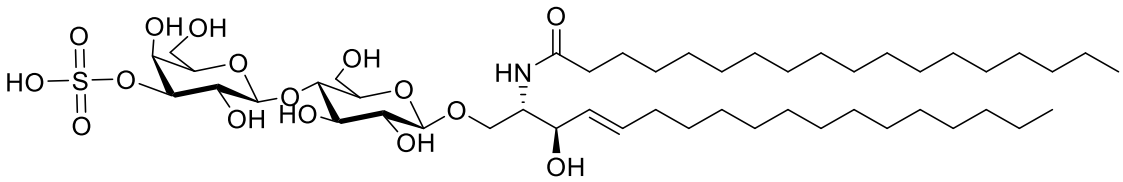
PRODUCT DATA SHEET

N-Octadecanoyl-sulfated-lactosylceramide

Catalog number: 1540
Synonyms: SM3; N-Octadecanoyl-lactosylceramide-3'-sulfate; N-Octadecanoyl-lactosylceramide sulfatide
Source: synthetic
Solubility: chloroform/methanol/DI water 2:1:0.1

CAS number: 1292769-63-1
Molecular Formula: $C_{48}H_{91}NO_{16}S$
Molecular Weight: 970
Storage: -20°C
Purity: TLC: >98%; identity confirmed by MS
TLC System: chloroform/methanol/2.5N ammonium hydroxide (65:25:4 by vol.)
Appearance: solid



Application Notes:

Sulfoglycolipids are an important group of negatively charged biological compounds that have essential and far-reaching cellular functions. They are especially active in interacting with extracellular matrix proteins, cellular adhesive receptors, blood coagulation systems, and microorganisms.[1] Sulfated glycolipids are produced by action of the enzyme cerebroside sulfotransferase (CST) which transfers a sulfate to the sugar moiety.

Sulfated-lactosylceramide was shown to abrogate anchorage-independent growth and cell adhesion to laminin and fibronectin, which could be attributed to decreased β1 integrin gene expression. This led to a novel hypothesis that specific, individual, glycosphingolipids might regulate the gene expression of a select number of genes.[2]

Sulfated-lactosylceramide binds L-selectin and P-selectin, specific cell adhesion molecules found on cell surfaces and linked to metastasis.[3] The presence of sulfated-lactosylceramide was linked to upregulation of CST gene expression and also mediated cell adhesion to vitronectin and αVβ3 integrins. Expression of sulfated-lactosylceramide induced by CST transfection in murine Lewis lung carcinoma cells led to suppression of cell adhesion to laminin and β1 integrin and, subsequently, metastasis.[3]

Arylsulfatase A is a lysosomal enzyme that catalyzes the first step in the degradation of sulfoglycolipids. Metachromatic leukodystrophy is an autosomal recessively inherited lysosomal storage disorder caused by deficiency of arylsulfatase A activity leading to subsequent accumulation of sulfoglycolipids. Toxic levels of these accumulated lipids leads to ataxia, flaccid and spastic tetraparesis, optical atrophy, epileptic seizures, and other neurological symptoms.[4]

Selected References:

1. K. Honke, Biosynthesis and biological function of sulfoglycolipids, *Proc Jpn Acad Ser B Phys Biol Sci*. 89(4): 129–138, *2013*
2. S. Uemura et al., Sialylation and sulfation of lactosylceramide distinctly regulate anchorage-independent growth, apoptosis, and gene expression in 3LL Lewis lung carcinoma cells, *Glycobiology* 13(3) 207-216, *2003*
3. J. Garcia et al., P-selectin mediates metastatic progression through binding to sulfatides on tumor cells, *Glycobiology* 17(2) 185–196, *2007*
4. M. Eckhardt et al., Sulfatide Storage in Neurons Causes Hyperexcitability and Axonal Degeneration in a Mouse Model of Metachromatic Leukodystrophy, *The Journal of Neuroscience*, 27(34):9009 –9021, *2007*

2178 High Tech Road, State College, PA 16803
www.matreya.com · Phone (814) 355-1030 · Fax (814) 355-1031