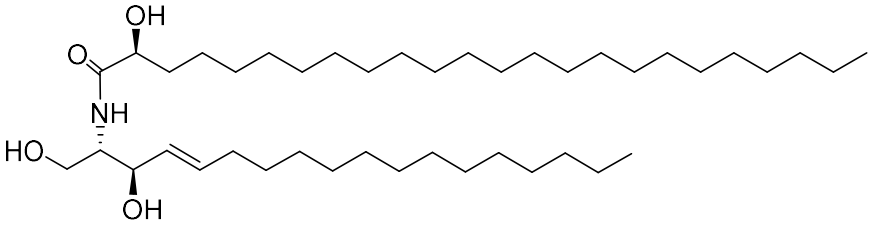
PRODUCT DATA SHEET

MATREYA LLC
Lipids and Biochemicals
A Cayman Chemical Company

N-(S)-*alpha*-Hydroxytetracosanoyl-D-*erythro*-sphingosine

Catalog number: 2097
Synonyms: N-(S)-*alpha*-Hydroxy-C24:0-ceramide; N-(S)-Cerebronoyl-ceramide
Source: synthetic
Solubility: chloroform/methanol 80:20, warm ethanol
CAS number: 112317-53-0

Molecular Formula: $C_{42}H_{83}NO_4$
Molecular Weight: 666
Storage: -20°C
Purity: TLC: >98%; identity confirmed by MS
TLC System: chloroform/methanol (90:10)
Appearance: solid



Application Notes:

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. 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.[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. 2-hydroxy fatty acid ceramides are especially abundant in nervous and epidermal cells. Skin cells contain significant amounts of long chain ceramides, such as *alpha*-hydroxyceramides, that are vital for maintaining skin barrier functions.[4]

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. S. Grond et al., "PNPLA1 Deficiency in Mice and Humans Leads to a Defect in the Synthesis of Omega-O-Acylceramides" *J Invest Dermatol*. Vol. 137(2) pp. 394-402, *2017*

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