SARTORIUS

Success Story

Improving Productivity and Purity in ADC Polishing With Sartobind® Q Membranes in Rapid Cycling Mode

Case Profile

Company Type:
Medium Biopharma, CDMO

Related Molecule:
Proteins, mAbs , biosimilars, bioconjugates, vaccines, mRNA (low pressure steps), plasmid

Related Process Steps:
Polishing

Antibody–drug conjugates (ADCs) are a rapidly growing therapeutic class in oncology, but their purification presents unique challenges. Traditional resin-based chromatography is limited by low productivity, high buffer consumption, and insufficient aggregate clearance—all in the context of handling highly potent cytotoxic payloads. In this study, Sartobind® membrane adsorbers were evaluated as a replacement for mixed-mode resins in ADC polishing. The results demonstrated significant process intensification, higher product quality, and notable cost savings. Learn more in our BPI article.[1]

Challenge

- Column handling and capital investment for packing equipment and facility footprint
- Long process times resulting in low productivity
- ROI dependent on high resin cycle numbers, requiring end-of-life use

Provided Solution

- Implementing rapid cycling chromatography (RCC) to support full utilization of consumables within a single batch
- Replacing resins with flexible Sartobind® Q membranes, reducing footprint, process time, and cost
- Leveraging single-use design to reduce validation burden and minimize operator risk

Before

Packed bed column chromatography:

- 31.8 L packed resin
- 50 batches
- 4 g/L/h productivity
- Process time: 12 hours

After

Rapid cycling chromatography with Sartobind® Q:

- 1.2 L membrane
- 20 cycles/batch
- 176 g/L/h productivity
- Process time: 6.5 hours

40x
increase in productivity

15% cost reduction
compared with packed-bed chromatography

Superior aggregate removal
in ADC polishing applications

>800 L buffer savings
through reduced chromatography material requirements

References

1 Lacoste, D., Perrin, P., & Stettler, M. (2020). Optimizing and intensifying ADC aggregate removal: A DoE approach to membrane chromatography and rapid cycling. BioProcess International. https://www.bioprocessintl.com/process-development/optimizing-and-intensifying-adc-aggregate-removal-a-doe-approach-to-membrane-chromatography-and-rapid-cycling