

Reduce manufacturing cost of antibody-based therapeutics with an alternative-source Protein A resin

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Designed for cost-effective antibody purification

For decades Protein A chromatography has been the method of choice for the purification of monoclonal antibodies. Modifications to the first generation of Protein A ligands has given way to more robust and efficient purification resins allowing the design of antibody purification processes with greater flexibility. The introduction of Thermo Scientific™ MabCaptureC affinity matrix offers an additional tool for process development and manufacturing of monoclonal antibodies. Featuring high capacity and a highly cross-linked agarose backbone, this Protein A resin is specifically designed to help improve the productivity and efficiency of antibody purification processes.

MabCaptureC affinity matrix – features and benefits

Our MabCaptureC resin is based on a new engineered and in-house produced protein A ligand, recombinantly expressed in yeast. It features:

- High binding capacity: ~60 g/L IgG at 5 min residence time
- Alkali stable ligand: >100 cycles at 0.2M NaOH
- Highly cross-linked agarose backbone (Praesto™ jetted technology)
- Uniform bead size (70 µm +/- 10 µm) offering improved performance characteristics
- Excellent scalability and free of animal components – allowing use in commercial manufacturing

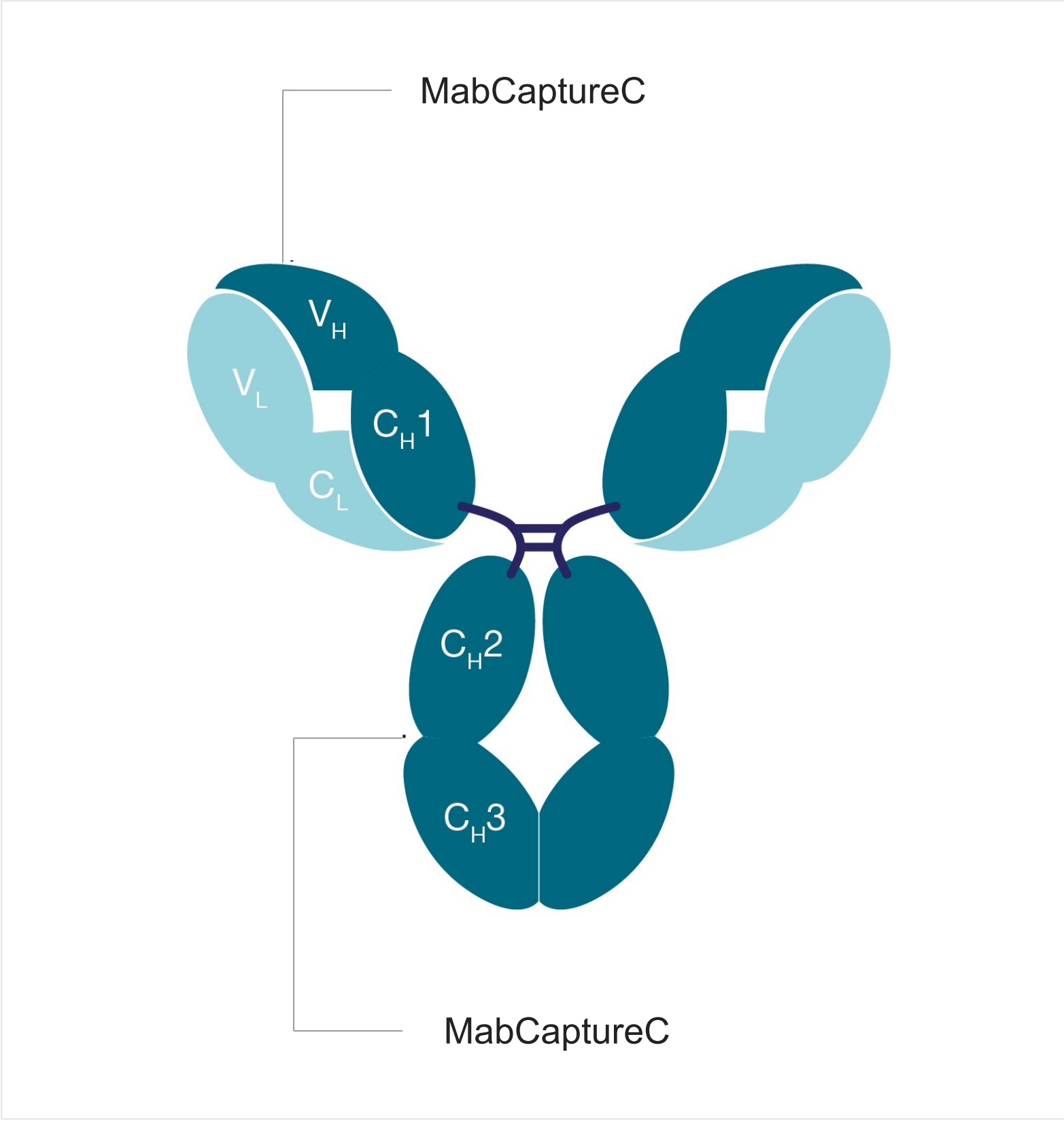


Figure 1: The MabcaptureC resin binds at the C_H2-C_H3 interface and V_H3 region of IgG

