cytiva

Simple but powerful solutions: syringe filtration for FPLC

cytiva.com

Simple but powerful solutions: syringe filtration for FPLC

Fast Protein Liquid Chromatography (FPLC) for protein purification can be prone to challenges. With ever-increasing sample complexity and growing demand for high-quality, high-speed, and highly reproducible data, the pressure on protein researchers and those who frequently use chromatography, has never been greater.

Sample particulates are the nemesis of FPLC, with clogging of the column and pump resulting in back-pressure build-up, leading to split peaks, broad peaks, peak tailing and, at worst, no peaks. Ultimately, you end up with inconsistent peaks that interfere with sample fractionation, increase the downtime of your ÄKTA™ chromatography system, and even skew your downstream analysis.

But what if there was a convenient and affordable way to streamline your ÄKTA™ chromatography system and improve column longevity?

When it comes to your FPLC sample, preparation is key to minimize the risk of particulates entering the chromatography system. It's here that syringe filtration can help to improve your protein purification workflow for sample collection and downstream analysis that is stress-free, efficient, and cost-effective.

In this blog, we track the course of a protein sample through a typical ÄKTA™ chromatography system to learn more about the benefits of syringe filtration at each stage.

Request a filtration sample for your ÄKTA™ chromatography system

1. Don't fall at the first hurdle

After you've primed the ÄKTA™ chromatography system and equilibrated your column, one of the first steps in your purification workflow is to inject your sample. Whether your sample is freshly prepared or from refrigerated storage, it may contain particulates and impurities that can potentially block the injection system or associated capillaries. This can lead to an increase in back pressure and leakage of any further injected sample.

Filtering your sample beforehand with the Protein Prep Syringe Filters for ÄKTA™ chromatography systems, means you can be sure that injection is as smooth as possible and ensures a consistent pressure across FPLC runs, reducing the risk of clogging and saving you precious protein sample.

2. Care for your column

It's in the column that your protein of interest binds to the matrix, depending on size or affinity, and is washed through before elution. A sample full of solid particulate matter may block the column frit or bed and before you know it, your matrix is destroyed.

This can be a costly mistake, resulting in:

A partial blockage

A partial blockage will still allow some of your protein to bind, meaning that it might not be immediately obvious that there is an issue in the column. However, the loss in protein will be clear when you get to the elution stage. And by then it's likely too late.

A complete blockage

A complete blockage can cause the ÄKTA™ chromatography system pumps to malfunction, leading to system downtime and termination of the program halfway through your run.

Syringe filtration of your sample beforehand mitigates the risk of blockages, saving you unnecessary cleaning time and increasing the longevity of your column and, crucially, your ÄKTA™ chromatography system.

Worried that you could lose precious protein in the filtration process? The Protein Prep Syringe Filters for ÄKTA™ chromatography systems have a hydrophilic membrane containing regenerated cellulose to ensure low protein binding and protein recovery over 95%.

3. Protect your peak

It's at the UV detection stage that issues with unfiltered samples become glaringly obvious, with blockages and pump faults causing rising backpressures. But what does that mean for you and your workflow?

Peak distortion, peaks that are broad, split, or erratic all indicate issues with protein fractionation, meaning you might need to halt your workflow at a critical point or, worse, perform long decontamination cycles before re-running the program again, risking the loss of precious sample.

Save time and sample with the Protein Prep Syringe Filters for ÄKTA™ chromatography systems. Minimize solid particulates and purify your proteins with confidence, safe in the knowledge that your peaks are protected.

Learn more about using regenerated cellulose filters to protect your columns

Choosing the right filter

While filtration might seem like a very small part of the protein purification workflow, when executed well it can make a huge impact on the quality of your data and the longevity of your equipment.

Protein Prep Syringe Filters are optimized specifically for sample preparation prior to chromatography with ÄKTA™ chromatography systems. The product range offers several unique features that enable you to purify with peace of mind:

- Low levels of extractables and certified for the absence of UV-absorbing substances at wavelengths of 210 and 254 nm with water, methanol, and acetonitrile.
- Documented batch-to-batch quality and consistency, ensuring high-quality, reproducible results.
- Filtration of samples prior to runs demonstrated to reduce column-degrading particulate matter.
- Availability in 13 and 30 mm syringe filter diameters.

For support or more information on syringe filtration, or to discuss your specific ÄKTA™ chromatography system needs, speak with your local Cytiva representative or contact the Scientific Support team.

Learn more about protecting your columns and your peaks in our white paper

Related Products

- Chromatography columns
- ÄKTA™ chromatography systems
- Protein Prep syringe filters for ÄKTA™ chromatography systems
- Benchkote protection sheets for ÄKTA™ chromatography systems

Related Content

- Protect your columns and your peaks (White paper)
- Filter device decision chart (Guide)
- Filter membrane material compatibility (Blog)

cytiva

cytiva.com

For local office contact information, visit cytiva.com/contact

CY28496-29NOV22-BA