

PRODUCT DATA SHEET

Tetrasialoganglioside GQ_{1b}, (NH₄⁺ salt)

Catalog No: 1516; 1516-001

Common Name: GQ_{1b}

Source: natural, bovine

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

CAS No: 68652-37-9

Molecular Formula: C₁₀₆H₁₈₂N₆O₅₅ • 4NH₃

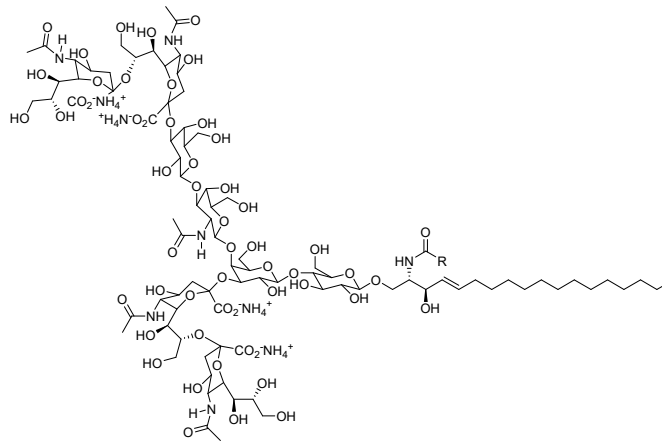
Molecular Weight: 2421 + 4NH₃ (stearoyl)

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:

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 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_{1b} ganglioside antibodies. Studies of these antibodies reveal large disruptions of Schwann cells. GQ_{1b} 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_{1b} 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_{1b} suppresses PHA-induced increases in cAMP levels in T cells and suppresses PHA-stimulated adenylate cyclase activity in T cells.⁴

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-g 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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