MabCaptureC resin binding capacity and elution properties

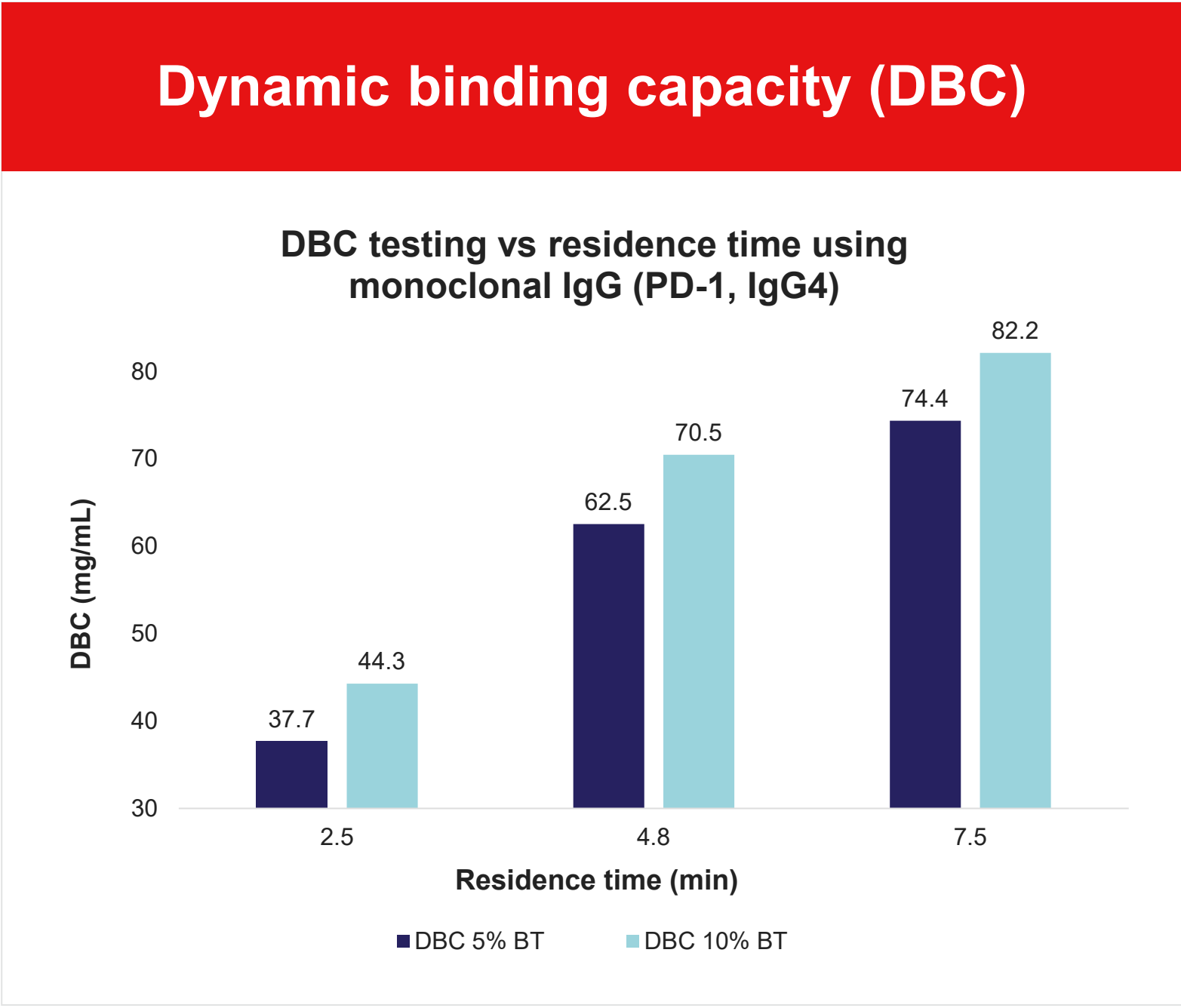


Figure 2: MabCaptureC resin dynamic binding capacity measured at 5 & 10% breakthrough at 2.5-, 4.8- and 7.5-min residence time using monoclonal IgG (load density 70mg/mL)

