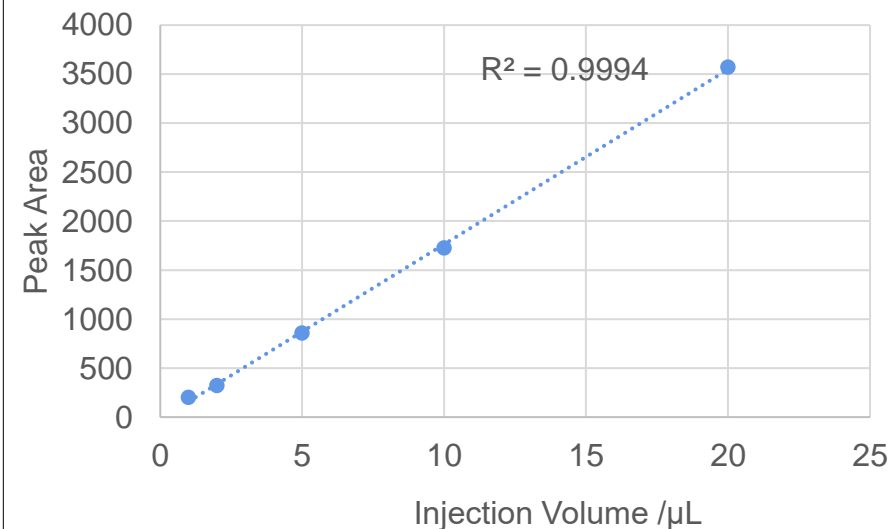
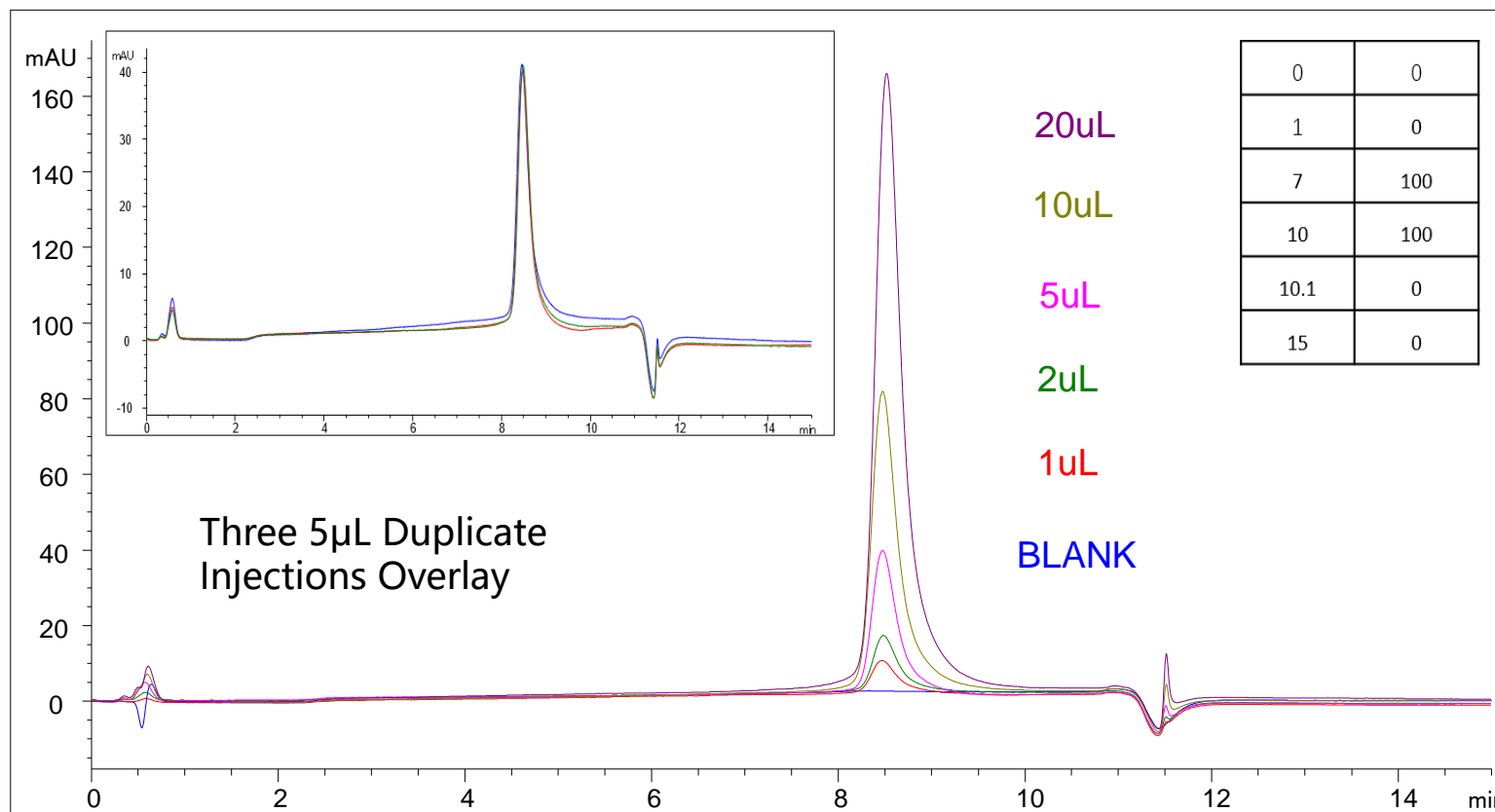
mRNA Affinity – HPLC Determination



Column: Proteomix POR50-dT20 HPLC Column 4.6×50mm (2221509D0-4605)

Mobile phase: A: 20mM Tris +1.0M NaCl, pH7.0 B:H₂O; Flow rate: 1.2 mL/min Detector : UV 260nm;

Column Temperature: RT; Injection volume: 1/2/5/10/20μL Sample: mRNA(150 ng/μL) ; Column Pressure: 26 bar



Inj.	Inj. Volume/μL	Inj. Amount/ng	Peak Area
1	1	150	203.4
2	2	300	323.4
3	5	750	858.3
4	10	1500	1726
5	20	3000	3570.3



Order Info



Resin Product – FPLC Purification

Product Name	Base Matrix	Particle /Pore Size	Specification	Part Number
Proteomix POR50-dT20 Affinity	PS/DVB	50 µm, >3000 Å	Resin	2221509D0
			4.2 mL Cartridge	2221509D0-750100

Resin package sizes are available in 1L, 5L, 10 L, 50 L
 Prepacked column cartridge sizes are available in 1, 4.2, 5 mL

HPLC column – Analytical Determination

Product Name	Base Matrix	Particle /Pore Size	Specification	Part Number
Proteomix POR50-dT20 Affinity	PS/DVB	50 µm, >3000 Å	4.6×50 mm	2221509D0-4605

Service – Customized Experience

Custom Oligo dT Affinity Resin and Column	Purification	Analytical Method Development	Column Packing and Analytical Testing
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