

# PRODUCT INFORMATION



## D-erythro/L-threo Lysosphingomyelin (d18:1)

Item No. 31557

CAS Registry No.: 82970-80-7

Formal Name: 2-[[[(2-amino-3-hydroxy-4-octadecen-1-yl)oxy]hydroxyphosphoryl]oxy]-N,N,N-trimethylethanaminium, inner salt

Synonyms: D-erythro/L-threo Lyso SM(18:1), D-erythro/L-threo Sphingosine-1-Phosphocholine (d18:1), D-erythro/L-threo-Sphingosylphosphorylcholine

MF:  $C_{23}H_{49}N_2O_5P$

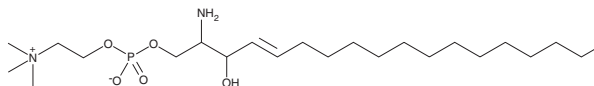
FW: 464.6

Purity:  $\geq 98\%$

Supplied as: A solid

Storage:  $-20^\circ\text{C}$

Stability:  $\geq 4$  years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

### Laboratory Procedures

D-erythro/L-threo Lysosphingomyelin (d18:1) is supplied as a solid. A stock solution may be made by dissolving the D-erythro/L-threo lysosphingomyelin in the solvent of choice, which should be purged with an inert gas. D-erythro/L-threo Lysosphingomyelin is soluble in a 2:1 solution of chloroform:methanol.

### Description

Lysosphingomyelin is an endogenous bioactive sphingolipid and a constituent of lipoproteins.<sup>1,2</sup> It is produced by the removal of the acyl group from sphingomyelin by a deacylase and acts as a precursor in the biosynthesis of sphingosine-1-phosphate (S1P; Item No. 62570). D-erythro Lysosphingomyelin is an agonist of the S1P receptors S1P<sub>1</sub>, S1P<sub>2</sub>, and S1P<sub>3</sub> ( $EC_{50}$ s = 167.7, 368.1, and 482.6 nM, respectively, for the human receptors).<sup>3</sup> It is also an agonist of the orphan receptor ovarian cancer G protein-coupled receptor 1 (OR1) that induces calcium accumulation in cells overexpressing OGR1 ( $EC_{50}$  = ~35 nM).<sup>4</sup> Levels of D-erythro lysosphingomyelin are increased in skin isolated from patients with atopic dermatitis, as well as postmortem brain from patients with Niemann-Pick disease type A, but not type B.<sup>2,5</sup> L-threo lysosphingomyelin is also an S1P<sub>1-3</sub> agonist ( $EC_{50}$ s = 19.3, 131.8, and 313.3 nM, respectively).<sup>3</sup> This product is a mixture of D-erythro and L-threo lysosphingomyelin. As this product is derived from a natural source, there may be variations in the sphingoid backbone.

### References

1. Ito, M., Kurita, T., and Kita, K. A novel enzyme that cleaves the N-acyl linkage of ceramides in various glycosphingolipids as well as sphingomyelin to produce their lyso forms. *J. Biol. Chem.* **270**(41), 24370-24374 (1995).
2. Nixon, G.F., Mathieson, F.A., and Hunter, I. The multi-functional role of sphingosylphosphorylcholine. *Prog. Lipid Res.* **47**(1), 62-75 (2008).
3. Im, D.-S., Clemens, J., Macdonald, T.L., et al. Characterization of the human and mouse sphingosine 1-phosphate receptor, S1P<sub>5</sub> (Edg-8): Structure-activity relationship of sphingosine 1-phosphate receptors. *Biochemistry* **40**(46), 14053-14060 (2001).
4. Meyer zu Heringdorf, D., Himmel, H.M., and Jakobs, K.H. Sphingosylphosphorylcholine-biological functions and mechanisms of action. *Biochim. Biophys. Acta* **1582**(1-3), 178-189 (2002).
5. Rodriguez-Lafrasse, C. and Vanier, M.T. Sphingosylphosphorylcholine in Niemann-Pick disease brain: Accumulation in type A but not in type B. *Neurochem. Res.* **24**(2), 199-205 (1999).

#### WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

#### SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

#### WARRANTY AND LIMITATION OF REMEDY

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