

PRODUCT DATA SHEET

Monosialoganglioside GM₃ (NH₄⁺ salt), bovine buttermilk

Catalog No: 1503

Common Name: GM₃

Source: natural, bovine buttermilk

Solubility: chloroform/methanol, (2:1);
forms micellar solution in water

CAS No: 54827-14-4

Molecular Formula: C₆₄H₁₁₈N₂O₂₁ • NH₃

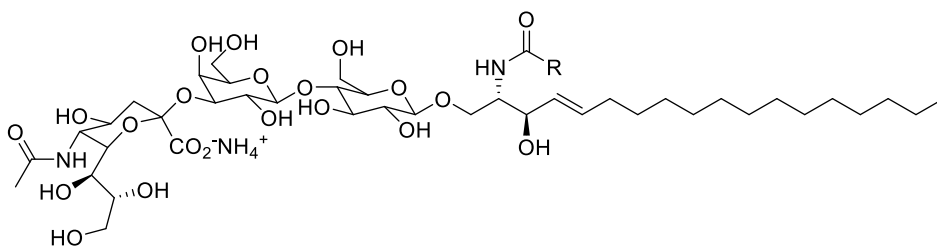
Molecular Weight: 1252+ NH₃ (tricosanoyl)

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:

Gangliosides¹ 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 The accumulation of gangliosides has been linked to several diseases including Tay-Sachs and Sandhoff disease. GM₃ is the main ganglioside of human fibroblasts and can regulate fibroblast and epidermal growth factors⁴ and is also able to regulate the adhesion and migration of several carcinoma cell lines. GM₃ was also shown to inhibit tumor cell invasion. GM₃ can induce human promyelocytic leukemia HL-60 cells to differentiate to monocyte/macrophage lineage instead of granulocytes.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. 277:29, 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. 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
5. 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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