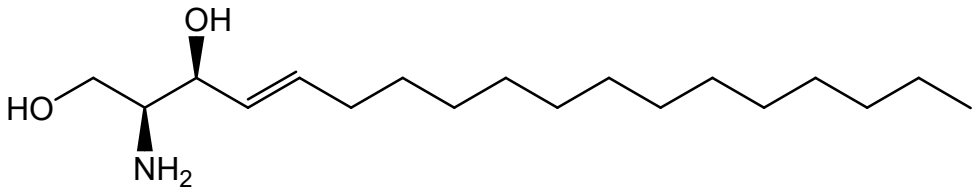
PRODUCT DATA SHEET

MATREYA LLC
Lipids and Biochemicals
A Cayman Chemical Company

L-*threo*-Sphingosine

Catalog number: 1806
Common Name: L-*threo*-Sphingosine, C18 chain
Source: synthetic
Solubility: ethanol, methanol, chloroform, DMSO
CAS number: 25695-95-8

Molecular Formula: $C_{18}H_{37}NO_2$
Molecular Weight: 300
Storage: -20°C
Purity: TLC >98%, GC >98%
TLC System: chloroform/methanol/DI water/ammonium hydroxide (70:20:1:1 by vol.)
Appearance: solid



Application Notes:

L-*threo*-Sphingosine is an inactive or less active isomer of the naturally occurring D-*erythro*-sphingosine. Natural sphingosine induces dephosphorylation of retinoblastoma gene products and inhibits cell growth while L-*threo*-sphingosine is less active. However, the L-*threo*-sphingosine is taken up by cells to the same extent as the natural sphingosine indicating that cellular uptake was not the factor influencing activity.[1] L-*threo*-sphingosine, along with other sphingosine isomers, has been found to be an activator of 3-Phosphoinositide-dependent kinase-1.[2] Natural D-*erythro*-sphingosine is a positive regulator of cell growth in fibroblasts whereas L-*threo*-sphingosine has no regulatory effect.[3] However, non-natural stereoisomers of sphingosine are not always inactive; L-*threo*-sphingosine has been shown to inhibit protein kinase C a little more potently than D-*erythro*-sphingosine.[4]
Sphingosine is a characteristic structural unit of many sphingolipids such as ceramides, gangliosides, globosides, sulfatides, sphingomyelin, and others. It is most abundant in nervous tissue and cell membranes. Sphingosine with an 18-carbon chain and a double bond at carbon 4 is the most abundant sphingosine in animal tissues. Lysosphingolipids inhibit protein kinase C activity resulting in the pathogenesis of sphingolipidoses such as Krabbe's disease and Gaucher's disease. Sphingosine can be phosphorylated via two kinases to form sphingosine-1-phosphate, which has important signaling functions. While sphingosines and ceramides can induce apoptosis, sphingosine-1-phosphate can promote cell survival or proliferation. Sphingosine has been shown to cause an increase in the cytoplasmic calcium level of cells.

Selected References:

1. Y. Hannun et al. “Stereoselectivity of Induction of the Retinoblastoma Gene Product (pRb) Dephosphorylation by D-*erythro*-Sphingosine Supports a Role for pRb in Growth Suppression by Sphingosine” *Biochemistry*, vol. 34 pp. 1885-1892, *1995*
2. 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*
3. S. Spiegel et al. “Stereospeci~cityo f Sp~ingosine-indu~eIdnt racellular Calcium Mobilization and Cellular Proliferation” *Journal of Biological Chemistry*, vol. 269 pp. 17924-17930, *1994*
4. 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*