ISOLATE AND PURIFY EVs

With EasySep™ Human Extracellular Vesicle Positive Selection Kits

Extracellular vesicles (EVs), including exosomes and microvesicles, are lipid bilayer-delimited structures naturally released from cells. EVs function in intercellular communication under homeostatic and pathological conditions and are frequently characterized by the expression of the tetraspanin proteins CD9, CD63, and CD81. The lumens of EVs contain protein, RNA/DNA, cytokine, or lipid cargoes that reflect the state of the cell of origin. Along with the study of fundamental EV biology, there is growing interest in studying the composition of EV cargoes to identify diagnostic or prognostic biomarkers of disease, as well as to assess the therapeutic potential of EVs.

Why Use EasySep™ Human Extracellular Vesicle Positive Selection Kits?

- Isolate human EVs in as little as 30 minutes without the use of columns
- Avoid the need for ultracentrifugation and associated time-consuming EV isolation methods
- Achieve greater efficiency compared to ultracentrifugation-based EV isolation methods

EasySep™ Human Extracellular Vesicle Positive Selection Kits

Traditional density gradient-based methods for isolating EVs require researchers to have access to an ultracentrifuge and involve time-consuming protocols. In contrast, EasySep™ Human Extracellular Vesicle Positive Selection Kits target EVs using tetrameric antibody complexes that recognize CD9, CD63, and/or CD81, and magnetic particles. Labeled EVs are separated using an EasySep™ magnet without the use of columns and remain in the tube while unwanted biofluid components are poured off. EVs from biofluids, including serum and plasma, and from culture-conditioned medium, can be isolated in as little as 30 minutes and are immediately available for downstream applications, including RNA extraction, western blot, or mass spectrometry. The data figures on the following page demonstrate the high yield, quality, and downstream compatibility of the EVs isolated using EasySep™ Human Extracellular Vesicle Positive Selection Kits.

How Does It Work?

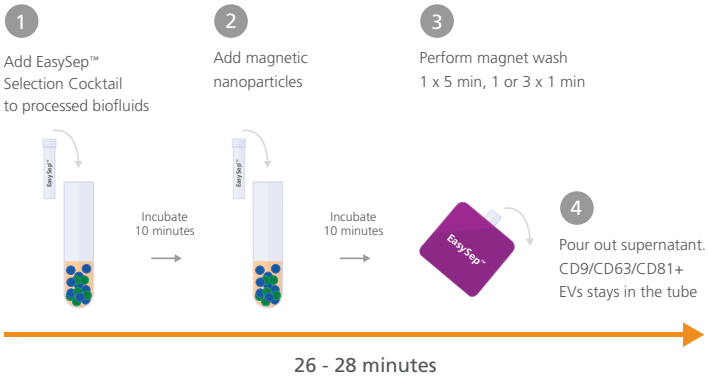

Figure 1. Procedure for Isolating EVs From Biofluids Using EasySep™ Human Pan-Extracellular Vesicle Positive Selection Kit

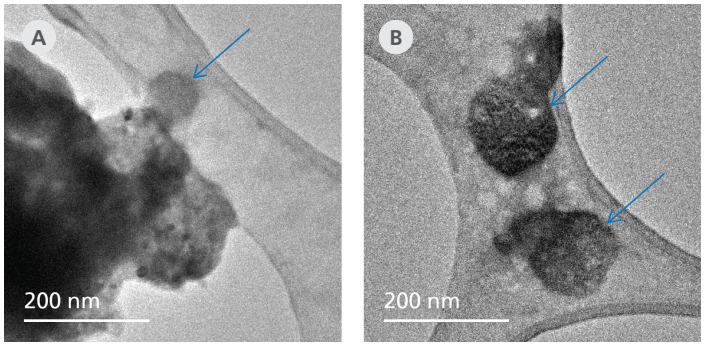

Figure 2. Images of Plasma-Derived EVs Isolated Using EasySep™ Human Pan-Extracellular Vesicle Positive Selection Kit

Transmission electron microscopy (TEM) analysis following immunomagnetic-based selection shows intact and spherical-shaped (arrows) plasma-derived EVs. The isolated EVs are attached to tetrameric antibody complexes and magnetic particles.

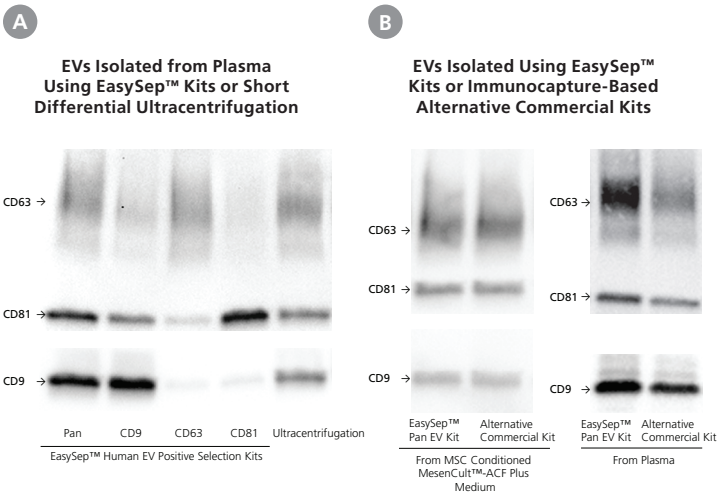

Figure 3. Tetraspanin Protein Expression and Recovery of EVs Using EasySep™ Human Pan/CD9/CD63/CD81 Extracellular Vesicle Positive Selection Kits

