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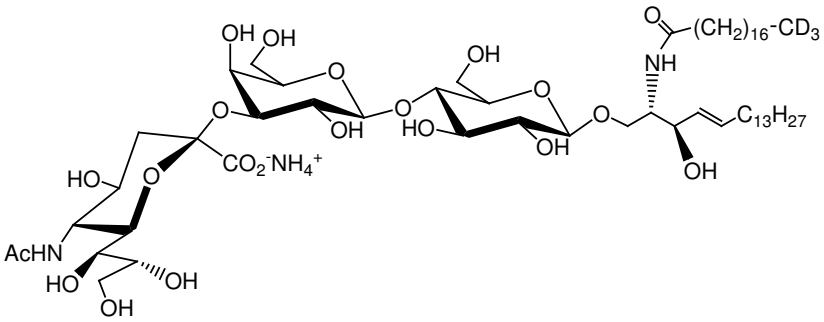
PRODUCT DATA SHEET

N-*omega*-CD_3-Octadecanoyl monosialoganglioside GM_3 (NH_4^+ salt)

Catalog number: 2052
Common Name: N-CD_3-Stearoyl-GM_3
Source: semisynthetic, bovine buttermilk
Solubility: chloroform/methanol/DI water, 2:1:0.1; forms micellar solution in water
CAS number: N/A
Molecular Formula: $C_{59}H_{105}D_3N_2O_{21} \bullet NH_3$

Molecular Weight: 1185+NH_3
Storage: -20°C
Purity: TLC 98$^+$%; identity confirmed by MS
TLC System: chloroform/methanol/ 2.5N aqueous ammonium hydroxide, (60:40:9 by vol.)
Appearance: solid



Application Notes:

This deuterated ganglioside is ideal for the identification of gangliosides in samples and biological systems using mass spectrometry.[1] Gangliosides[2] 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.[3] They participate in cellular proliferation, differentiation, adhesion, signal transduction, cell-to-cell interactions, tumorigenesis, and metastasis.[4] The accumulation of gangliosides has been linked to several diseases including Tay-Sachs and Sandhoff disease. GM_3 is the main ganglioside of human fibroblasts and can regulate fibroblast and epidermal growth factors[5] and is also able to regulate the adhesion and migration of several carcinoma cell lines. GM_3 was also shown to inhibit tumor cell invasion. GM_3 can induce human promyelocytic leukemia HL-60 cells to differentiate to monocyte/macrophage lineage instead of granulocytes.[6]

Selected References:

1. J. Gu, C. Tifft and S. Soldin "Simultaneous quantification of G_{M1} and G_{M2} gangliosides by isotope dilution tandem mass spectrometry" *Clinical Biochemistry*, Vol. 41(6) pp. 413-417, *2008*
2. L. Svennerholm, et al. (eds.), *Structure and Function of Gangliosides,* New York, Plenum, *1980*
3. T. Kolter, R. Proia, K. Sandhoff "Combinatorial Ganglioside Biosynthesis" *J. Biol. Chem.*, Vol. 277:29, pp. 25859-25862, *2002*
4. S. Birkle, G. Zeng, L. Gao, R. K. Yu, and J. Aubry "Role of tumor-associated gangliosides in cancer progression" *Biochimie*, Vol. 85 pp. 455–463, *2003*
5. E. G. Bremer, J. Schlessinger, and S. Hakomori "Ganglioside-mediated modulation of cell growth. Specific effects of GM3 on tyrosine phosphorylation of the epidermal growth factor receptor" *J. Biol. Chem.*, Vol. 261 pp. 2434–2440, *1986*
6. T. Chung, H. Choi, Y. Lee, and C. Kim "Molecular mechanism for transcriptional activation of ganglioside GM3 synthase and its function in differentiation of HL-60 cells" *Glycobiology,* Vol. 15:3, pp. 233-244, *2004*

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