

PRODUCT DATA SHEET

N-Dodecanoyl-NBD-L-threo-sphingosine

Catalog number: 1620

Synonyms: N-C12:0-NBD-L-threo-Ceramide;
N-C12:0-NBD-L-threo-
Sphingosine, fluorescent

Source: synthetic

Solubility: chloroform/methanol (2:1);
methanol

CAS number: 474943-08-3

Molecular Formula: C₃₆H₆₁N₅O₆

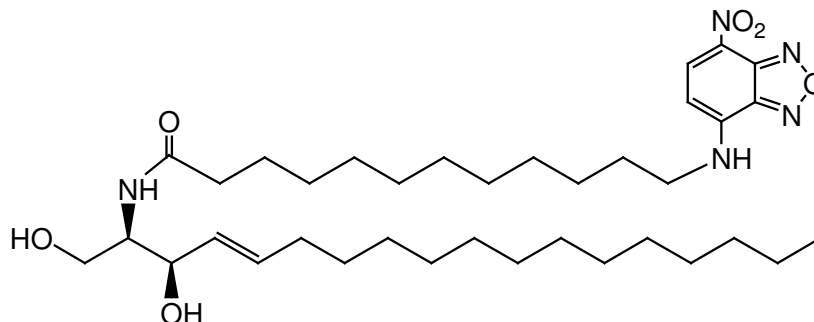
Molecular Weight: 660

Storage: -20°C

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

TLC System: chloroform/methanol (90:10)

Appearance: solid



Application Notes:

This product is a fluorescent *L-threo*-ceramide. The NBD fluorescent group has been shown to have only a small influence on lipid adsorption into cells and cellular membranes and this fluorescent analog of *L-threo*-ceramide is comparable to C12:0-*L-threo*-ceramide in many biological functions such as lipid uptake and transport¹, structural determinants, and lipid partitioning². *L-threo*-ceramide is a non-natural isomer of ceramide. The natural *D-erythro* isomer 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. 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 fumonisins B1 on axon growth 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.

Selected References:

1. D. Moffat and J. Kusel "Fluorescent lipid uptake and transport in adult *Schistosoma mansoni*" *Parasitology*, Vol. 105(1) pp. 81-89, 1992
2. P. Sengupta et al. "Structural determinants for partitioning of lipids and proteins between coexisting fluid phases in giant plasma membrane vesicles" *Biochimica et Biophysica Acta*, Vol. 1778(1) pp. 20-32, 2008
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

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