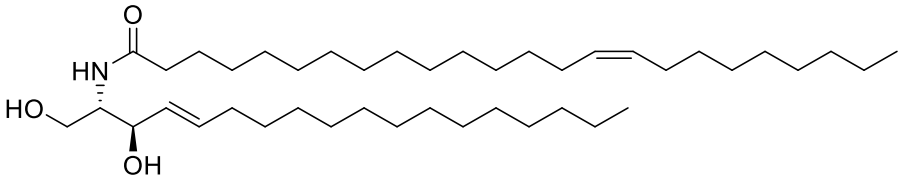
PRODUCT DATA SHEET

N-Tetracosenoyl-(*cis*-15)-D-*erythro*-sphingosine

Catalog No: 1930
Common Name: N-(*cis*-15)-C24:1-D-*erythro*-Ceramide; N-Nervonoyl-D-*erythro*-sphingosine
Source: synthetic
Solubility: chloroform
CAS No: N/A

Molecular Formula: $C_{42}H_{81}NO_3$
Molecular Weight: 648
Storage: -20°C
Purity: TLC >98%; GC >98%; identity confirmed by MS
TLC System: chloroform/methanol (95:5 by vol.)
Appearance: solid



Application Notes:

Ceramide is a fatty acid amide of sphingosine. This product is a well-defined ceramide with a tetracosenoyl (nervonyl) acyl group. 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.[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. Ceramides with short side chains have been shown to enter easily into cells where they are biologically active while ceramides with longer side chains will enter cells if dissolved in dodecane-isopropanol. Nervonic acid has been found to be important in the biosynthesis of nerve cell myelin and is found in sphingolipids of white matter. There is a marked reduction in the level of nervonic acid in sphingolipids in diseases involving demyelinateion, such as adrenoleukodystropy and multiple sclerosis.[4]

Selected References:

1. J. Hauser, B. Buehrer, and R. Bell "Role of ceramide in mitogenesis induced by exogenous sphingoid bases." *Journal of Biological Chemistry* Vol. 269 pp. 6803, *1994*
2. N. Radin, "Killing tumours by ceramide-induced apoptosis: a critique of available drugs" *Biochemical Journal,* Vol. 371 pp. 243-256, *2003*
3. N. 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. C. Cook et al. "Effects of feeding *Lunaria* oil rich in nervonic and erucic acids on the fatty acid compositions of sphingomyelins from erythrocytes, liver, and brain of the quaking mouse mutant" *Lipids*, Vol. 33 pp. 993, *1998*

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