

Got Purification Troubles?

Purify Adeno-Associated Viruses Using Ion Exchange and Mixed-Mode Resins

The Challenge

Using affinity resins for the purification of adeno-associated virus (AAV) products and looking to reduce downstream manufacturing costs?

Purification Tip

Ion exchange (IEX), specifically anion exchange (AEX), and multimodal chromatography are promising, economical, and efficient alternatives for the purification of AAVs.

Our Approach

We optimized a workflow with an AEX resin, Nuvia HP-Q Resin, and a hydrophobic anion exchange mixed-mode resin, Nuvia aPrime 4A Resin, to maximize viral recovery and full AAV8 particle enrichment. Nuvia HP-Q Resin captured 100% of the virus particles and provided exceptional purity by removing host cell protein (HCP) and DNA (Figure 1). Nuvia aPrime 4A Media separated the empty capsids from the full capsids with excellent yield and further removal of HCP and DNA (Figure 2).

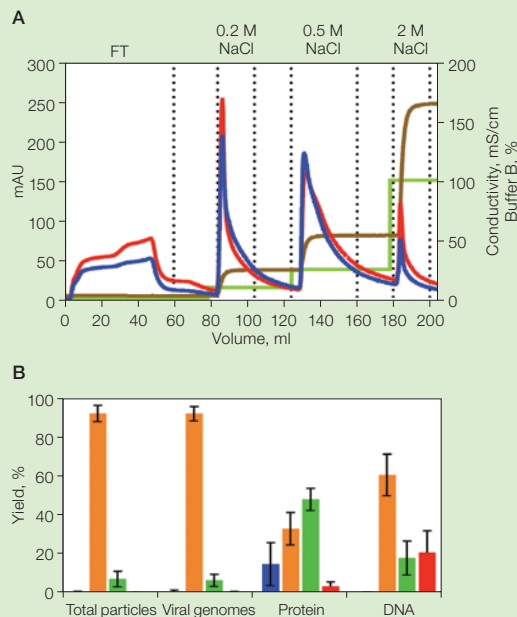


Fig. 1. Capture of AAV8 using Foresight Nuvia HP-Q chromatography. **A**, chromatogram of AAV8 capture and elution with buffer b, 2 M NaCl (—), in steps of 0.2, 0.5, and 2 M NaCl. OD 260 (—); OD 280 (—); conductivity (—). **B**, yield of AAV8 total particles and genome-containing particles from Nuvia HP-Q capture step and residual percentages of protein and DNA. 0.2 M NaCl (orange); 0.5 M NaCl (green); 2 M NaCl (red); FT (blue). AU, absorbance units; FT, flowthrough.

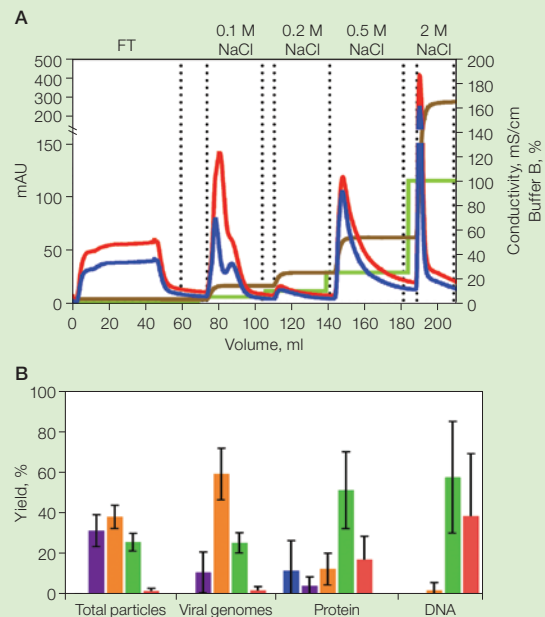


Fig. 2. Capture of AAV8 using Foresight Nuvia aPrime 4A chromatography. **A**, chromatogram of AAV8 capture and elution with buffer B, 2 M NaCl (—), in steps of 0.1, 0.2, 0.5, and 2 M NaCl. OD 260 (—); OD 280 (—); conductivity (—). **B**, yield of AAV8 total particles and genome-containing particles from Nuvia aPrime 4A capture step and residual percentages of protein and DNA. 0.1 M NaCl (purple); 0.2 M NaCl (orange); 0.5 M NaCl (green); 2 M NaCl (red); FT (blue). AU, absorbance units; FT, flowthrough.

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