TFF-EVs Large

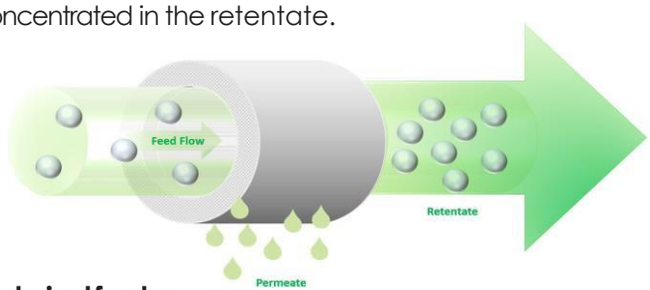
Tangential flow filtration concentrator

Product Code: HBM-TFF-EV-L

Pioneering the EV Field

About TFF-EVs

TFF-EVs is a filter cartridge containing polyethersulfone hollow fibers (50 nm pores), which allows the concentration and the purification of nanoparticles and Extracellular Vesicles (> 50 nm) from different fluids, including conditioned media, human biofluids and plant extracts. Water and small molecules (< 800kDa) pass through the hollow fiber pores, whereas nanoparticles are concentrated in the retentate.



Technical features

Technical features	Description
Hollow fiber material	Polyethersulfone
Pore size (nm)	50 +/- 10
Cut off (kDa)	800 +/- 50
Filtering surface (m2)	1.0
Internal fiber diameter (µm)	210 +/- 10
External fiber diameter (µm)	290 +/- 20
Fiber number per filter	6050 +/- 50
Cartridge internal diameter (mm)	32
Maximum transmembrane pressure (mmHg)	500
Maximum flow rate (ml/min) Conditioned media Urine viscous fluids (plasma, serum)	115 ml/min 100 ml/min 78 ml/min
Sterilization method	e-beams sterilization

Preparation of the fluid before the EV concentration

- Sample precleaning.

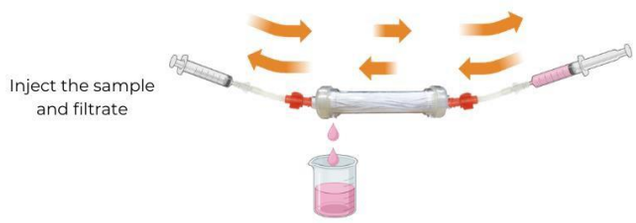
Fluid	Recommended	Optional
Plasma	10 min at 300 g (save super) 20 min at 1200 g (save super)	30 min at 10000 g to eliminate large particles (> 200 nm)
Serum	10 min at 300 g (save super) 20 min at 1200 g (save super)	30 min at 10000 g to eliminate large particles (> 200 nm)
Urine	10 min at 300 g (save super).	
Cell media*	10 min at 300 g (save super) 20 min at 1200 g (save super).	30 min at 10000 g to eliminate large particles (> 200 nm)

- Start the concentration process setting the pump with the flow rates indicated in the Technical feature table.

Tangential flow filtration and EV purification, manual use

Concentration can be done manually by the help of Luer lock adaptors (HBM-TFF-L-adaptors).

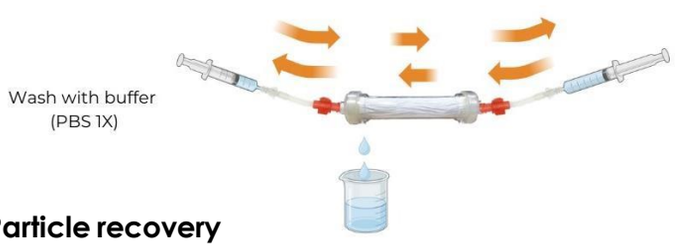
- Connect the adaptor to the both sides of the TFF-Evs-L. Start the filtration process pushing the fluids into the filter from the syringe on the right to the syringe on the left. Continue the filtration by processing the sample upwards and downwards between syringes until all the fluid is eliminated from the filter.



Particles larger than 50 nm are retained inside the filter fibers.

Particle washing

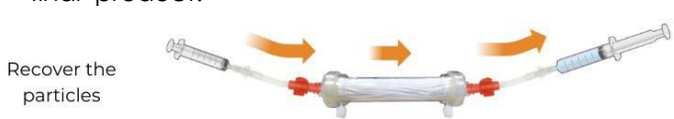
- To remove completely the contaminants from the nanopartilces retained into the filter, repeat the same procedure injecting in the syringe 1 PBS 1x buffer (~50mL each; other buffers or solutions can be used as well). Repeat the washing procedure at least 2 times more.



Particle recovery

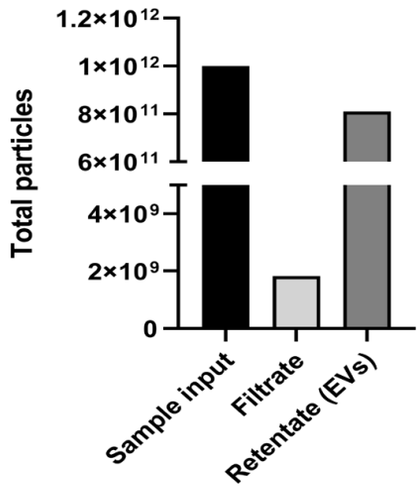
After washing, the particles can be recovered in a small volume of buffer.

a. Close the outlets of the filter during the recovery step. Aspirate the sample from the filter, detach the syringe from the nozzle, collect recovered particles into a clean tube.
b. To increase the yield, you can take 10-15 mL clean 1XPBS and inject inside the filter. You can go forward and backward to clean EVs on the membrane with syringes. Then repeat the aspiration as you did in step a.
c. You can repeat step b one more time to increase the yield. Then you end up with 40-45 mL of final product.

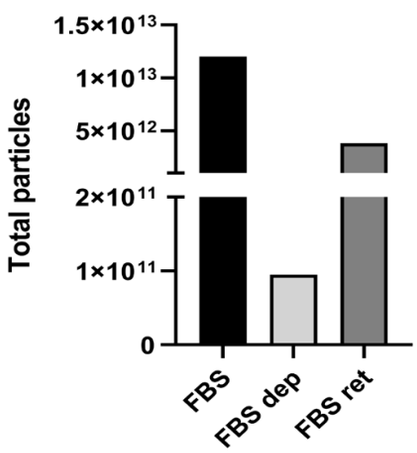


Performance data

- 1. Particle recovery



- 2. Depletion of bovine EVs from fetal bovine serum (FBS)



Washing procedure.

Once the concentration process is ended the filter cartridge has to be washed with a NaOH solution 0.5 N, in order to remove contaminants and particles from the hollow fibers. A final wash with aboundant MilliQ water must be performed for removing the chemical traces.

If the cartridge is used for processing complex fluids (serum, plasma) it is recommended to use a NaOH solution 1 N.

If the cartridge is used for processing fluids derived from plants and after the washing steps the fibers look colored, a solution of NaClO (0.05%) can be used.

After the washing step containing chemicals (NaOH or NaClO) a final wash with aboundant MilliQ water must be performed for removing the chemicaltraces.

The filter can be stored at room temperature, dried.

Filter re-sterilization.

The filter can be re-sterilized by Beta or Gamma irradiation. Not suitable for sterilization in autoclave.