

# PRODUCT INFORMATION



## Ganglioside G<sub>M1</sub> (bovine) (ammonium salt)

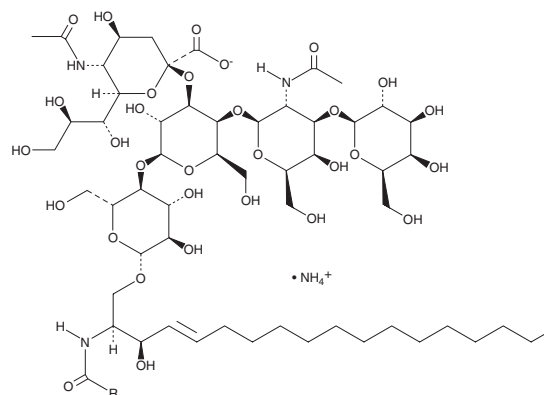
Item No. 31548

**CAS Registry No.:** 1007119-81-4  
**Formal Name:** 1-O-[O-β-D-galactopyranosyl-(1→3)-O-2-(acetylamino)-2-deoxy-β-D-galactopyranosyl-(1→4)-O-[N-acetyl-α-neuraminosyl-(2→3)]-O-β-D-galactopyranosyl-(1→4)-β-D-glucopyranosyl]-ceramide, monoammonium salt

**Synonyms:** G<sub>M1</sub>, Monosialoganglioside G<sub>M1</sub>  
**MF:** C<sub>73</sub>H<sub>130</sub>N<sub>3</sub>O<sub>31</sub> • NH<sub>4</sub> (for stearoyl)  
**FW:** 1,563.9  
**Purity:** ≥98%  
**Supplied as:** A solid  
**Storage:** -20°C  
**Stability:** ≥4 years

**Special Conditions:** Forms micellar solution in water

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.



### Laboratory Procedures

Ganglioside G<sub>M1</sub> (bovine) (ammonium salt) is supplied as a solid. A stock solution may be made by dissolving the ganglioside G<sub>M1</sub> (bovine) (ammonium salt) in the solvent of choice, which should be purged with an inert gas. Ganglioside G<sub>M1</sub> (brain) (ammonium salt) is soluble in a 2:1:0.1 solution of chloroform:methanol:DI water.

### Description

Ganglioside G<sub>M1</sub> is a monosialylated ganglioside and the prototypic ganglioside for those containing one sialic acid residue.<sup>1,2</sup> It is found in a large variety of cells, including immune cells and neurons, and is enriched in lipid rafts in the cell membrane.<sup>3</sup> It associates with growth factor receptors, including TrkA, TrkB, and the GDNF receptor complex containing Ret and GFRα, and is required for TrkA expression on the cell surface. Ganglioside G<sub>M1</sub> interacts with other proteins to increase calcium influx, affecting various calcium-dependent processes, including inducing neuronal outgrowth during differentiation. Ganglioside G<sub>M1</sub> acts as a receptor for cholera toxin, which binds to its oligosaccharide group, facilitating toxin cell entry into epithelial cells of the jejunum.<sup>4,5</sup> Similarly, it is bound by the heat-labile enterotoxin from *E. coli* in the pathogenesis of traveler's diarrhea.<sup>6</sup> Ganglioside G<sub>M1</sub> sensitizes inactivated T cells to TNF-α-induced apoptosis and induces apoptosis of activated T cells even in the absence of TNF-α.<sup>7</sup> Ganglioside G<sub>M1</sub> is found at higher levels on T cells isolated from patients with renal cell carcinoma (RCC) compared with T cells from patients without cancer. Levels of ganglioside G<sub>M1</sub> are decreased in the substantia nigra pars compacta in postmortem brain from patients with Parkinson's disease.<sup>3</sup> Ganglioside G<sub>M1</sub> gangliosidosis, characterized by a deficiency in G<sub>M1</sub>-β-galactosidase, the enzyme that degrades ganglioside G<sub>M1</sub>, leads to accumulation of the gangliosides G<sub>M1</sub> and G<sub>A1</sub> in neurons and can be fatal in infants.<sup>1</sup> This product contains ganglioside G<sub>M1</sub> molecular species with primarily C18:0 fatty acyl chain lengths. As this product is derived from a natural source, there may be variations in the sphingoid backbone.

### References

1. Kolter, T. *ISRN Biochem.* 506160 (2012).
2. Mocchetti, I. *Cell Mol. Life Sci.* **62(19-20)**, 2283-2294 (2005).
3. Ledeen, R.W. and Wu, G. *Trends Biochem. Sci.* **40(7)**, 407-418 (2015).
4. Turnbull, W.B., Precious, B.L., and Homans, S.W. *J. Am. Chem. Soc.* **126(4)**, 1047-1054 (2004).
5. Blank, N., Schiller, M., Krienke, S., et al. *Immunol. Cell Biol.* **85(5)**, 378-382 (2007).
6. Minke, W.E., Roach, C., Hol, W.G., et al. *Biochemistry* **38(18)**, 5684-5692 (1999).
7. Das, T., Sa, G., Hilston, C., et al. *Cancer Res.* **68(6)**, 2014-2023 (2008).

#### WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

#### SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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