

# PRODUCT DATA SHEET

## Tetrasialoganglioside GQ<sub>1b</sub> (Na<sup>+</sup> salt), bovine

**Catalog No:** 1559; 1559-001

**Common Name:** GQ<sub>1b</sub>

**Source:** natural, bovine

**Solubility:** chloroform/methanol/DI water,  
(2:1:0.1); forms micellar solution in  
water

**CAS No:** 68652-37-9

**Molecular Formula:** C<sub>106</sub>H<sub>182</sub>N<sub>6</sub>O<sub>55</sub> • 4Na

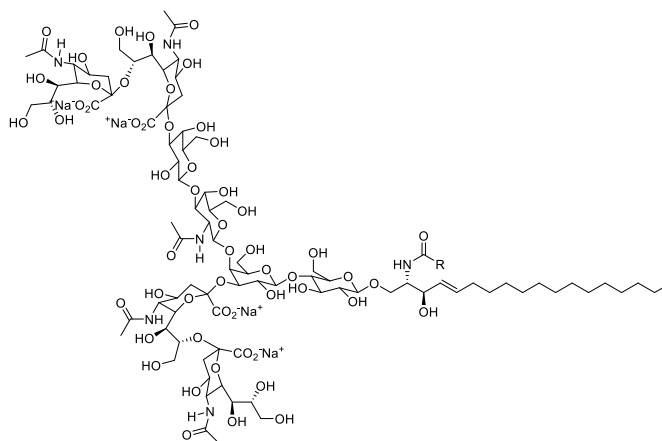
**Molecular Weight:** 2421 + 4Na (stearoyl)

**Storage:** -20°C

**Purity:** TLC > 98%; identity confirmed by MS

**TLC System:** chloroform/methanol/  
2.5N ammonium hydroxide,  
(60:40:12 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 while an autoimmune response against gangliosides can lead to Guillain-Barré syndrome. Miller-Fisher syndrome, a variant of Guillain-Barré syndrome, is an autoimmune disease characterized by the presence of anti-GQ<sub>1b</sub> ganglioside antibodies. Studies of these antibodies reveal large disruptions of Schwann cells. GQ<sub>1b</sub> has been shown to enhance Ig production of human peripheral blood mononuclear cells and to selectively enhance Th1 cytokine production while suppressing Th2 production. GQ<sub>1b</sub> has also been shown to enhance PHA-induced IL-2 secretion of peripheral blood T cells while it decreases PHA-induced IL-4 and IL-5 secretion. GQ<sub>1b</sub> suppresses PHA-induced increases in cAMP levels in T cells and suppresses PHA-stimulated adenylate cyclase activity in T cells.<sup>4</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.*, July 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*, 85, 455-463, 2003
4. N. Kanda and S. Watanabe "Gangliosides GD1b, GT1b, and GQ1b Enhance IL-2 and IFN-γ Production and Suppress IL-4 and IL-5 Production in Phytohemagglutinin-Stimulated Human T Cells" *The Journal of Immunology*, Vol. 166 pp. 72-80, 2001

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