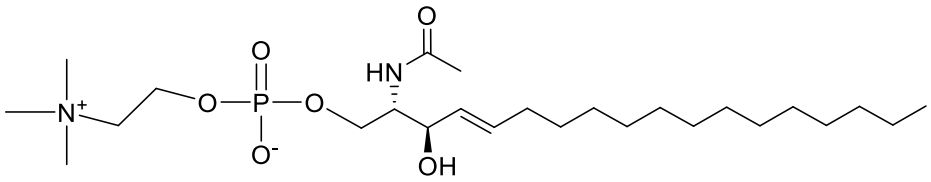
PRODUCT DATA SHEET

N-Acetyl-sphingosylphosphorylcholine (mixture of D-*erythro* and L-*threo* isomers)

Catalog number: 1907
Synonyms: N-C2:0-Sphingomyelin; N-C2:0-SM
Source: semisynthetic, bovine buttermilk
Solubility: ethanol, chloroform/methanol (2:1)
CAS number: 74713-54-5
Molecular Formula: $C_{25}H_{51}N_2O_6P$

Molecular Weight: 506
Storage: -20ºC
Purity: TLC: >98%; identity confirmed by MS
TLC System: chloroform/methanol/DI water (60:40:9 by vol.)
Appearance: solid



Application Notes:

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. An improper ratio of sphingomyelin to ceramide has been shown to be a factor in Niemann-Pick disease and neonatal respiratory distress syndrome.[1] However, the ratio of sphingomyelin to ceramide is different for different cell types.[2] Sphingomyelin is an important amphiphilic component when plasma lipoprotein pools expand in response to large lipid loads or metabolic abnormalities.[3] In contrast to ceramides, N-hexanoyl-sphingosylphosphorylcholine does not initiate vesicle formation in cells.[4] Sphingosylphosphorylcholine has been shown to induce intracellular calcium release while its short chain analog, N-acetyl-sphingosylphosphoylcholine, requires a significantly higher concentration to initiate the same level of response.[5]

Selected References:

1. 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*,
2. J. Kilkus et al. "Differential regulation of sphingomyelin synthesis and catabolism in oligodendrocytes and neurons" *J Neurochem*. Vol. 106(4) pp. 1745-1757, *2008*
3. N. Duan RD. "Absorption and lipoprotein transport of sphingomyelin" *J Lipid Res*., Vol. 47(1) pp. 154-171, *2006*
4. R. Li, E. Blanchette-Mackie, and S. Ladisch "Induction of Endocytic Vesicles by Exogenous C_6-ceramide" *Journal of Biological Chemistry*, vol. 274 pp. 21121-21127, *1999*
5. D. Yule et al. "Sphingosine Metabolism Induces Ca2+ Oscillations in Rat Pancreatic Acinar Cells" *The Journal of Biological Chemistry*, Vol. 268(17) pp. 12353-12358, *1993*

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