

PRODUCT DATA SHEET

N-Hexanoyl-biotin-D-erythro-sphingosine

Catalog number: 2081

Synonyms: N-C6:0-biotin-D-erythro-Ceramide

Source: synthetic

Solubility: chloroform/methanol 2:1, DMF

CAS number: 192070-02-3

Molecular Formula: C₃₄H₆₂N₄O₅S

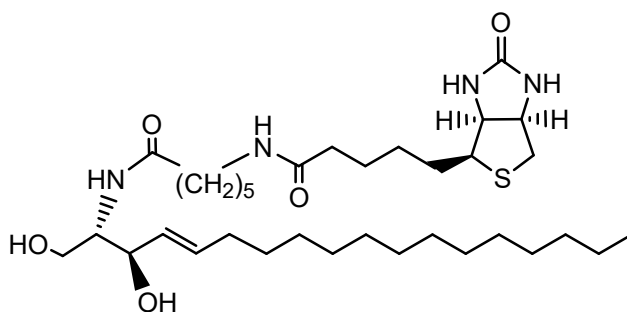
Molecular Weight: 639

Storage: -20°C

Purity: TLC >98%, HPLC >98%, identity confirmed by MS

TLC System: chloroform/methanol 85:15

Appearance: solid



Application Notes:

This ceramide analogue contains a biotin unit attached to the amine of the sphingosine moiety via a hexanoic acid linker and is ideal for use in sphingolipid studies. The biotin structure allows for attachment of the ceramide to streptavidin and avidin making it extremely useful for binding to substrates and for toxin detection¹.

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. The sphingosine can be phosphorylated to form sphingosine-1-phosphate. Two of ceramide's metabolites, sphingosine-1-phosphate and glucosylceramide, produce cell proliferation and other cellular functions.² Ceramide exerts numerous biological effects, including induction of cell maturation, cell cycle arrest, terminal cell differentiation, cell senescence, and cell death.³ Because of these effects ceramide has been investigated for its use in cancer treatment and many potential approaches to cancer therapy have been presented.⁴ Other effects include producing reactive oxygen in mitochondria (followed by apoptosis) and stimulating phosphorylation of certain proteins (especially mitogen activated protein). It also stimulates some protein phosphatases (especially protein phosphatase 2A) making it an important controller of protein activity.

Selected References:

1. A. Mukhopadhyay et al. "Direct interaction between the inhibitor 2 and ceramide via sphingolipid-protein binding is involved in the regulation of protein phosphatase 2A activity and signaling" *FASEB*, Vol. 23(3) pp. 751-763, 2009
2. J. M. Hauser, B. M. Buehrer, and R. M. Bell "Role of ceramide in mitogenesis induced by exogenous sphingoid bases." *Journal of Biological Chemistry* Vol. 269 pp. 6803, 1994
3. N. S. Radin, "Killing tumours by ceramide-induced apoptosis: a critique of available drugs" *Biochemical Journal*, Vol. 371 pp. 243-256, 2003
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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