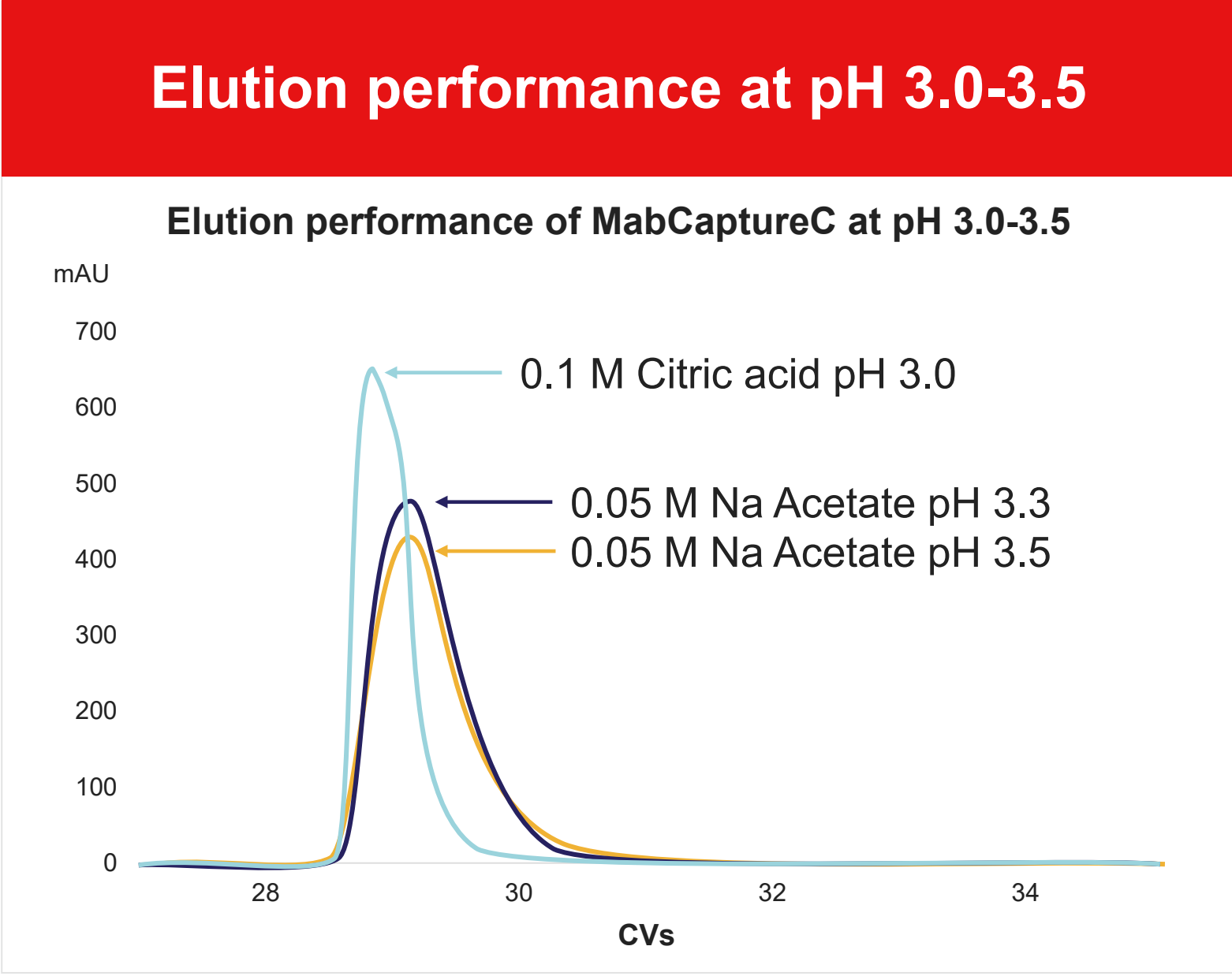


Figure 3: MabCaptureC was tested in a 2cm 0.4mL column and displayed efficient elution at pH 3.0 – 3.5

- The MabCaptureC resin demonstrates high dynamic binding capacity
- The resin shows efficient elution (>98%) at pH 3.0-3.5

