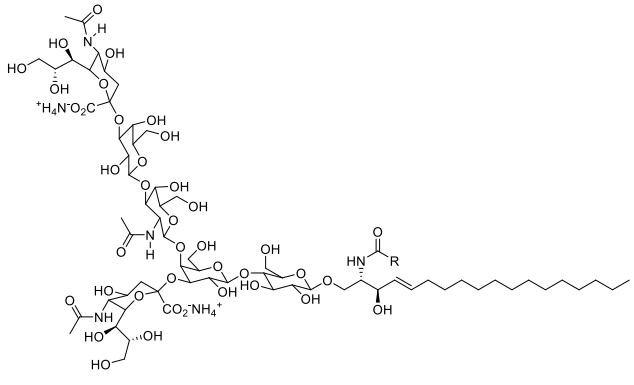
PRODUCT DATA SHEET

MATREYA LLC
Lipids and Biochemicals
A Cayman Chemical Company

Disialoganglioside GD_{1a} (NH_4^+ salt), porcine

Catalog No: 1546
Common Name: GD_{1a}
Source: natural, porcine
Solubility: chloroform/methanol/DI water, (2:1:0.1); forms micellar solution in water
CAS No: 12707-58-3

Molecular Formula: $C_{84}H_{148}N_4O_{39} \cdot 2NH_3$
Molecular Weight: 1838 + $2NH_3$ (Stearoyl)
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[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. They participate in cellular proliferation, differentiation, adhesion, signal transduction, cell-to-cell interactions, tumorigenesis, and metastasis.[2] The accumulation of gangliosides has been linked to several diseases including Tay-Sachs and Sandhoff disease. An autoimmune response against gangliosides can lead to Guillain-Barre syndrome. GD_{1a} is one of the major brain gangliosides. It is a coreceptor of Toll-like receptor 2 signaling[3] and it inhibits concanavalin A-induced $45Ca_2^+$ uptake although it is not cytotoxic nor does it significantly alter the rate of Ca_2^+ efflux. Along with other gangliosides GD_{1a} enhances tumor cell proliferation, invasion, and metastasis. It is a receptor for cholera toxin and contributes to the sodium channel functional variability within and between neuronal cells. GD_{1a} causes a significant increase in the responsiveness of epidermal growth factor receptors, a condition that is often associated with the formation of tumors.[4]

Selected References:

1. L. Svennerholm, et al. (eds.), *Structure and Function of Gangliosides,* New York, Plenum, *1980*
2. 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*
3. Shuang Liang et al "Ganglioside GD1a Is an Essential Coreceptor for Toll-like Receptor 2 Signaling in Response to the B subunit of Type IIb Enterotoxin" *The Journal of Biological Chemistry*, March, Vol. 282 pp. 7532-7542, *2007*
4. Yihui Liu, Ruixiang Li and Stephan Ladisch "Exogenous Ganglioside G_{D1a} Enhances Epidermal Growth Factor Receptor Binding and Dimerization" *The Journal of Biological Chemistry,* August, Vol. 279 pp. 36481-36489, *2004*

2178 High Tech Road, State College, PA 16803
www.matreya.com · Phone (814) 355-1030 · Fax (814) 355-1031