

Got Purification Troubles?

Improve mAb Purification Process Efficiency with Mixed-Mode Resins



The Challenge

Does your monoclonal antibody (mAb) purification process have three steps? Are you trying to improve purity, yield, and process economics?



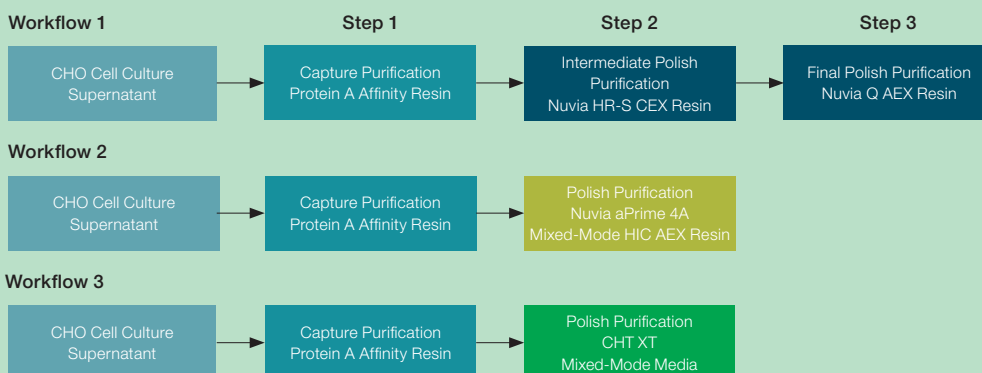
Purification Tip

Mixed-mode resins such as Nuvia aPrime 4A Hydrophobic AEX Resin and CHT™ Ceramic Hydroxyapatite XT Mixed-Mode Media can eliminate a purification unit operation, allowing you to obtain higher yield and comparable purity while saving time and money.



Our Approach

To evaluate the yield and purity of mAb purification by a traditional three-step process (workflow 1) and two-step processes (workflows 2 and 3), purification of a Chinese hamster ovary (CHO) cell-expressed trastuzumab biosimilar (pI 8.6) was performed.



Workflow	Step	Mode	HCP, ng/ml	Protein A, ng/ml	HCD, pg/μl	Monomer, %	Yield, %
All	Cell culture feed	–	4,252.0	–	90,348.9	N/A	N/A
1	1	Bind and elute	196.6	10.5	1,879.5	96.1	>95
1	2	Bind and elute	23.7	*	BDL	98.1	94.3
1	3	Flowthrough	3.0	4.1	BDL	99.2	97.1
2	2	Flowthrough	BDL	0.2	BDL	99.0	92.4
3	2	Bind and elute	3.5	0.1	0.15	99.0	>95

BDL, below detection limit; HCD, host cell DNA; HCP, host cell protein.

* Each workflow's leached Protein A concentration was determined only after the Protein A capture and final chromatography steps.

The results from the two-step processes demonstrate higher yield than the three-step process and comparable purity. The two-step processes removed leached Protein A twenty times more effectively than the three-step process. Additionally, host cell protein (HCP) and host cell DNA (HCD) removal is comparable across all three workflows, indicating that there is no compromise with the reduced number of processing steps.

Innovative Products. Customized Solutions.

Nuvia aPrime 4A Resin

Nuvia aPrime 4A Resin delivers:

- A wide experimental design space
- Optimal product recovery
- Single-step removal of multiple impurities

Go to bio-rad.com/NuviaaPrime4A to explore the various features of Nuvia aPrime 4A Resin.

CHT Ceramic Hydroxyapatite XT Media

CHT XT Media will put you on the path to:

- Efficient, single-step clearance of impurities
- Great process economics (cost and time efficiency)
- Unique selectivity
- Straightforward column packing; also available as prepacked, process-scale Foresight Pro Columns

Go to bio-rad.com/CHTXT to explore the various features of CHT XT Media.

Services and Support

We offer multiple service and support levels to deliver solutions tailored to your needs.

- Method development
- Process development
- Column packing support
- Global technical support



Process purification bottles, columns, and plates.

Global Supplier

We are a global supplier of process resins and columns with more than 30 support sites across six continents. Contact your regional Bio-Rad process chromatography specialist by email at process@bio-rad.com or call our customer service at 1-800-4-BIORAD (1-800-424-6723). Connect with us for news, events, and the latest product information:



[linkedin.com/company/bio-rad](https://www.linkedin.com/company/bio-rad)



twitter.com/bioradlifesci

Screen Our Process Resins and Media Today



Scan this QR code or go to bio-rad.com/ResinSample and request a sample today.

BIO-RAD and CHT are trademarks of Bio-Rad Laboratories, Inc. in certain jurisdictions. All trademarks used herein are the property of their respective owner. © 2023 Bio-Rad Laboratories, Inc.

Nuvia aPrime 4A Resin is covered by U.S. Patent Number 9,669,402 and foreign counterparts.



**Bio-Rad
Laboratories, Inc.**

Life Science
Group

Website bio-rad.com **USA** 1 800 424 6723 **Australia** 61 2 9914 2800 **Austria** 00 800 00 24 67 23 **Belgium** 00 800 00 24 67 23 **Brazil** 4003 0399
Canada 1 905 364 3435 **China** 86 21 6169 8500 **Czech Republic** 00 800 00 24 67 23 **Denmark** 00 800 00 24 67 23 **Finland** 00 800 00 24 67 23
France 00 800 00 24 67 23 **Germany** 00 800 00 24 67 23 **Hong Kong** 852 2789 3300 **Hungary** 00 800 00 24 67 23 **India** 91 124 4029300 **Israel** 0 3 9636050
Italy 00 800 00 24 67 23 **Japan** 81 3 6361 7000 **Korea** 82 080 007 7373 **Luxembourg** 00 800 00 24 67 23 **Mexico** 52 555 488 7670
The Netherlands 00 800 00 24 67 23 **New Zealand** 64 9 415 2280 **Norway** 00 800 00 24 67 23 **Poland** 00 800 00 24 67 23 **Portugal** 00 800 00 24 67 23
Russian Federation 00 800 00 24 67 23 **Singapore** 65 6415 3188 **South Africa** 00 800 00 24 67 23 **Spain** 00 800 00 24 67 23 **Sweden** 00 800 00 24 67 23
Switzerland 00 800 00 24 67 23 **Taiwan** 886 2 2578 7189 **Thailand** 66 2 651 8311 **United Arab Emirates** 36 1 459 6150 **United Kingdom** 00 800 00 24 67 23