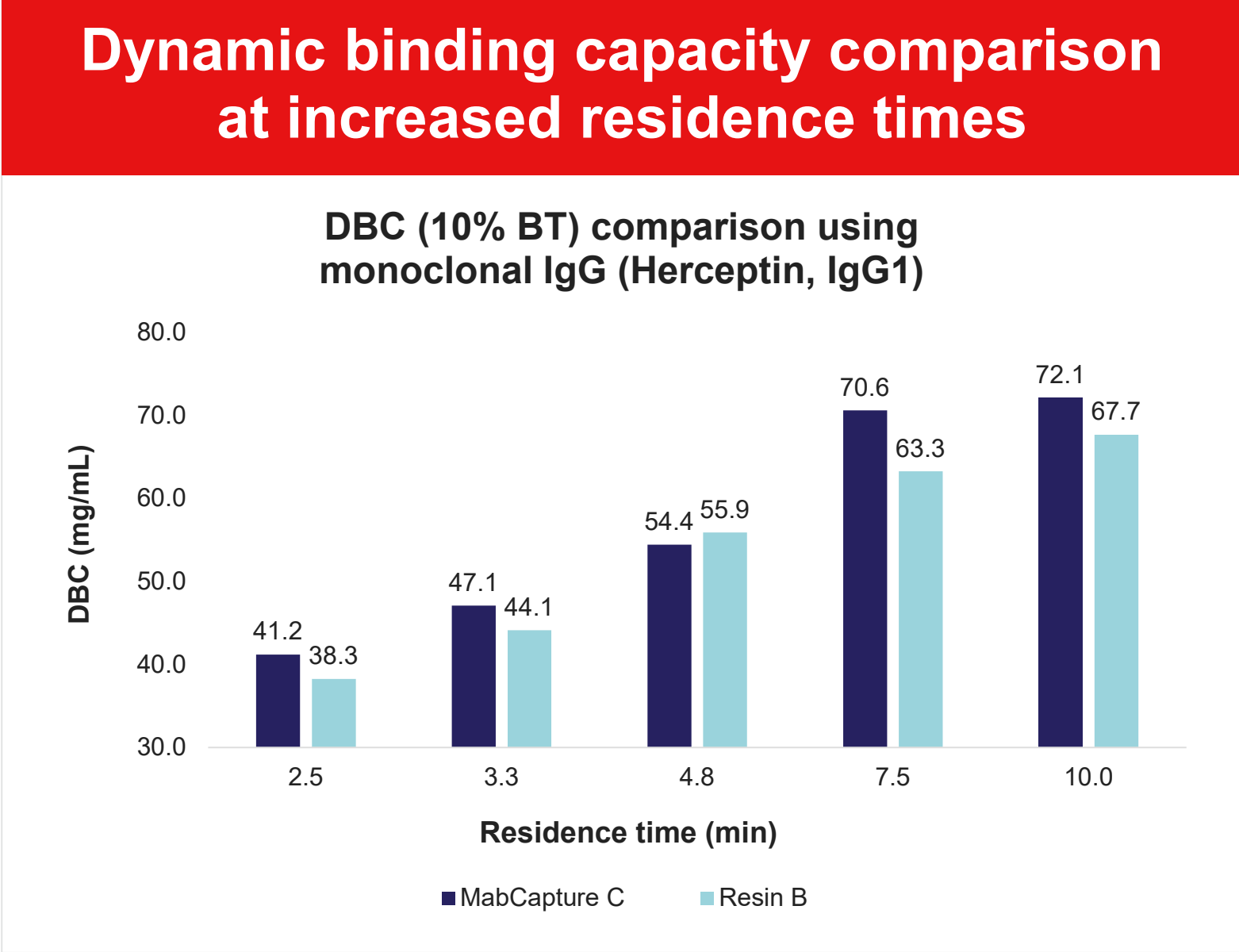


Figure 4: Comparison study of dynamic binding capacity measured at 10% breakthrough with increasing residence times using MabCaptureC and a comparative resin.

- The MabCaptureC resin shows excellent binding capacity compared to comparative resins
- High dynamic binding capacity is shown at increased residence times, allowing processing of high-titer feedstocks

MabCaptureC resin cleaning, reusability and impurity removal

Advised cleaning strategy

- **Acid strip after every run:**
Up to 0.5 M Citric acid or Acetic acid
- **Additional cleaning/sanitization steps**
Process optimization mainly depending on type of feed
 - Cleaning after every run with 0.2 M NaOH
 - If needed, cleaning with 0.4 M NaOH after every 5th or 10th run

