

A comprehensive lipidomics approach for monitoring lipid signalling during neuroinflammation

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Neuroinflammation is one of the key components of hypoxic-ischemic brain injury. There is a strong body of evidence suggesting that it contributes to secondary neural damage and cognitive decline. Neuroinflammation is characterized by microglial activation as well as migration and infiltration of peripheral macrophages and neutrophils to the brain. Neuroinflammation-associated changes in lipid metabolism and phospholipid membrane are another phenomenon, but not fully understood. Production of lipid mediators could contribute to the progression of neuroinflammation but also promote resolution of inflammation. Although there is some evidence that modulating the production of inflammatory mediators could be neuroprotective, this mechanism of action is not clear. We used comprehensive lipidomics combined with data-mining to monitor the production of inflammatory lipid mediators and alterations in the phospholipid membrane in a neuroinflammation model. A better understanding of lipid metabolism and lipid signaling during the course of inflammation could lead to the development of novel therapeutic approaches.