WEBINAR DIGEST

Wash & elution optimization for AAV capsid recovery

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The constant growth in the number of clinical trials in the gene therapy space highlights the need for a reliable and scalable viral vector manufacturing solution. The CTS AAV-MAX production system allows for excellent flexibility from discovery through preclinical testing, clinical manufacturing, and ultimately commercial-grade production of AAV for gene therapy. In this poster, the results from a wash and elution optimization study using the POROS™ CaptureSelect™ AAVX chromatography resin are summarized.

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OPTIMIZING POROS CAPTURESELECT RESINS FOR AAV AFFINITY CAPTURE

Downstream process scientists are presented with some unique purification challenges in the AAV workflow, including:

- Increased impurity burden due to cell lysis, including host cell protein (HCP) and host cell DNA (HCD) removal
- Recovery – Cumulative yield losses with each unit operation
- Removal of empty capsids
- Removal of adventitious viruses
- Scalability
- Large variety of AAV serotypes

POROS CaptureSelect AAV affinity resins are designed to address key challenges using a single chromatography step.

POROS CaptureSelect AAVX resin is a pan-serotype affinity resin that binds both wild-type and novel or engineered capsids. Since the AAVX ligand is coupled to the POROS backbone, the resin delivers scalable pressure-flow characteristics. This resin is manufactured to quality standards and has the proper documentation for its use in GMP processes.

The growing use of AAV viral vectors in the gene therapy field has emphasized the need to optimize the downstream purification process, with demand for higher purity and recovery.

OPTIMIZING AAVX WASH BUFFERS

The purity and recovery of AAV6 capsids produced in HEK293 cells were assessed after treatment with 11 different wash buffers, with varying pH and compositions **(Figure 1)**. The wash buffers that yielded the best recoveries (over 85%) were Tris buffers at pH 7.5 and 9, with the addition of 1.5 M sodium chloride.

OPTIMIZING ELUTION BUFFER

Figure 2 provides a snapshot of the recovery as a function of the elution buffer compositions tested. The greatest recoveries (over 70%) were achieved with glycine pH 2 and 2.5 alone. Equal recovery can be obtained at a slightly higher pH of pH 3 if arginine or arginine and propylene glycol are added.

Optimizing viral vector production and purification is key to enhancing scalable manufacturing. This wash and elution study using the POROS CaptureSelect AAVX chromatography resin identified the optimal wash and elution buffers for AAV6 capsid recovery and purity.

Watch the webinar here

Read the full transcript here

Figure 1. Comparison of excipient effect on AAV6 recovery.

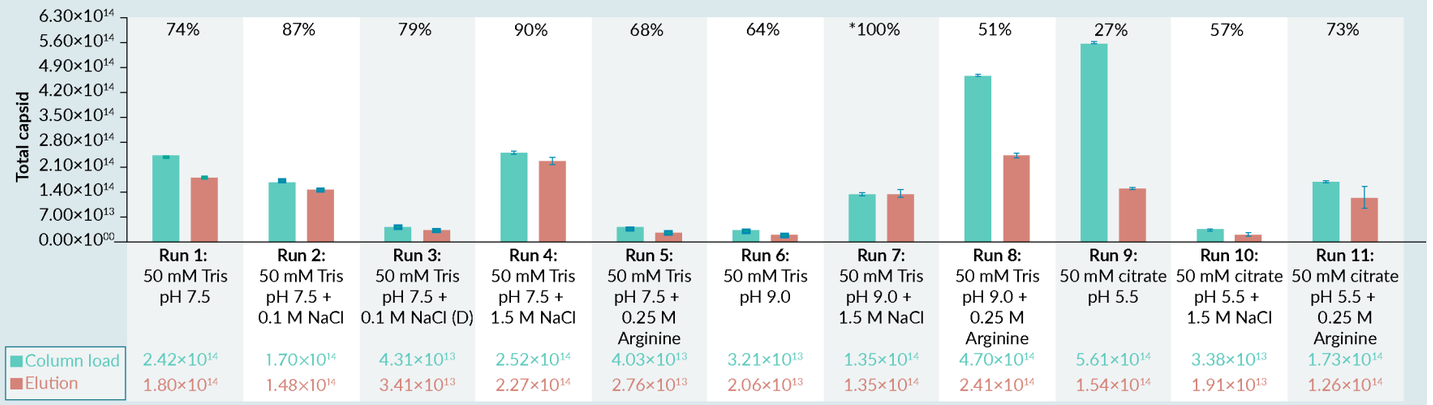
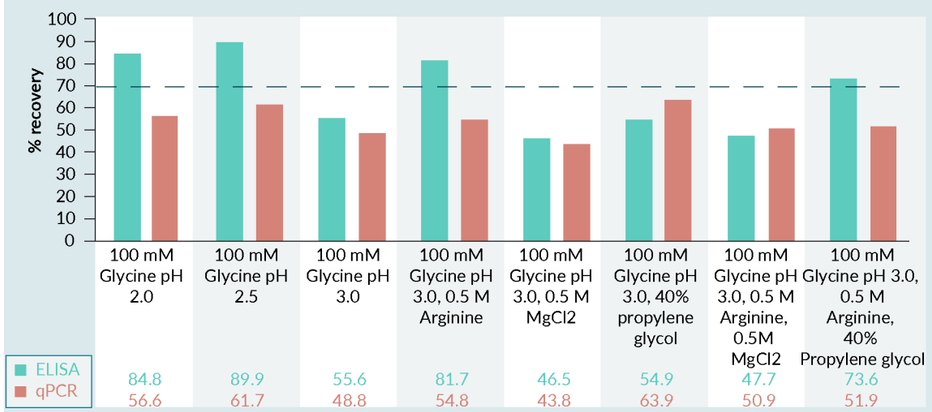


Figure 2. Wash buffer optimization: Total capsid recovery for each wash buffer tested.



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