Supplementary Information

Therapeutic Extracellular Vesicle Preparation via Electrophoretic Enrichment and Counterflow Microdialysis

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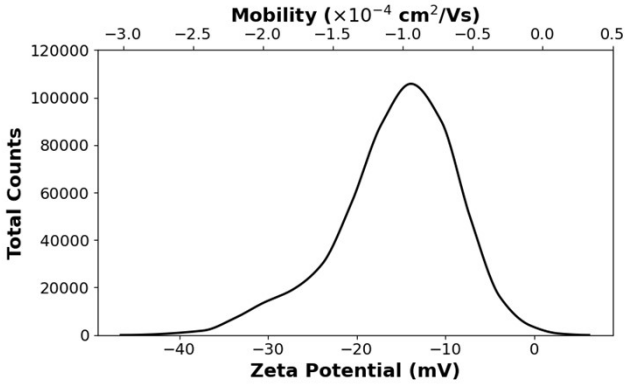

Fig. S1: Measured distributions of zeta potential and electrophoretic mobility for a typical EV sample following on-chip electrophoretic enrichment.

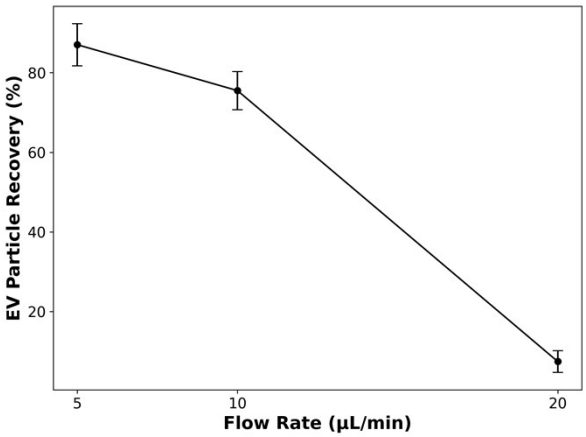

Fig. S2: Effect of applied voltage on EV retention during electrokinetic capture. Experimental data was collected using an input solution of 1×10^9 vesicles/mL and 10 min capture period at 75v.

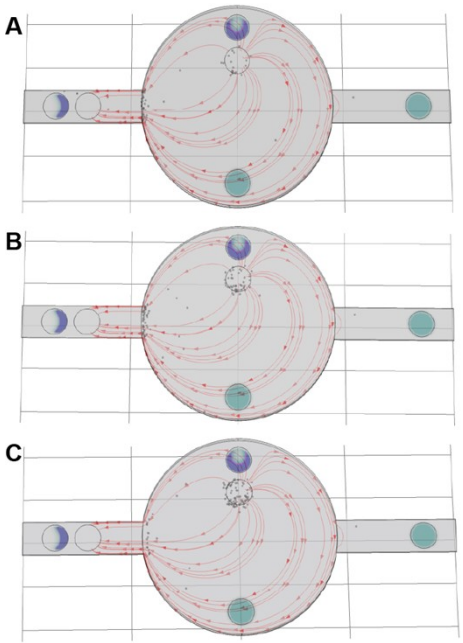

Fig. S3: Simulated electric field distribution and particle fate at t = 120 s within the electrokinetic enrichment device at applied voltages of (A) 45 V, (B) 60 V, and (C) 75 V. Arrows indicate the direction and relative magnitude of the applied electric field.

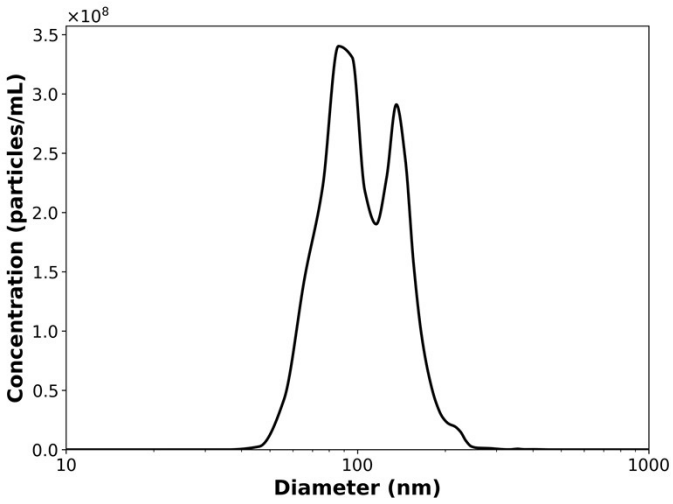

Fig. S4: Particle size distribution for HEK-conditioned media before enrichment.

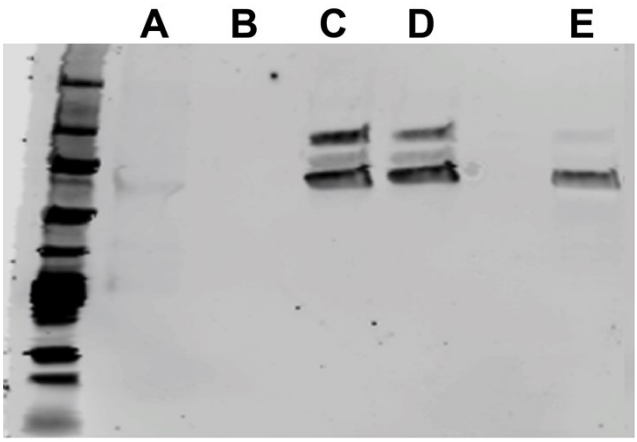

Fig. S5: Western blot for CD63 using (A) culture medium waste, (B) buffer waste, (C) enriched EVs (diluted 50×), (D) culture medium, and (E) TFF-processed culture medium. Waste and enriched EV samples were collected following 10 min enrichment at 60 V bias and 10 μL min^{-1} flow rate.