

PRODUCT DATA SHEET

N-*omega*-Hydroxytriacontanoyl-D-erythro-sphingosine

Catalog number: 2080

Synonyms: N-*omega*-Hydroxy-C30:0-D-erythro-ceramide

Source: synthetic

Solubility: chloroform/methanol 2:1, DMF, hot ethanol

CAS number: 457100-08-2

Molecular Formula: C₄₈H₉₅NO₄

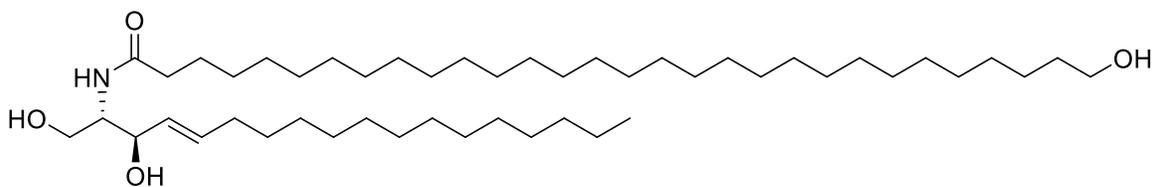
Molecular Weight: 750

Storage: -20°C

Purity: TLC: >98%; identity confirmed by MS

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

Appearance: solid



Application Notes:

This product is a high purity ceramide containing an *omega*-hydroxy very long-chain fatty acid (C30:0) acylated to sphingosine, making it ideal as an internal standard and for biological studies. Ceramide is a fatty acid amide of sphingosine that functions as a precursor in the synthesis of sphingomyelin, glycosphingolipids, and of free sphingosine and fatty acids. Two of ceramide's metabolites, sphingosine-1-phosphate and glucosylceramide, produce cell proliferation and are involved in a host of other cellular functions.¹ Ceramide exerts numerous biological effects, including induction of cell maturation, cell cycle arrest, terminal cell differentiation, cell senescence, and cell death.² Because of these effects ceramide has been investigated for its use in cancer treatment and many potential approaches to cancer therapy have been presented.³ 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. Sphingolipids acylated with very long chain fatty acids (VLCFA) may be responsible for the maturation of epidermis cells of the spermatozoa/testes.⁴ *omega*-Hydroxylated VLCFA ceramides are vital to skin barrier functions and a deficiency of these lipids can cause death from water loss through the skin. A mutation in an elongase enzyme for VLCFA results in a deficiency in *omega*-hydroxy VLCFA-ceramides which causes a muscular dystrophy disease, defective skin-water permeability barrier function, and neurological disorders showing the importance of these VLCFA ceramides.⁵

Selected References:

1. 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
2. N. S. Radin, "Killing tumours by ceramide-induced apoptosis: a critique of available drugs" *Biochemical Journal*, Vol. 371 pp. 243-256, 2003
3. 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
4. R. Sandhoff "Very long chain sphingolipids: Tissue expression, function and synthesis" *FEBS Letters* Vol. 584(9) pp. 1907-1913, 2010
5. W. Li "Depletion of ceramides with very long chain fatty acids causes defective skin permeability barrier function, and neonatal lethality in ELOVL4 deficient mice" *Int J Biol Sci*, Vol. 3 pp. 120-128, 2007

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