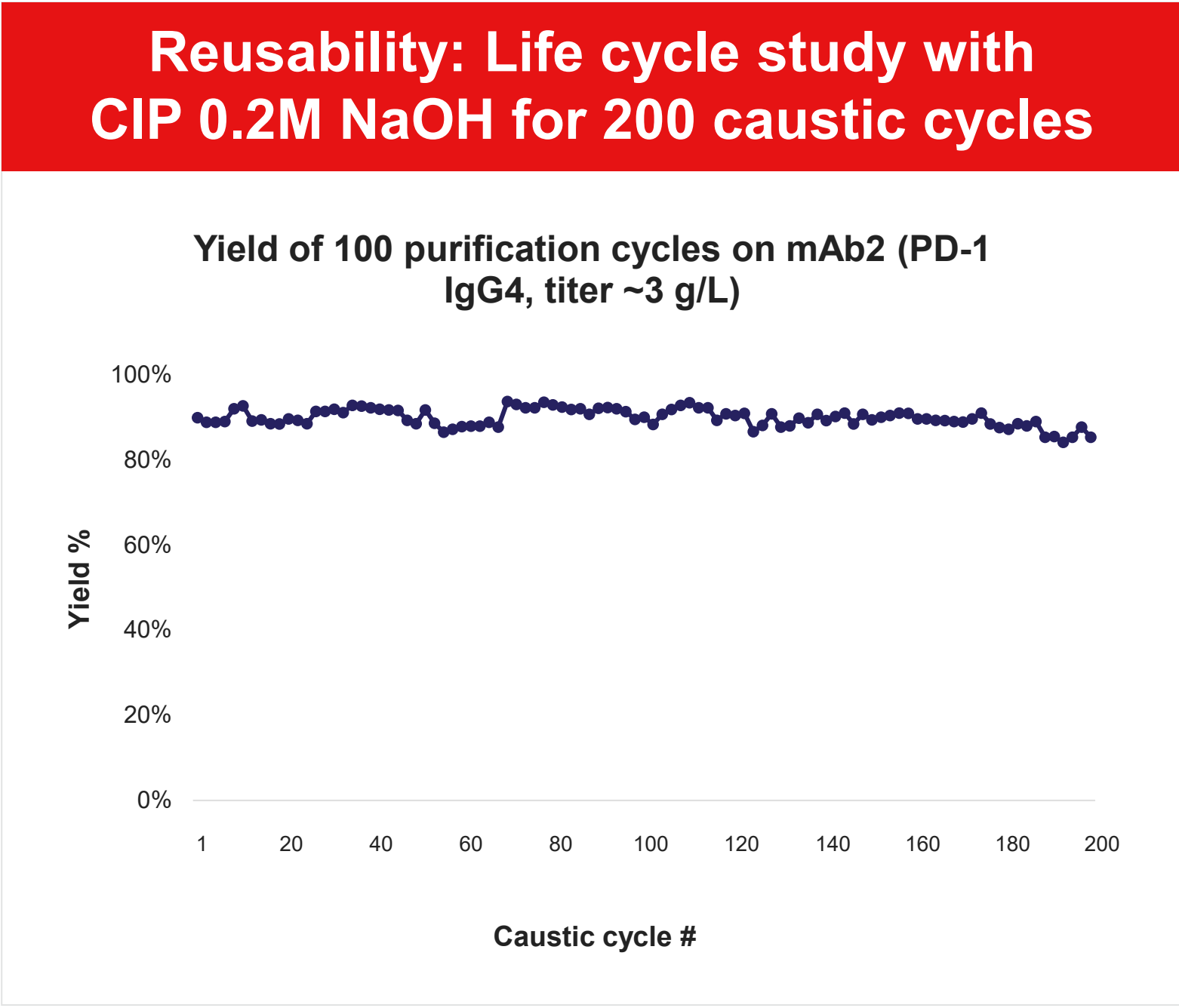


Figure 5: Stable yield (~90%) during 100 purification cycles using 2x 15min 0.2M NaOH per run (equivalent to 200 caustic cycles)

