

PRODUCT DATA SHEET

N-Hexanoyl-L-*threo*-sphingosine

Catalog number: 1828

Common names: N-C6:0-L-*threo*-Ceramide

Source: synthetic

Solubility: chloroform, ethanol, DMSO, DMF
(up to 5 mg/ml)

CAS number: 189894-80-2

Molecular Formula: C₂₄H₄₇NO₃

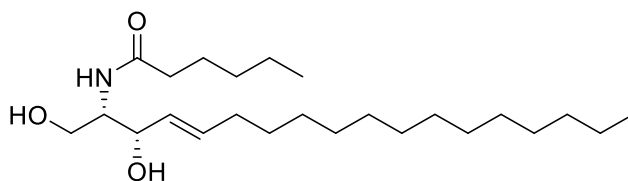
Molecular Weight: 398

Storage: -20°C

Purity: TLC >98%, GC >98%; identity confirmed
by MS

TLC System: chloroform/methanol (90:10 by vol.)

Appearance: solid



Application Notes:

This product is the non-natural *L-threo* stereoisomer of ceramide. Natural *D-erythro* ceramide is a critical compound in cells both as a free ceramide and incorporated into more complex sphingolipids. *L-threo*-ceramides demonstrate a different metabolic functionality from natural ceramides. They have been shown to be metabolized to sphingomyelin but not to glucosylceramide.¹ Another non-natural stereoisomer, *L-erythro* ceramide, is not metabolized to any sphingolipid. In contrast to natural ceramides *L-threo* ceramides are unable to antagonize the disruptive effects of fumonisin B1 on axon growth² but it is able to activate intracellular pathways and induces apoptosis.³ The deacylated form of ceramide, sphingosine, also has many critical cellular functions. *L-threo*-sphingosine, along with other sphingosine isomers, has been found to be an activator of 3-Phosphoinositide-dependent kinase-1⁴ and inhibits protein kinase C a little more potently than *D-erythro*-sphingosine.⁵

Selected References:

1. K. Venkataraman and H. Futerman "Comparison of the metabolism of L-erythro- and L-threo-sphinganine and ceramides in cultured cells and in subcellular fractions" *Biochim Biophys Acta*, vol. 1530 pp. 219-226, 2001
2. A. Schwarz and A. Futerman "Distinct Roles for Ceramide and Glucosylceramide at Different Stages of Neuronal Growth" *The Journal of Neuroscience*, vol. 17 pp. 2929-2938, 1997
3. A. Bielawska et al. "Selectivity of ceramide-mediated biology—lack of activity of *erythro*dihydroceramide" *J Biol Chem*, vol. 268 pp. 26226–26232, 1993
4. C. King et al. "Sphingosine Is a Novel Activator of 3-Phosphoinositide-dependent Kinase 1" *The Journal of Biological Chemistry*, vol. 275(24) pp. 18108-18113, 2000
5. V. Stevens et al. "Structural requirements for long-chain (sphingoid) base inhibition of protein kinase C in vitro and for the cellular effects of these compounds" *Biochemistry*, vol. 28, 3138-3145, 1989

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