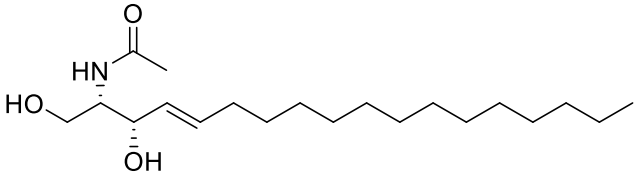
PRODUCT DATA SHEET

N-Acetyl-L-*threo*-sphingosine

Catalog number: 1829
Common names: N-C2:0-L-*threo*-Ceramide
Source: synthetic
Solubility: chloroform, ethanol, DMSO, DMF (up to 5 mg/ml)
CAS number: 143615-69-4
Molecular Formula: $C_{20}H_{39}NO_3$

Molecular Weight: 342
Storage: -20ºC
Purity: TLC >98%, GC >98%; identity confirmed by MS
TLC System: chloroform/methanol (90:10)
Appearance: solid



Application Notes:

This non-natural L-*threo*-ceramide contains an acetyl group which allows it to enter easily into cells where it demonstrates activity different from natural D-*erythro*-ceramides. N-Acetyl-*threo*-sphingosine can be converted to the N-acetyl-*threo*-sphingosylphosphorylcholine in the presence of Mn^{2+} and CDP-choline.[1] Glucosyl-N-acetyl-L-*threo*-sphingosine was found to be a poorer substrate for *beta*-glucosidase than the D-*erythro* isomer but was able to undergo cleavage.[2] N-Acetyl-D-*erythro*-sphingosine demonstrates many of the biological activities associated with ceramides that contain long-chain fatty acids. However, it has also been found that this N-acetyl-sphingosine may inhibit neutrophil superoxide release,[3] stimulation of DNA synthesis, and phospholipase D activity. N-acetyl-D-*erythro*-sphingosine is different from sphingosine as seen by its inability to inhibit protein kinase C or cause calcium release. Ceramide is a fatty acid amide of sphingosine that has many important biological functions and is the precursor for many complex glycosphingolipids. Ceramide functions as a precursor in the synthesis of sphingomyelin, glycosphingolipids, and of free sphingosine and fatty acids. Ceramide has been investigated for its use in cancer treatment and many potential approaches to cancer therapy have been presented.[4]

Selected References:

1. M. Ullman and N. Radin "The Enzymatic Formation of Sphingomyelin from Ceramide and Lecithin in Mouse Liver" *The Journal of Biological Chemistry*, vol. 249 pp. 1506-1512, *1974*
2. K. Sandhoff et al. "Specificity of human glucosylceramide β-glucosidase towards synthetic glucosylsphingolipids inserted into liposomes" *European Journal of Biochemistry*, vol. 160 pp. 527-535, *1986*
3. K. Wong, X. Li, N. Hunchuk "*N*-Acetylsphingosine (C_2-ceramide) Inhibited Neutrophil Superoxide Formation and Calcium Influx" *Journal of Biological Chemistry*, Vol. 270 pp. 3056-3052, *1995*
4. N. S. Radin, "Designing anticancer drugs via the achilles heel: ceramide, allylic ketones, and mitochondria" *Bioorganic and Medicinal Chemistry*, Vol. 11(10) pp. 2123-2142, *2003*

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