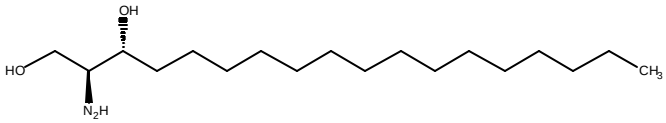
3050 Spruce Street
Saint Louis, Missouri 63103 USA
Telephone (800) 325-5832 (314) 771-5765
Fax (314) 286-7828
email: techserv@sial.com
sigma-aldrich.com

ProductInformation

D-*erythro*-Dihydrosphingosine

Product Number **D3314**
Storage Temperature –20 °C

CAS #: 764-22-7
Synonyms: Sphinganine



Product Description

Molecular Formula: $C_{18}H_{39}NO_2$
Formula Weight: 301.5
Appearance: white solid
Purity: 98%

Sphingolipids are ubiquitous among eukaryotic organisms and have long been recognized for their roles in cell membrane structure, especially in nerve and blood cells. They are involved in cell recognition (e.g. blood group determinants, surface antigens) and determine cell status, i.e. differentiated versus non-differentiated (embryonic), normal versus malignant, etc.[1,2]

Sphingosine, sphinganine, and other long-chain (sphingoid) bases inhibit protein kinase C (PKC) *in vitro* and block cellular responses to agonists that act via this enzyme. In *in vitro* experiments with neutrophils and hamster ovary cells, the inhibitory effects of long-chain analogues differing in alkyl chain length (11-20 carbon atoms), stereochemistry, and headgroup were maximal with the 18-carbon homologues, which are the same length as the naturally occurring sphingosine. Small differences were obtained with the four stereoisomers of sphingosine (i.e., D and L forms of *erythro*- and *threo*-sphingosine), with N-methyl derivatives of the different sphingosine homologues, and with simpler alkylamines (e.g., stearylamine).[3,4]

D-*erythro*-dihydrosphingosine is a biosynthetic precursor to sphingosine and long chain sphingosine analog. D-*erythro*-dihydrosphingosine remains inactive in cell culture supernatants and may be used as a baseline in cell-free experiments. In cells, D-*erythro*-dihydrosphingosine is metabolized to sphingosine and inhibits PKC activation in a time dependent manner. In Hep3B cells, this compound and other synthetic long-chain analogues induce apoptosis independently of ceramide and are accompanied by activation of caspase-3-like proteases, but not by caspase-1.[5,6]

Sigma offers a full line of natural ceramides and sphingolipids, as well as synthetic analogs. To view, visit our web site at www.sigma-aldrich.com.

Preparation Instructions

D-*erythro*-dihydrosphingosine is soluble in ethanol and DMSO at 25 mg/ml. Prewarm DMSO before use.

Storage/Stability

Store at –20 °C for up to twelve months.

References

1. Ong, D.E. and Brady, R.N., In vivo studies on the introduction of the 4-t-double bond of the sphingenine moiety of rat brain ceramides. J. Biol. Chem., **248**, 3884 3888 (1973).
2. Merrill, A.H. and Wang, E., Biosynthesis of long-chain (sphingoid) bases from serine by LM cells. Evidence for introduction of the 4-trans-double bond after *de novo* biosynthesis of N-acylsphinganine(s). J. Biol. Chem., **261**, 3764-3769 (1986).
3. Ohanian, J. and Ohanian, V., Sphingolipids in mammalian cell signaling. Cell Mol. Life Sci., **58**, 2053-2068 (2001).
4. Merrill, A. H., 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, **28**, 3138-3145 (1989).
5. Hannun, Y. A., et al., Sphingosine inhibition of protein kinase C activity and of phorbol dibutyrate binding in vitro and in human platelets. J. Biol. Chem., **261**, 12604-12609 (1986).
6. Hung, W.C., et al., Activation of caspase-3-like proteases in apoptosis induced by sphingosine and other long-chain bases in Hep3B hepatoma cells. Biochem. J., **338**, 161-166 (1999).

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