Michel LAGARDE

Michel Lagarde is a professor emeritus at INSA-Lyon (Lyon University). A former research scientist at Inserm, then director of an Inserm research unit, he taught biochemistry and molecular biology at the BioSciences Department of INSA-Lyon for 25 years. He founded the Institute for Multidisciplinary Biochemistry of Lipids (IMBL), and has been the president of several scientific societies dedicated to lipids, including the International Conference on the Bioscience of lipids (ICBL).

Bioactivity of 1-acetyl,2-docosahexaenoyl-glycerophosphocholine (AceDoPC), compared to its precursor 2-docosahexaenoyl-glycérophosphocholine (DHA-LysoPC)

Abstract

AceDoPC has been made by acetylation of DHA-LysoPC to prevent DHA migration from the *sn-2* to *sn-1* position of LysoPC.

Compared to DHA-LysoPC, AceDoPC keeps its capacity to efficiently cross the blood-brain barrier for enriching the brain with DHA. In addition, AceDoPC is beneficial in experimental stroke treatment.

AceDoPC also expresses some antioxidant effects, especially through an aspirin-like effect. In that case, cyclooxygenases might be inhibited by acetylation of their active sites, as does aspirin.

Such acetylation may even occur on some histones, as it has been shown with aspirin, then expressing some epigenetic effect.

Moreover, AceDoPC may be a precursor of acetylcholine in response to its cleavage by phospholipase D, presumably through acetylation of the released choline group by the proximal acetyl moiety.

Also, as a pseudo-mimetic of 1-alkyl,2-acetyl-glycerophosphocholine, named Platelet-Activating Factor (PAF), AceDoPC appears as an antagonist of PAF-induced blood platelet aggregation.

Although initially not expected, the acetylation of the physiological transporter of DHA to the brain (DHA-LysoPC) has generated a structured phospholipid (AceDoPC) of interest in several pathological states, especially through target acetylation.