



Friday, February 27th – h 14:00
Seminars Room, NICO

Linking fatty acid metabolism to peripheral neuropathy

Nico Mitro

Department of Pharmacological and Biomolecular Sciences
University of Milan

Myelin is a membrane characterized by high lipid content to facilitate impulse propagation. Changes in myelin fatty acid (FA) composition have been associated with peripheral neuropathy, but the specific role of peripheral nerve FA synthesis in myelin formation and function is poorly understood.

We have found that mice lacking sterol regulatory element-binding factor-1c (Srebf1c) have blunted peripheral nerve FA synthesis that results in development of peripheral neuropathy. Srebf1c null mice develop Remak bundle alterations and hypermyelination of small caliber fibers that impair nerve function.

Peripheral nerves lacking Srebf1c show decreased FA synthesis and glycolytic flux, but increased FA catabolism and mitochondrial function. These metabolic alterations are the result of local accumulation of two endogenous peroxisome proliferator-activated receptor- α (Ppara) ligands, 1-palmitoyl-2-oleyl-sn-glycerol-3-phosphatidylcholine and 1-stearoyl-2-oleyl-sn-glycerol-3-phosphatidylcholine. Treatment with a Ppara antagonist rescues the neuropathy of Srebf1c null mice. These findings reveal the importance of peripheral nerve FA synthesis to sustain myelin structure and function.

Host: Alessandro Vercelli

www.nico.ottolenghi.unito.it

NICO - Neuroscience Institute Cavalieri Ottolenghi
Azienda Ospedaliero-Universitaria San Luigi Gonzaga
Regione Gonzole, 10 - 10043 Orbassano (Torino - Italy)