

## PRODUCT DATA SHEET

### Monosialoganglioside GM<sub>3</sub> (NH<sub>4</sub><sup>+</sup> salt)

**Catalog No:** 1503

**Common Name:** GM<sub>3</sub>

**Source:** natural, bovine buttermilk

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

**CAS No:** 54827-14-4

**Molecular Formula:** C<sub>64</sub>H<sub>118</sub>N<sub>2</sub>O<sub>21</sub> • NH<sub>3</sub>

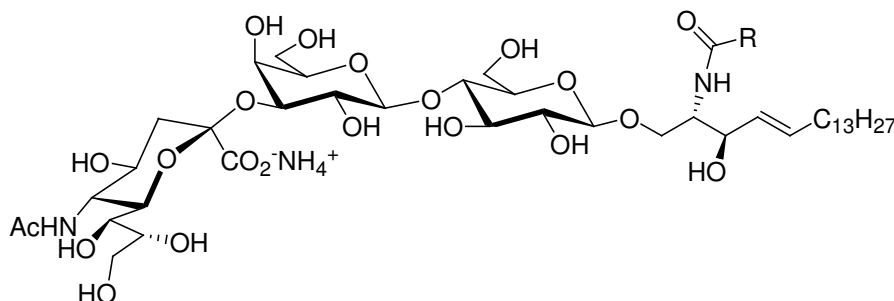
**Molecular Weight:** 1252+ NH<sub>3</sub> (tricosanoyl)

**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:**

Gangliosides<sup>1</sup> 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.<sup>2</sup> They participate in cellular proliferation, differentiation, adhesion, signal transduction, cell-to-cell interactions, tumorigenesis, and metastasis.<sup>3</sup> The accumulation of gangliosides has been linked to several diseases including Tay-Sachs and Sandhoff disease. GM<sub>3</sub> is the main ganglioside of human fibroblasts and can regulate fibroblast and epidermal growth factors<sup>4</sup> and is also able to regulate the adhesion and migration of several carcinoma cell lines. GM<sub>3</sub> was also shown to inhibit tumor cell invasion. GM<sub>3</sub> can induce human promyelocytic leukemia HL-60 cells to differentiate to monocyte/macrophage lineage instead of granulocytes.<sup>5</sup>

### **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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