Isolation of Membrane Vesicles from Biological Fluids and Methods for Use

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Technology description

University of Louisville researchers have developed methods for isolating and concentrating exosomes from a biological fluid samples for proteomic analysis. After obtaining a biological fluid sample of blood, blood plasma, or urine containing membrane vesicles (exosomes), the biological fluids are filtered according to method, resulting in the isolation of membrane vesicles from the biological fluid sample. The methods also provide for the isolation of biomarker polypeptides from the membrane vesicles via filtration module, allowing for the identification and/or quantitation of the isolated biomarker polypeptides. Additionally, these methods are capable of separating and performing individual analyses on a number of components of diagnostic interest found in urine that provide useful data for diagnosing or characterizing the progression of the disorder, including: urinary casts and bacteria, membrane vesicles, cryoglobulins, soluble, high molecular weight proteins, low molecular weight proteins and peptides, and electrolytes and low molecular weight metabolites.
Biological fluids are valuable as indicators of a subject's well-being and can be analyzed for data indicative of the presence, absence, and progression of disease. While many biological fluids are available, urine is the most convenient and painless fluid to collect. This technology directly addresses a previously unmet need for improved methods of isolating polypeptides from biological fluids for proteomic analysis and improved methods of isolating exosomes from biological fluids. Further, this technology is applicable for use in markets catering to screening drug candidates, detection of urinary and blood biomarkers that aid in diagnosis and assessment of diseases, and in toxicology assays.

Advantages

Applicable to a number of biological fluids;
May provide proteomic information about the presence and/or severity of a disorder;
Method can be applied to freshly collected biological fluid samples or previously frozen samples.

Institution

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