(A) EVs were isolated from plasma using either EasySep™ Human Extracellular Vesicle Positive Selection Kits or short differential ultracentrifugation (2 x 70 min, 100,000 xg) and isolated fractions analyzed by western blot for tetraspanin protein expression. (B) Equal or higher recovery of EVs was achieved from mesenchymal stromal cell (MSC)-conditioned MesenCult™-ACF Plus Medium and plasma using EasySep™ Human Pan-Extracellular Vesicle Positive Selection Kit when compared to EVs isolated using other commercially available immunocapture-based EV isolation kits.

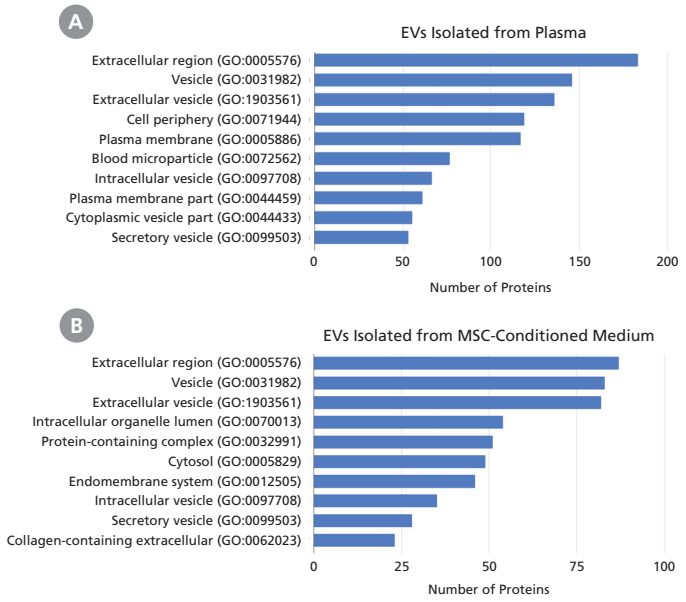

Figure 4. Top 10 Cellular Compartment Gene Ontology Terms for EVs Isolated from Plasma or MSC-Conditioned Medium Using EasySep™ Human Pan-Extracellular Vesicle Positive Selection Kit

Proteins present in EVs isolated from (A) plasma and (B) MSC-conditioned medium using EasySep™ Human Pan-Extracellular Vesicle Positive Selection Kit were detected by proteomic analysis. They were then grouped by the Gene Ontology terms of EVs, confirming the quality and compatibility of isolated EVs with mass spectrometry analysis.

Product Information

Product	Biofluid Volume Processed	Catalog #
EasySep™ Human Pan-Extracellular Vesicle Positive Selection Kit	20 mL	17891
EasySep™ Human Extracellular Vesicle (CD81) Positive Selection Kit	20 mL	17892
EasySep™ Human Extracellular Vesicle (CD9) Positive Selection Kit	20 mL	17894
EasySep™ Human Extracellular Vesicle (CD63) Positive Selection Kit	20 mL	17895
EasySep™ Extracellular Vesicle PE Positive Selection Kit	20 mL	100-0812

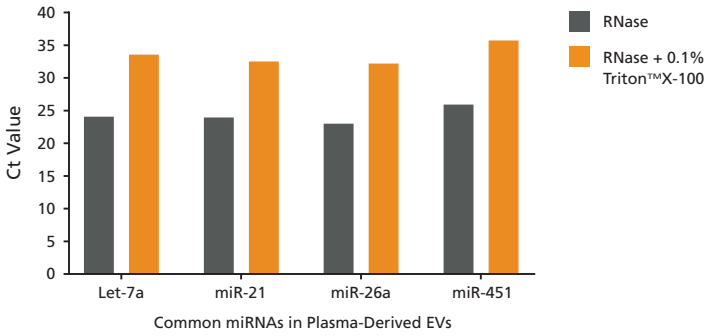

Figure 5. Common microRNAs (miRNAs) in Plasma-Derived EVs Isolated Using EasySep™ Human Pan-Extracellular Vesicle Positive Selection Kit

MicroRNAs (miRNAs) found in plasma-derived EVs were detected with RT-qPCR demonstrating the compatibility of EasySep™ Human Pan-Extracellular Vesicle Positive Selection Kit with downstream RNA extraction and RNA analysis. The increase in Ct value following EV lysis using 0.1% Triton™X-100 and RNase digestion demonstrate the integrity of isolated EVs.