Lipidomic Analysis Reveals

Altered Fatty Acid Metabolism in the Liver of the Symptomatic Niemann–Pick, Type C1 Mouse Model

Pergande M.R. *et al* • **https://doi.org/10.1002/pmic.201800285**

"...there's this real need for data analysis solutions like MassHunter Explorer and MassHunter Quantitative Analysis that are not only powerful but are easy for researchers to use."

Daniel Cuthbertson, Ph.D.
Director, Global Life Science Research Market, Agilent Technologies

A study looked at free fatty acids levels in Niemann-Pick disease type C1 (NPC1)
NPC1 is a fatal neurodegenerative disorder: Mutations in the NPC1 gene > accumulation of cholesterol and sphingolipids

Methods

Study of NPC1−/− mice, looking particularly at ω-3 and ω-6 fatty acids

LC/MS: Lipid extracts were detected by an Agilent 6546 LC/Q-TOF system controlled by the Agilent Mass Hunter acquisition software

GC: Fatty Acid Methyl Esters (FAMEs) were analyzed by an Agilent 7820A gas chromatograph (GC)

Results

Lipidomic analysis of liver tissue revealed alterations in:

- Fatty acid synthesis
- Enzymes regulating ω-3 and ω-6 fatty acids

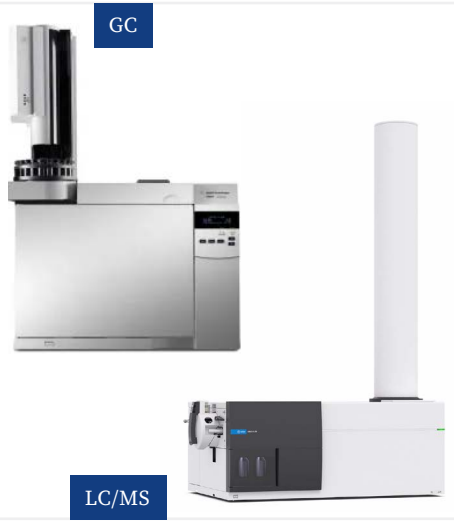
Read the full Expert Insight, here

Conclusions

The study highlights changes in storage and membrane lipids in late-stage NPC1, including:

- Ceramides
- Phospholipids
- Sphingomyelins
- Triacylglycerols

Agilent Equipment Used



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Abbreviations: LC/MS – liquid chromatography mass spectrometry **GC** – gas chromatography **NPC1** – Niemann-Pick disease, type C1

An Integrative Multiomics Framework

Identification of Therapeutic Targets in Pulmonary Fibrosis

Arif, M. *et al.* 2023 • **https://doi.org/10.1002/advs.202207454**

"Metabolomics technologies are becoming increasingly routine, enabling larger and larger cohorts of samples to be analyzed. This is something we are seeing a lot of demand for as life scientists."

Daniel Cuthbertson, Ph.D.
Director, Global Life Science Research Market, Agilent Technologies

Study – Options for pulmonary fibrosis (PF) investigation of mice exposed to oropharyngeal bleomycin. Looked at progressive changes in:
Pulmonary function • Transcriptomics • Metabolomics

Methods

- Identification of central gene subnetworks associated with critical pathological changes
- Hydroxyproline measurements with liquid chromatography tandem mass spectrometry (LC/MS/MS)
- PF was quantified by measuring hydroxyproline, using an Agilent 6470B triple quadrupole mass spectrometer, coupled to an Agilent 1200 LC system.

Results

- Multi-omics-based framework needed to bridge gap between mouse models and human idiopathic PF

Framework would:

- Facilitate identification of druggable target
- Enable testing of therapeutic candidates

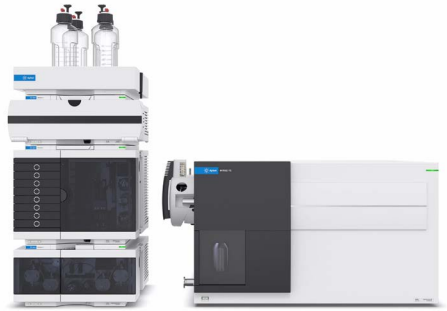
Conclusions

- Peripheral cannabinoid receptor 1 (CB1R) antagonism is a promising therapeutic target for clinical translation in PF
- Findings can be accessed on Mouse Lung Fibrosis Atlas

Read the full Expert Insight, here

Agilent Equipment Used

Agilent 6470B Triple Quadrupole combined with 1290 Infinity II LC



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