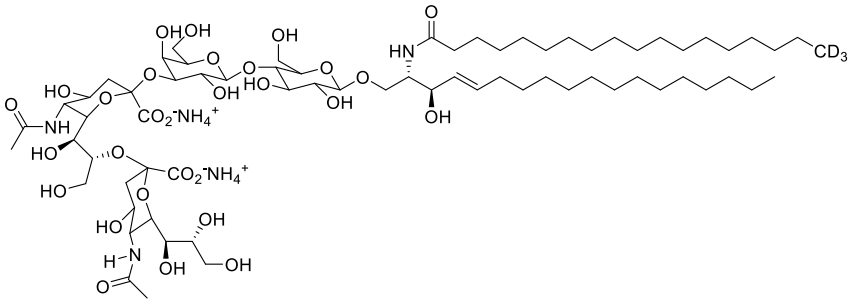
PRODUCT DATA SHEET

N-*omega*-CD_3-Octadecanoyl disialoganglioside GD_3 (NH_4^+ salt)

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: $C_{70}H_{122}D_3N_3O_{29} \bullet 2NH_3$
Molecular Weight: 1476 + $2NH_3$
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. GD_3 is predominantly expressed during neuronal development and its expression becomes very limited in adult tissues. GD_3 expression is unusually high in basal cell carcinomas and malignant melanomas and is thought to be a human melanoma-specific antigen. Although GD_3 is not immunogenic it has been investigated as a tool for immunotargeting human melanoma cells.[3] Over expression of GD_3 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 GD_3 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*

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