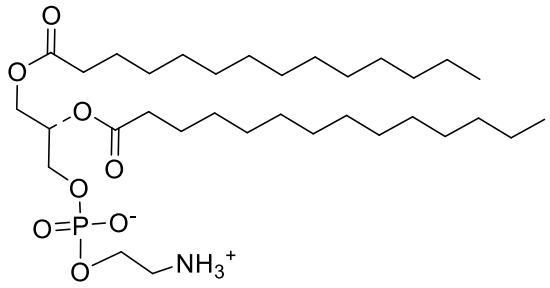
PRODUCT DATA SHEET

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

Catalog No: 1434
Common Name: DMPE
Source: synthetic
Solubility: chloroform/methanol/DI water/acetic acid (100:30:10:2.5); chloroform/acetic acid (95:5)
CAS No: 998-07-2

Molecular Formula: $C_{33}H_{66}NO_8P$
Molecular Weight: 636
Storage: -20°C
Purity: TLC > 98%
TLC System: chloroform/methanol/DI water (65:25:4 by vol.)
Appearance: solid



Application Notes:

1,2-Dimyristoyl-sn-glycero-3-phosphorylethanolamine is a glycerophospholipid in which a phosphorylethanolamine moiety occupies a terminal glycerol substitution site and myristic acid occupies the other two substitution sites. The terminal diene groups of bis(tetradecadienoyl)phosphorylethanolamine, but not dimyristoyl-phosphorylethanolamine, cause a relatively strong lateral pressure on the membrane which tends to bend the lipid monolayers into inverse structures. Like most phospholipids PE usually has a saturated fatty acid on C-1 and an unsaturated fatty acid on C-2 of the glycerol backbone but the fatty acid distribution at the C-1 and C-2 positions of glycerol within all phospholipids is continually changing, owing to phospholipid degradation and the continuous phospholipid remodeling that occurs while these molecules are in membranes. PEs are neutral zwitterions at physiological pH. PE is frequently the main lipid component of microbial membranes and the second most abundant phospholipid in mammals, comprising as much as 45% of brain lipids. They are concentrated in mitochondria and are key building blocks of membrane bilayers where they are distributed asymmetrically with the majority confined to the inner leaflet. It appears that a primary role for PE, in bacterial membranes at least, is simply to dilute the high negative charge density of the anionic phospholipids. PE acts as a chaperone in transport membrane folding.[1] In animals PE is involved in the secretion of very-low-density lipoproteins and aids in membrane fusion and fission.[2] In plants *lyso* PE retards senescence by inhibiting phospholipase D. PE is the precursor to many important lipids, acts as a protein transport from the membrane to the vacuole, and is synthesized through the CDP-ethanolamine or the PS decarboxylation pathway. After being converted to diacyl glycerol PE acts as a second messenger.[3]

Selected References:

1. M. Bogdanov, W. Dowhan, "Lipid-assisted Protein Folding" *Journal of Biological Chemistry*, Vol. 274 pp. 36827-36830, *1999*
2. J. Vance, "Phosphatidylserine and phosphatidylethanolamine in mammalian cells: two metabolically related aminophospholipids" *Journal of Lipid Research*, Vol. 49 pp. 1377-1387, *2008*
3. D. Lang et al., "Molecular Species Analysis of 1,2-Diglycerides on Phorbol Ester Stimulation of LA-N-1 Neuroblastoma Cells During Proliferation and Differentiation" *Journal of Neurochemistry*, Vol. 65 pp. 810, *1995*