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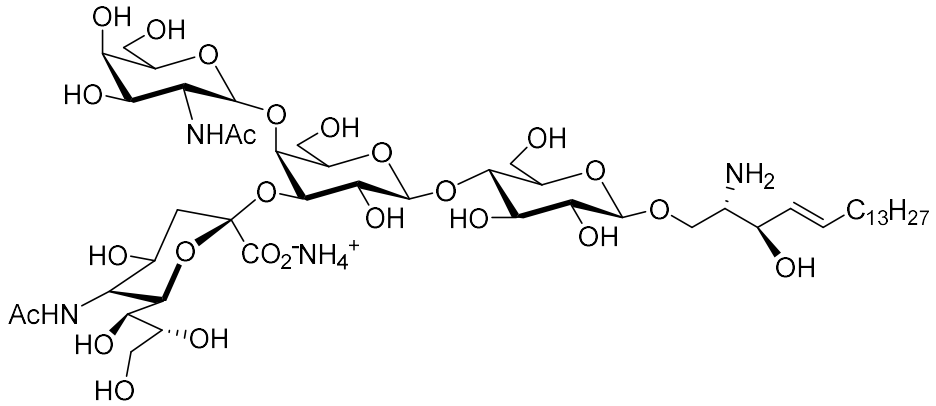
PRODUCT DATA SHEET

lyso-Monosialoganglioside GM_2 (NH_4^+ salt), bovine

Catalog No: 1543
Common Name: *lyso*-GM_2
Source: semisynthetic, bovine
Solubility: chloroform/methanol/DI water, (2:1:0.1); forms micellar solution in water
CAS No: 94458-61-4

Molecular Formula: $C_{49}H_{87}N_3O_{25} \cdot NH_3$
Molecular Weight: 1118+ NH_3 (stearoyl)
Storage: -20°C
Purity: TLC >98%; identity confirmed by MS
TLC System: chloroform/methanol/ 2.5N aqueous ammonium hydroxide, (60:40:9)
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.[3] GM_2 regulates the function of ciliary neurotrophic factor receptors. The accumulation of GM_2 (due to a deficiency in *beta*-hexosaminidase) has characterized Tay-Sachs disease (due to a mutation in the gene *HEXA*) and Sandhoff disease (due to a mutation in the gene *HEXB*).[4] *lyso*-GM_2 was also found in elevated amounts in brains with Sandhoff and Tay-Sachs disease. Although the origin of *lyso*-GM_2 remains unknown, it is tied with the loss of HEXA. In a study that subjected *lyso*-GM_2 to modified *beta*-hexasaminidase (Hex B) which hydrolyzes GM2 and associated gangliosides, Hex B was found to strongly influence the *lyso*-GM_2 levels to decrease.[5]

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, No. 29, pp. 25859-25862, *2002*
3. 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*
4. R. Gravel et al., *The Metabolic and Molecular Bases of Inherited Disease* (C. R. Scriver, W. S. Sly, B. Childs, A. L. Beaudet, D. Valle, K. W. Kinzler, and B. Vogelstein, eds) pp. *3827*–3876, McGraw-Hill Inc., New York, *2001*
5. T. Kodama, T. Togawa, et. al. "Lyso-GM2 Ganglioside: A Possible Biomarker of Tay-Sachs Disease and Sandhoff Disease" *PLoS ONE*, Vol 6, No. 12, *2011*

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