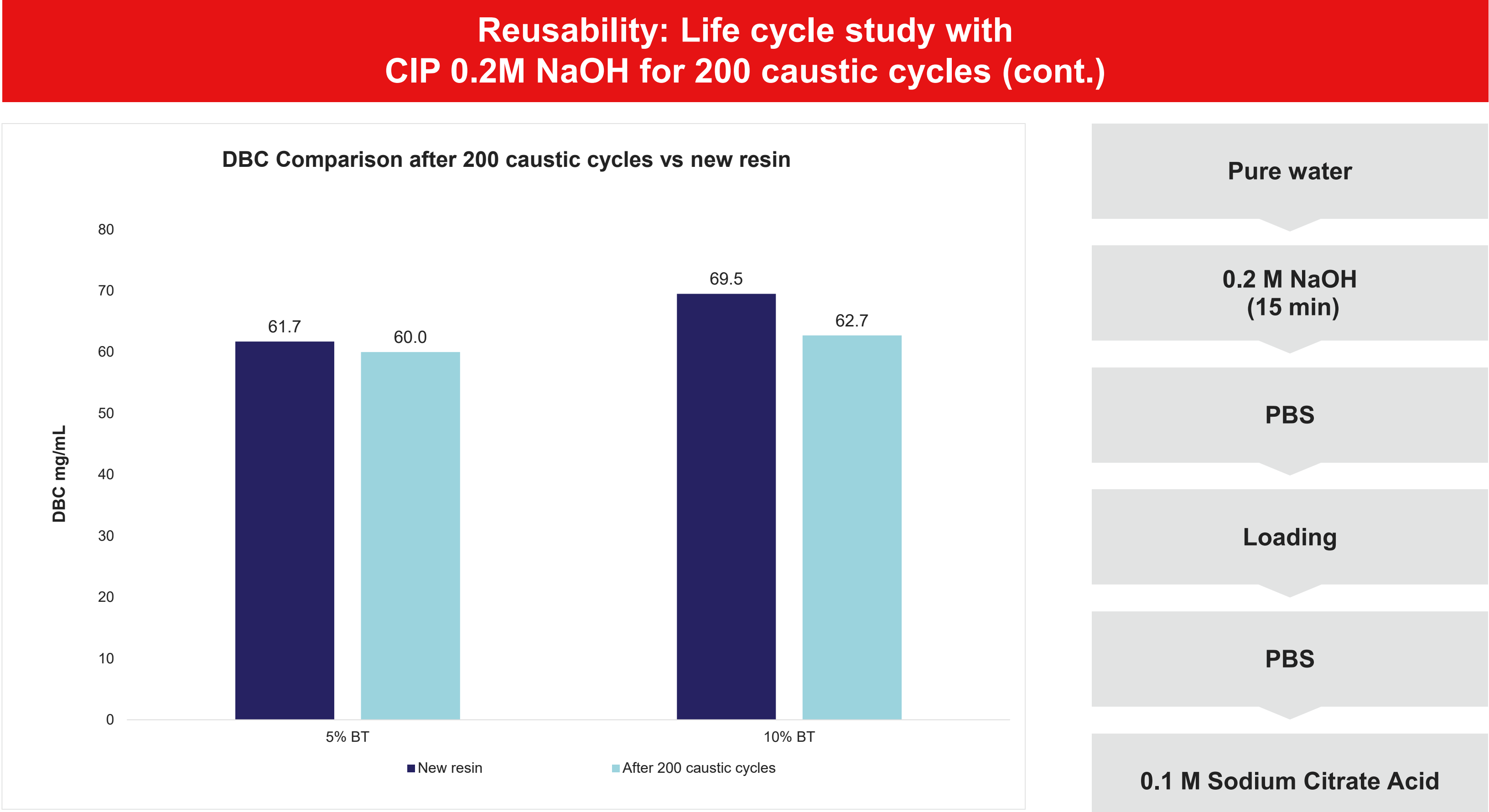


Figure 6: Excellent reusability: less than 10% capacity loss after 100 purification cycles (200 caustic cycles)

Excellent alkaline stability –
High capacity is observed after cleaning with 0.2M NaOH (2x 15 min/cycle) for 200 caustic cycles

