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Multiple Reaction Monitoring Profiling

A new tandem mass spectrometry method uses multiple reaction monitoring (MRM) transitions for accelerated, multivariate analysis of complex samples, enhancing biomarker and chemical profiling across proteomics, lipidomics, and metabolomics.

Conventionally screening and analysis of small molecules in heterogeneous samples is done through mass spectrometry (MS). Unfortunately, this process can be selective and time consuming when including sample preparation and data acquisition. In the case of obtaining molecular structural information, higher resolution MS of selected ions, or univariate analysis, must be performed to evaluate each metabolite individually. However, multivariate statistical methods could allow a broader comparison of samples and the molecular relationships.

Researchers at Purdue University have developed a tandem mass spectrometry method that allows complex samples to be rapidly analyzed for particular subgroups using a set of multiple reaction monitoring (MRM) transitions. This method aims to rapidly recognize chemical similarities in the samples through transitions that can be selected without prior knowledge of the compounds. MRM acts as a means of accelerated biomarker discovery, applicable to proteomics, lipidomics, metabolomics, etc. This strategy was applied to cerebrospinal fluid (CSF) to help identify biomarkers for Parkinson's disease. No specific biomarker was identified, but further improvements could show results and apply to other biomarker screenings and chemical profiling.

Advantages:

-Accelerated

-Identifies biomarkers

-Multivariate

Potential Applications:

-Biomarker screenings

Technology ID

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Category

Biotechnology & Life Sciences/Biomarker Discovery & Diagnostics

Biotechnology & Life Sciences/Analytical & Diagnostic Instrumentation

Authors

Robert Graham Cooks

Christina R Ferreira

Tiago Jose Paschoal Sobreira

Further information

Dipak Narula

dnarula@prf.org

View online

-Chemical profiling

-Drug screenings

-Identify Parkinson's disease biomarker

TRL: 3

Intellectual Property:

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