

## PRODUCT DATA SHEET

### Lyso-Dihydrosphingomyelin

**Catalog number:** 1913

**Common names:**

Dihydrosphingosylphosphorylcholine  
 (mixture of D-*erythro* and L-*threo*  
 isomers)

**Source:** semisynthetic, bovine buttermilk

**Solubility:** chloroform/methanol, 2:1

**CAS number:** N/A

**Molecular Formula:** C<sub>23</sub>H<sub>51</sub>N<sub>2</sub>O<sub>5</sub>P

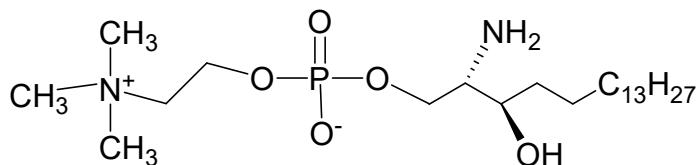
**Molecular Weight:** 467

**Storage:** -20°C

**Purity:** TLC >98%; identity confirmed by MS

**TLC System:** chloroform/methanol/2.5N  
 ammonium hydroxide (60:40:9)

**Appearance:** solid



### **Application Notes:**

This product is the saturated form of the more plentiful sphingomyelin, a lipid that is found in mammalian cell membranes, especially in the membranes of the myelin sheath, and is the most abundant sphingolipid in mammals. Dihydrosphingomyelin has been identified as a minor lipid component in many mammalian tissues but has recently been reported to be present in significant amounts in bovine brain and bovine milk.<sup>1</sup> It is also found in much greater amounts in human lens membranes (half of all the phospholipids) where it has a critical role in ocular function and perhaps in age-related nuclear cataracts.<sup>2</sup> However, dihydrosphingomyelin has been reported to occur only in small amounts in the lens membranes of other mammals. Dihydrosphingomyelin demonstrates good mixing properties with both sterols and sphingomyelin indicating that it could function as a membrane organizer and this may be the reason it is present in large amounts in human lens membranes where cholesterol is also enriched.<sup>3</sup> The enzyme sphingomyelinase is active towards dihydrosphingomyelin and readily converts it to dihydroceramide. Recent evidence has been presented that indicates that dihydrosphingomyelin impairs HIV-1 infection by rigidifying liquid-ordered membrane domains, a finding that could have great potential in providing a therapeutic treatment for this debilitating disease.<sup>4</sup>

### **Selected References:**

1. Wm. Byrdwell and R. Perry "Liquid chromatography with dual parallel mass spectrometry and 31P nuclear magnetic resonance spectroscopy for analysis of sphingomyelin and dihydrosphingomyelin II. Bovine milk sphingolipids" *Journal of Chromatography A*, vol. 1146 pp. 164-185, 2007
2. J. Deeley et al. "Sphingolipid distribution changes with age in the human lens" *Journal of Lipid Research*, vol. 51 pp. 2753-2760, 2010
3. T. Nyholm et al. "A Calorimetric Study of Binary Mixtures of Dihydrosphingomyelin and Sterols, Sphingomyelin, or Phosphatidylcholine" *Biophysical Journal*, vol. 84 pp. 3138-3146, 2003
4. C. Vieira et al. "Dihydrosphingomyelin Impairs HIV-1 Infection by Rigidifying Liquid-Ordered Membrane Domains" *Chemistry and Biology*, vol. 17 pp. 766-775, 2010

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