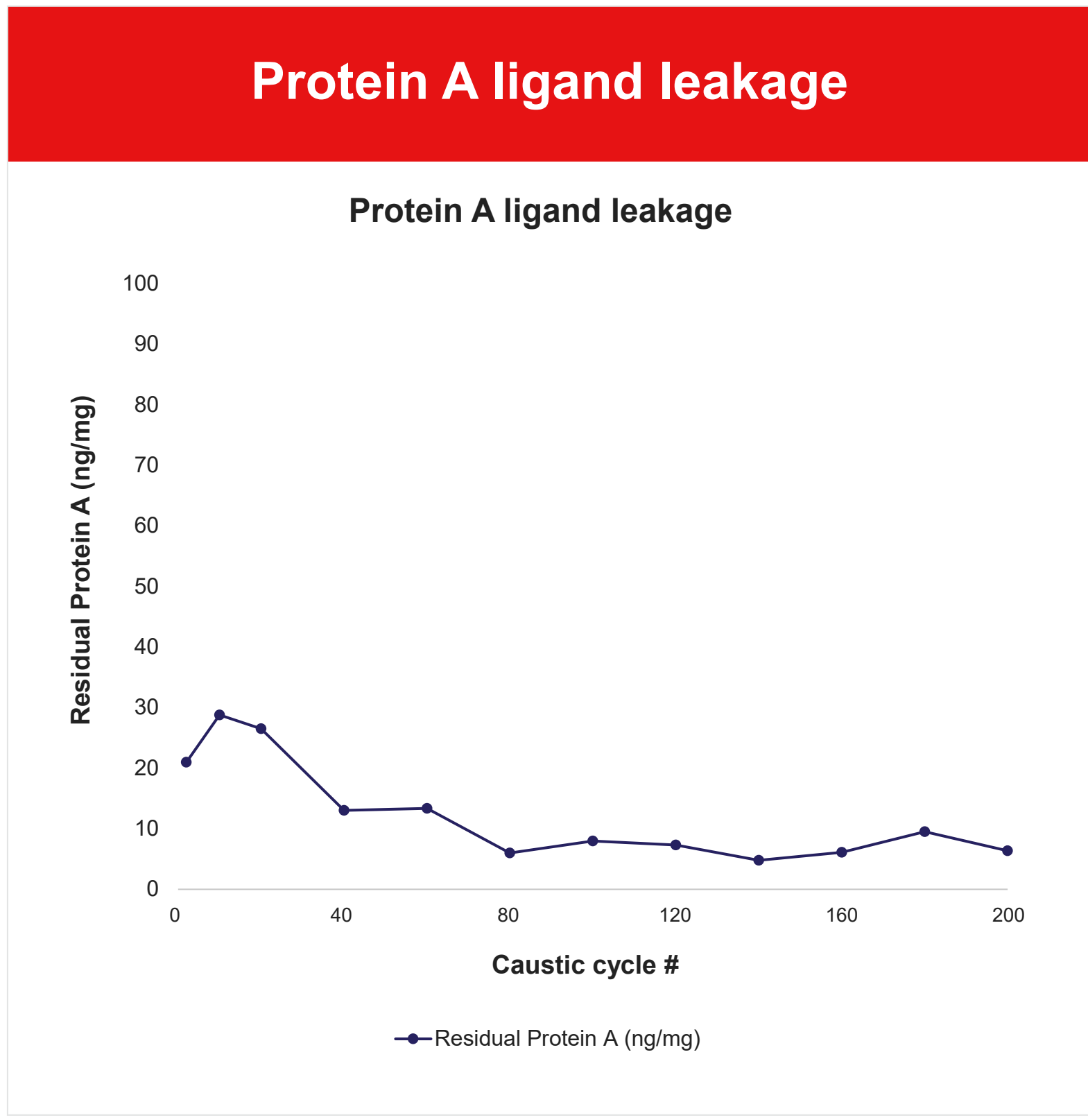


Figure 7: Ligand leakage (ppm) was measured over a 100 cycles using the Cygnus rec. Protein A ELISA kit demonstrating leakage on average of 12ppm over 100 cycles

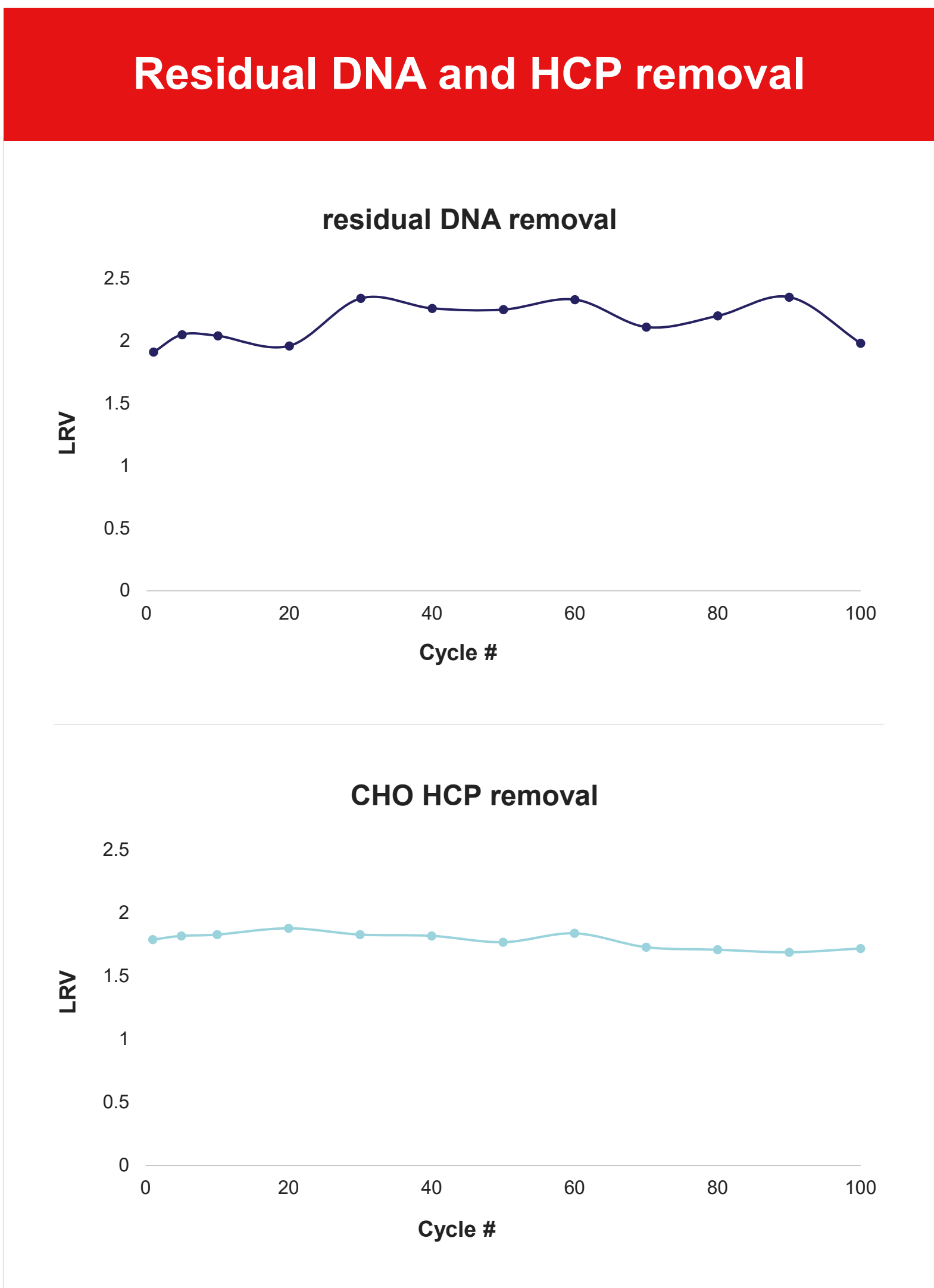


Figure 8: Consistent residual DNA and CHO HCP removal over a 100 purification cycles

