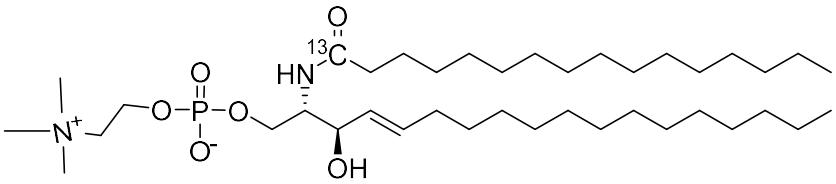
PRODUCT DATA SHEET

MATREYA LLC
Lipids and Biochemicals
A Cayman Chemical Company

N-1-^{13}C-Hexadecanoyl-D-*erythro*-sphingosylphosphorylcholine

Catalog number: 2200
Synonyms: D-*erythro*-Sphingomyelin with 1-^{13}C-palmitic acid; N-1-^{13}C-Palmitoyl-sphingosylphosphorylcholine; ^{13}C16:0-SM
Source: semisynthetic, bovine
Solubility: chloroform, ethanol, methanol
CAS number: 144236-99-7

Molecular Formula: $C_{38}{}^{13}CH_{79}N_2O_6P$
Molecular Weight: 704
Storage: -20ºC
Purity: TLC: >98%; identity confirmed by MS
TLC System: chloroform/methanol/DI water/ ammonium hydroxide (60:40:7:3)
Appearance: solid



Application Notes:

This product is a stable isotope analog of sphingomyelin containing a ^{13}C on the fatty acid portion of ceramide and is ideal for use as a standard. Sphingomyelin is found in mammalian cell membranes, especially in the membranes of the myelin sheath. It is the most abundant sphingolipid in mammals and is thought to be found mostly in the exoplasmic leaflet of the membrane although there is also evidence of a sphingomyelin pool in the inner leaflet of the membrane. It is involved in signal transduction and apoptosis.[1] An improper ratio of sphingomyelin to ceramide has been shown to be a factor in Niemann-Pick disease[2] and neonatal respiratory distress syndrome.[3] However, the ratio of sphingomyelin to ceramide is different for different cell types.[4] Sphingomyelin is an important amphiphilic component when plasma lipoprotein pools expand in response to large lipid loads or metabolic abnormalities.[5] N-hexanoyl-sphingosylphosphorylcholine has been used to enhance the uptake of anti-tumor drugs by cancer cells, thereby increasing the cytotoxicity towards those cancer cells.[6]

Selected References:

1. R. N. Kolesnick, A. Haimovitz-Friedman, Z. Fuks "The sphingomyelin signal transduction pathway mediates apoptosis for tumor necrosis factor, Fas, and ionizing radiation" *Biochem Cell Biol*., Vol. 72(11-12) pp. 471-474, *1994*
2. M. Schmuth, et al. "Permeability barrier disorder in Niemann-Pick disease: sphingomyelin-ceramide processing required for normal barrier homeostasis" *J Invest Dermatol*., Vol. 115(3) pp. 459-466*, 2000*
3. C. St Clair et al. "The probability of neonatal respiratory distress syndrome as a function of gestational age and lecithin/sphingomyelin ratio" *Am J Perinatol*., Vol. 25(8) pp. 473-480, *2008*,
4. J. Kilkus et al. "Differential regulation of sphingomyelin synthesis and catabolism in oligodendrocytes and neurons" *J Neurochem*. Vol. 106(4) pp. 1745-1757, *2008*
5. N. Duan RD. "Absorption and lipoprotein transport of sphingomyelin" *J Lipid Res*., Vol. 47(1) pp. 154-171, *2006*
6. R. Veldman et al. "*N*-hexanoyl-sphingomyelin potentiates *in vitro* doxorubicin cytotoxicity by enhancing its cellular influx" *Nature*, Vol. 90 pp. 917-925, *2004*

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