

# PRODUCT DATA SHEET

## N-Hexanoyl-NBD-L-*threo*-sphingosine

**Catalog number:** 1857; 1857-001

**Synonyms:** N-C6:0-NBD-L-*threo*-Ceramide;  
N-C6:0-NBD-L-*threo*-Sphingosine

**Source:** synthetic

**Solubility:** ethanol, methanol, chloroform

**CAS number:** 114301-95-0

**Molecular Formula:** C<sub>30</sub>H<sub>49</sub>N<sub>5</sub>O<sub>6</sub>

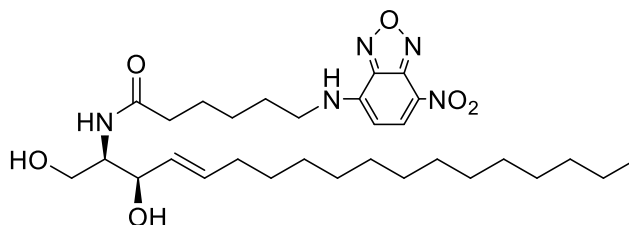
**Molecular Weight:** 576

**Storage:** -20°C

**Purity:** TLC: >98%

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

**Appearance:** solid



### Application Notes:

This product is a high purity, non-natural *L-threo* ceramide containing a fluorescent NBD label and is ideal as a standard and for biological studies. NBD (7-nitrobenzofurazan) has been shown to have only a small influence on lipid adsorption into cells and cellular membranes especially when the fatty acid is a short chain. The fluorescent analog of natural ceramide is comparable to C6:0-ceramide in many biological functions such as inhibition of VSV-G protein transport<sup>1</sup>, and transport of sphingomyelin and glucocerebroside from the golgi apparatus to the cell surface.<sup>2</sup> Both the natural *D-erythro* and the non-natural *L-erythro* and the *D-* and *L-threo* ceramides display similar effectiveness in inducing apoptotic damage in cells.<sup>3</sup> The protein phosphatases PP1 and PP2A, which are involved in regulating apoptosis and cell growth, are activated by *D-erythro* ceramide but inhibited by *L-threo*, *D-threo*, and *L-erythro* ceramide.<sup>4</sup> Both *D-erythro* and *D-threo* C2 ceramides have been found to be potent inducers of IL-6 production, while neither the *L-threo* or *L-erythro* stereoisomers of ceramide were effective.<sup>5</sup> *D-* and *L-erythro* ceramide and *D-* and *L-threo* ceramide are also comparably effective inhibitors of protein kinase C.<sup>6</sup>

### Selected References:

1. A. Rosenwald and R. Pagano "Inhibition of glycoprotein traffic through the secretory pathway by ceramide" *Journal of Biological Chemistry*, Vol. 268 pp. 4577-4579, 1993
2. N. Lipsky, R. Pagano "Intracellular translocation of fluorescent sphingolipids in cultured fibroblasts: Endogenously synthesized sphingomyelin and glucocerebroside analogues pass through the golgi apparatus en route to the plasma membrane" *Journal of Cell Biology*, Vol. 100 pp. 27-34, 1985
3. W. Jarvis et al. "Induction of Apoptosis and Potentiation of Ceramide-mediated Cytotoxicity by Sphingoid Bases in Human Myeloid Leukemia Cells" *The Journal of Biological Chemistry*, Vol. 271 pp. 8275-8284, 1996
4. C. Chalfant et al. "Long Chain Ceramides Activate Protein Phosphatase-1 and Protein Phosphatase-2A Activation is Stereospecific and Regulated by Phosphatidic Acid" *The Journal of Biological Chemistry*, Vol. 274 pp. 20313-20317, 1999
5. S. Laulederkind et al. "Ceramide Induces Interleukin 6 Gene Expression in Human Fibroblasts" *The Journal of Experimental Medicine*, Vol. 182 pp. 599-604, 1995
6. T. Ariga et al. "Role of sphingolipid-mediated cell death in neurodegenerative diseases" *Journal of Lipid Research*, Vol. 39 pp. 1-16, 1998

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