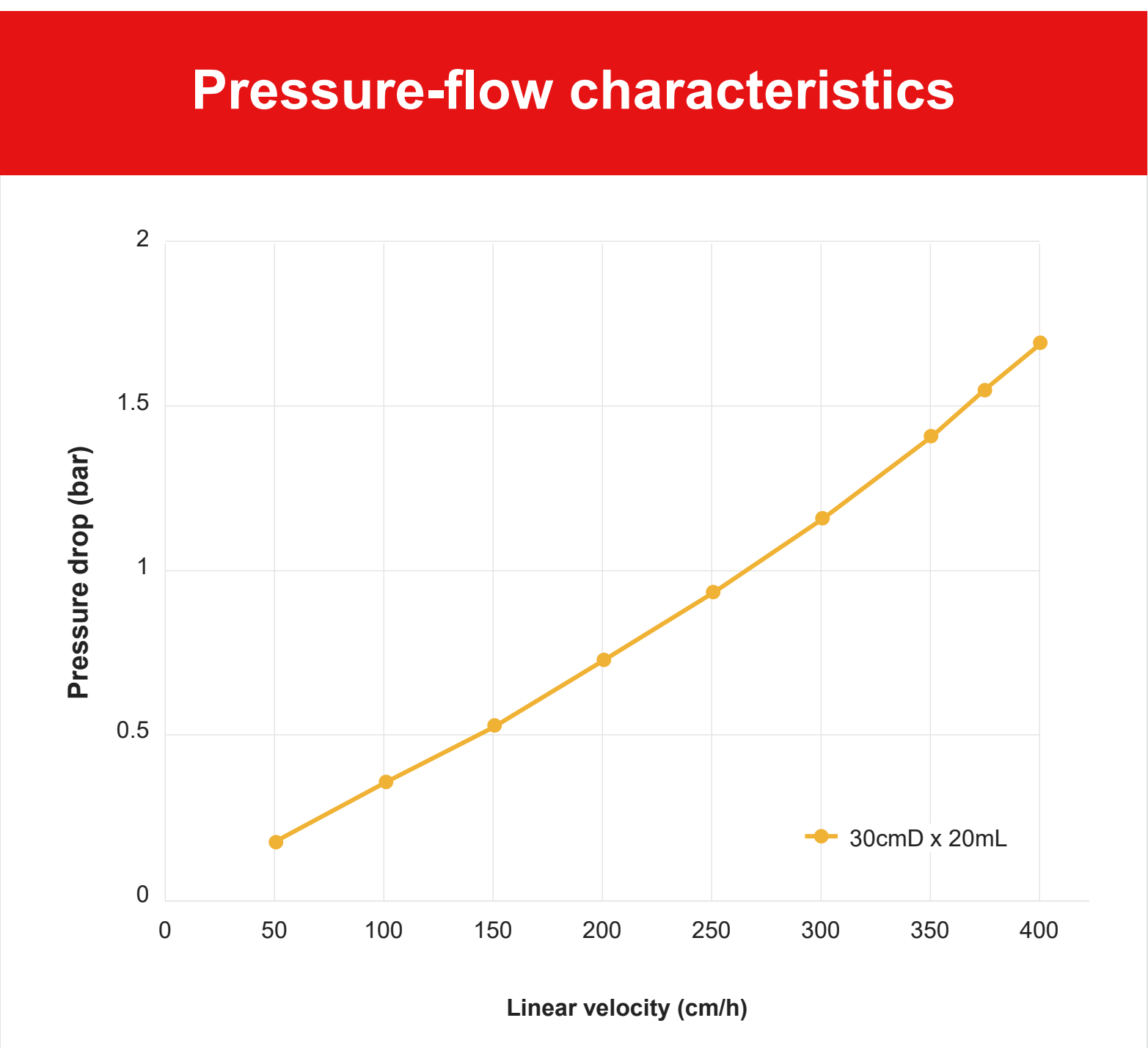


Figure 9: The MabCaptureC resin demonstrates high permeability - <2 bar at 400 cm/h in a 30 cm diameter column x 20 cm bed height

Available products	
Cat nr.	Product
1963662250*	MabCaptureC Affinity Matrix 250ml
196366201L*	MabCaptureC Affinity Matrix 1L
196366205L*	MabCaptureC Affinity Matrix 5L
5943662001	MabCaptureC MiniChrom 1 ml
5943662005	MabCaptureC MiniChrom 5 ml
5943662200	MabCaptureC RoboColumn 200 ul

* Products come with regulatory support (RSF)

Conclusion

Featuring high capacity, excellent alkaline stability and increased productivity, the MabCaptureC affinity matrix can be an excellent protein A resin in the monoclonal antibody purification workflow.

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