

PRODUCT DATA SHEET

Disialoganglioside GD_{1a} (NH₄⁺ salt), bovine

Catalog No: 1062

Common Name: GD_{1a}

Source: natural, bovine

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

CAS No: 12707-58-3

Molecular Formula: C₈₄H₁₄₈N₄O₃₉ • 2NH₃
(stearoyl; d18:1 sphingoid base)

Molecular Weight: 1838 + 2NH₃

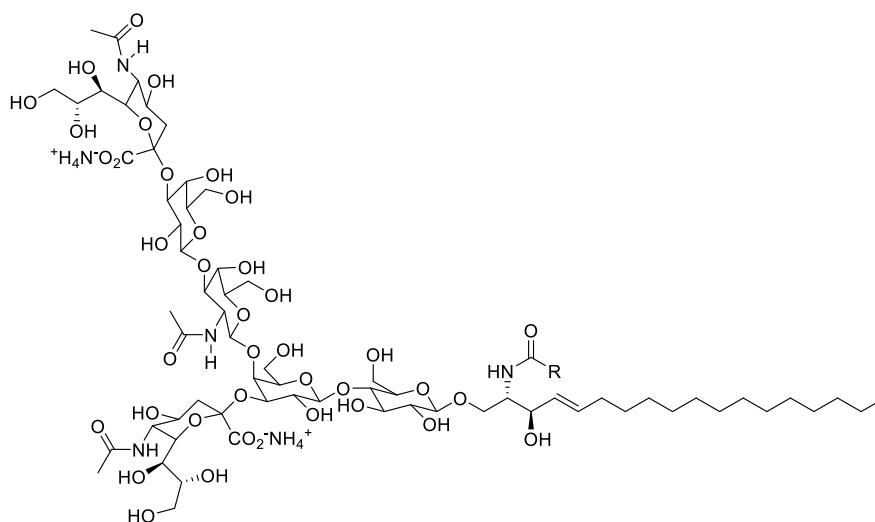
(stearoyl; d18:1 sphingoid base)

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:

As this product is derived from a natural source, there may be variations in the sphingoid backbone.

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. 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 signaling³ and it inhibits concanavalin A-induced 45Ca²⁺ uptake although it is not cytotoxic nor does it significantly alter the rate of Ca²⁺ 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 GD_{1a} 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 GD_{1a} Enhances Epidermal Growth Factor Receptor Binding and Dimerization” *The Journal of Biological Chemistry*, August, Vol. 279 pp. 36481-36489, 2004

This product is to be used for research only. It is not intended for drug or diagnostic use, human consumption or to be used in food or food additives. Matreya assumes no liability for any use of this product by the end user. We believe the information, offered in good faith, is accurate.