

Communication

Tangential Flow Filtration for Highly Efficient Concentration of Extracellular Vesicles from Large Volumes of Fluid

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Abstract: Concentration of extracellular vesicles (EVs) from biological fluids in a scalable and reproducible manner represents a major challenge. This study reports the use of tangential flow filtration (TFF) for the highly efficient isolation of EVs from large volumes of samples. When compared to ultracentrifugation (UC), which is the most widely used method to concentrate EVs, TFF is a more efficient, scalable, and gentler method. Comparative assessment of TFF and UC of conditioned cell culture media revealed that the former concentrates EVs of comparable physicochemical characteristics, but with higher yield, less single macromolecules and aggregates (<15 nm in size), and improved batch-to-batch consistency in half the processing time (1 h). The TFF protocol was then successfully implemented on fluids derived from patient lipoaspirate. EVs from adipose tissue are of high clinical relevance, as they are expected to mirror the regenerative properties of the parent cells.

Keywords: exosome; extracellular vesicles; isolation; ultrafiltration; tangential flow filtration; lipoaspirate
