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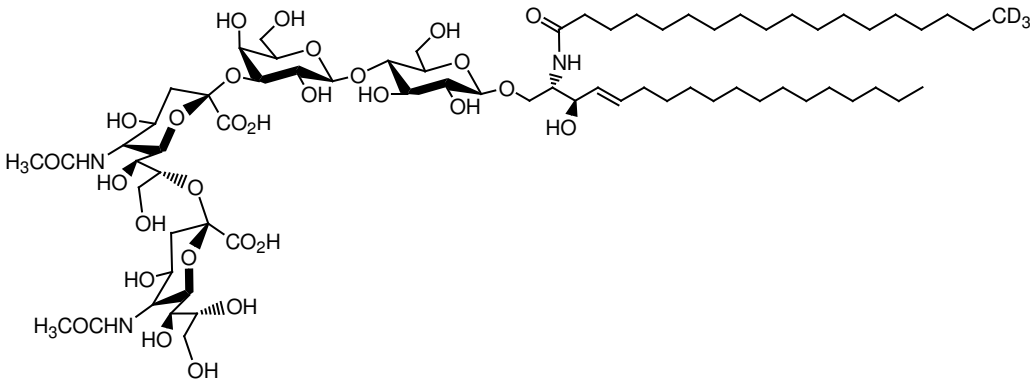
PRODUCT DATA SHEET

N-*omega*-CD_3-Octadecanoyl disialoganglioside GD_3

Catalog No: 2054
Common Name: N-CD_3-Stearoyl GD_3
Source: Semisynthetic, bovine buttermilk
Solubility: chloroform/methanol, (2:1); water
CAS No: N/A
Molecular Formula: $C_{70}H_{122}D_3N_3O_{29}$

Molecular Weight: 1476
Storage: -20°C
Purity: TLC: >98%; identity confirmed by MS
TLC System: chloroform/methanol/ 2.5N ammonium hydroxide, (60:40:9 by Vol.)
Appearance: solid



Application notes:

Gangliosides[1] are acidic glycosphingolipids that form lipid rafts in the outer leaflet of the cell plasma membrane, especially in neuronal cells in the central nervous system.[2] They participate in cellular proliferation, differentiation, adhesion, signal transduction, cell-to-cell interactions, tumorigenesis, and metastasis. The accumulation of gangliosides has been linked to several diseases including Tay-Sachs and Sandhoff disease. GD3 is predominantly expressed during neuronal development and its expression becomes very limited in adult tissues. GD3 expression is unusually high in basal cell carcinomas and malignant melanomas and is thought to be a human melanoma-specific antigen. Although GD3 is not immunogenic it has been investigated as a tool for immunotargeting human melanoma cells.[3] Over expression of GD3 has led to apoptosis by recruiting mitochondria to apoptotic pathways and suppressing NF-κB activation and subsequent κB-dependent gene induction.[4] Increased levels of GD3 have also been found to be associated with proliferative diseases, such as atherosclerosis. A recent study has demonstrated that inhibition of GD_3 synthase, thereby decreasing levels of GD_3, has neuroprotective properties in a Parkinson's model and may warrant further investigation as a therapeutic target.[5] Stable isotope labeled GD_3 is a new mass spectrometry internal standard that can greatly enhance ganglioside studies.[6]

Selected References:

1. L. Svennerholm, et al. (eds.), *Structure and Function of Gangliosides,* New York, Plenum, *1980*
2. T. Kolter, R. Proia, K. Sandhoff "Combinatorial Ganglioside Biosynthesis" *J. Biol. Chem*., Vol. 277:29 pp. 25859-25862, *2002*
3. H. Jennings et al. "Bioengineering of Surface GD3 Ganglioside for Immunotargeting Human Melanoma Cells" *Journal of Biological Chemistry,* Vol. 279:24 pp. 25390, *2004*
4. J. Fernández-Checa et al. "Ganglioside GD3 Sensitizes Human Hepatoma Cells to Cancer Therapy" *Journal of Biological Chemistry*, Vol. 277:51 pp. 49870, *2002*
5. Y. Akkhawattanangkul et al. "Targeted Deletion of GD3 Synthase Protects Against MPTP-induced Neurodegeneration" *Genes Brain Behav*. Vol. 16:5 pp. 522-536, *2017*
6. M Reis et al., "Isotopic labeling of milk disialogangliosides (GD3)" *Chem Phys Lipids*. Vol. 200 pp. 104-112, *2016*