qEVoriginal

Size Exclusion Columns for Extracellular Vesicle Isolation

Izon Science's qEVoriginal Size Exclusion Columns enable the rapid isolation of extracellular vesicles (EVs) from cell culture supernatants and complex biological fluids. Each column efficiently removes background proteins, lipids, solutes, cell debris, and other particulates to improve the sensitivity and accuracy of downstream assays (e.g., TRPS, protein profiling, RNA profiling, etc.) while maintaining the biological properties of EVs. Vesicles are isolated in 15 minutes allowing EV samples to be collected and prepared for analysis on the same day. Columns are available off-the-shelf and quality assured so your isolations are reproducible from column to column.

Isolation of Extracellular Vesicles by qEVoriginal Size Exclusion Columns

Size exclusion chromatography (SEC) is an effective method to isolate EVs from cell culture supernatants and complex biological fluids. Since the separation is based on size (Figure 1), vesicles flow through the column unretained and elute in the void volume. Proteins and other contaminants that are smaller than the pores of the stationary phase are retained by the column and elute later. Other methods that are non-specific in nature require overnight incubation of vesicles with precipitation buffer. As a result, vesicular and non-vesicular particles are isolated together so additional steps are needed to separate EVs from contaminating particles. In contrast, isolations using qEVoriginal Size Exclusion Columns take 15 minutes and remove 99% of contaminating background proteins and up to 95% of high-density lipoprotein (HDL) contaminates from your samples in a single isolation.

Key Features

- Fast, 15-minute isolation of extracellular vesicles
- Removes > 99% of contaminating background proteins
- Removes up to 95% of contaminating HDL
- Removes cell debris and other particulates
- Maintains the integrity and biological function of extracellular vesicles
- Manufactured to ISO 13485 quality standards

Fast Isolation, Gentle on Your Sample

qEVoriginal Size Exclusion Columns are gentle on your vesicles so purified EVs retain their biological function, are free of contaminating proteins and vesicle recovery from column-to-column is reproducible. In comparison, vesicle preparations using ultracentrifugation show variable recovery and take from 2 to 96 hours to complete. Since samples are isolated without extreme centrifugal force, the risk of forming protein or vesicle aggregates that can contaminate your EVs is low with qEVoriginal Size Exclusion Columns. Unlike density-gradient ultracentrifugation, vesicles are isolated using phosphate-buffered saline solution (PBS). By avoiding the use of "highly" viscous and hyperosmotic sucrose gradients, the biological function of your vesicles post isolation is assured.

Simple Method to Isolate Extracellular Vesicles

Isolating EVs using qEVoriginal Size Exclusion Columns takes only 15 minutes. The simple four-step procedure is:

1. Rinse the column with PBS.
2. Pipette 500 µL sample onto the column.
3. Add PBS to the column to elute EVs.
4. Collect 500 µL fractions.

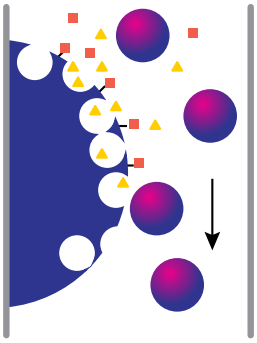
Figure 2 shows the analysis of fractions collected from a serum sample. A qNano Gold System, with Tunable Resistance Pulse Sensing, reliably measured the presence of EVs in a quantitative fashion. Relative protein concentration was measured by absorbance at 280 nm. The data shows that fractions 7 to 9 have the highest concentration of EVs and the contaminating serum proteins elute in fractions 11 to 30. By comparing the EV to protein concentration ratio before and after isolation, fraction 7 had greater than a 6000-fold enrichment of vesicles relative to protein[1] (Figure 3). Depending on the sample, fractions 7 to 9 or fractions 7 to 11 are pooled if downstream assays require higher EV purity or higher EV yield, respectively.

Focus on Your Research, Not Your Vesicle Isolation

Characterization of EVs first requires their isolation from cell culture supernatants or complex biological fluids. Numerous protocols and reagents exist to isolate EVs, but their results vary greatly. qEVoriginal Size Exclusion Columns are the fastest and easiest method to isolate EVs. Unlike other methods, qEVoriginal Columns are gentle on your EVs so they retain their biological properties and are free of contaminating proteins, vesicle aggregates and HDL. qEVoriginal Size Exclusion Columns are convenient, available off-the-shelf and quality assured so you can spend your time focusing on your research, versus the isolation of your EVs.

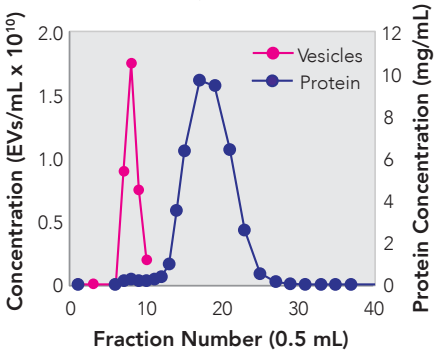
1. A.N.Boing,et.al.,"Single-stepisolationofextracellularvesiclesbysize-exclusion chromatography", Journal of Extracellular Vesicles, 2014, 3:23430

Figure 1



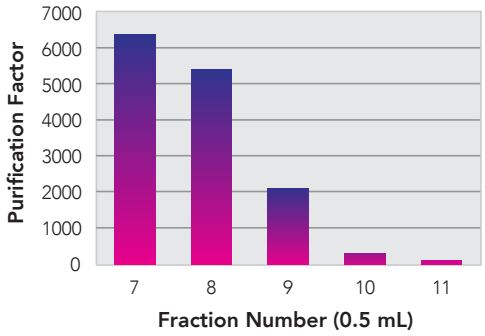
SEC works by trapping smaller molecules in the pores of the stationary phase. The larger molecules or particles ow past the pores because they are too large to enter. Larger molecules or particles ow through the column faster than smaller molecules and elute rst. Smaller molecules have longer retention times and elute later.

Figure 2



Typical qEVoriginal Size Exclusion Column elution profile from a serum sample. EVs (pink) elute in fractions 7 to 11, while bulk free proteins elute in later fractions.

Figure 3



Purification factor for fractions 7 to 11 are shown. Fractions 7 and 8 were the most enriched. An enrichment of vesicles relative to contaminating proteins of > 6000-fold was achieved.

Ordering Information

Website:	store.izon.com
Email:	orders@izon.com
Part number:	SP1
Description:	qEVoriginal Columns (5 columns/package)

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