

PRODUCT DATA SHEET

1,2-Dimyristoyl-sn-glycero-3-phosphorylcholine

Catalog number: 1425

Common Name: DMPC

Source: synthetic

Solubility: methylene chloride, methanol

CAS number: 18194-24-6

Molecular Formula: C₃₆H₇₂NO₈P

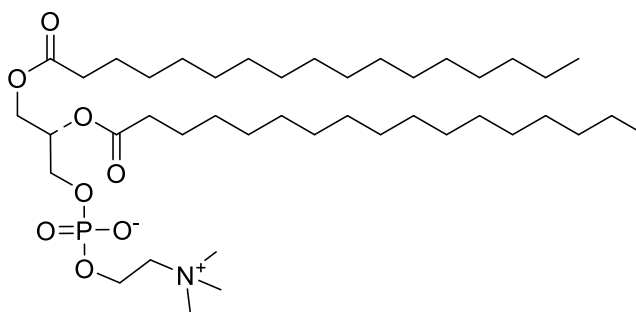
Molecular Weight: 678

Storage: -20°C

Purity: TLC >98%

TLC System: chloroform/methanol/DI water
(65:25:4 by vol.)

Appearance: solid



Application Notes:

This product is a well-defined, high purity, phosphatidylcholine (PC) containing two myristoyl acyl groups. 1,2-Dimyristoyl-sn-glycero-3-phosphorylcholine (DMPC) does not exist in nature and is therefore useful as an internal standard. DMPC, but not natural lecithin from soy or egg, has been found to raise HDL cholesterol and apoA-I, improve HDL function, and prevent lesions or cause their regression in apoE-null mice.¹ 1,2-dimyristoyl-sn-glycero-3-phosphocholine/1,2-dicaproyl-sn-glycero-3-phosphocholine bicelles are widely used for high-resolution NMR investigations of protein structure. PC is a major component of biological membranes, especially in the outer leaflet, often composing almost 50% of the total phospholipids.² It is a vital component in membrane bilayers and is the main phospholipid circulating in plasma. PC plays an important role in membrane-mediated cell signaling by generating diacylglycerols and phospholipids.³ Phospholipase D is an enzyme that cleaves off the choline head group, converting PC to phosphatidic acid, while phospholipase C cleaves off the phosphate group leaving diacylglycerol. PC is the biosynthetic precursor of sphingomyelin, phosphatidylethanolamine, lyso-phosphatidylcholine, and platelet-activating factor. The choline headgroup is an essential nutrient in animals although it can be synthesized by methylating phosphatidylethanolamine to phosphatidylcholine and then cleaving the headgroup with phospholipase D.⁴ Tumor cells appear to have increased synthesis of PC and this may be a potential target for cancer therapy. Another function of PC is the activation of enzymes such as the enzyme 3-hydroxybutyrate dehydrogenase which must be bound to phosphatidylcholine before it can function optimally.

Selected References:

1. M. Navab et al. "Oral Synthetic Phospholipid (DMPC) Raises High-Density Lipoprotein Cholesterol Levels, Improves High-Density Lipoprotein Function, and Markedly Reduces Atherosclerosis in Apolipoprotein E-Null Mice" *Circulation*, vol. 108 pp. 1735-1739, 2003
2. M. Billah and J. Anthes "The regulation and cellular functions of phosphatidylcholine hydrolysis" *Biochemistry Journal*, Vol. 269 pp. 281-291, 1990
3. J. Exton "Signaling through Phosphatidylcholine Breakdown" *The Journal of Biological Chemistry*, Vol. 265(1) pp. 1-4, 1990
4. Z. Li and D. Vance "Phosphatidylcholine and choline homeostasis" *Journal of Lipid Research*, Vol. 49 pp. 1187-1194, 2008

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