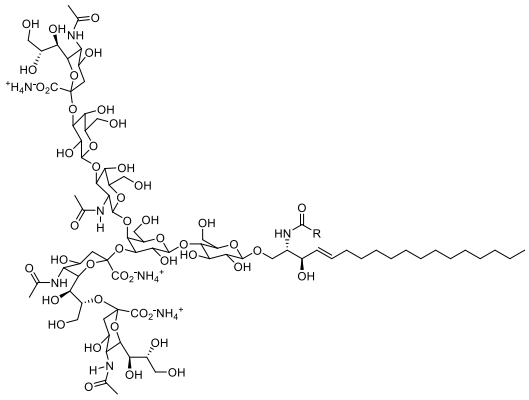
PRODUCT DATA SHEET

Trisialoganglioside GT_{1b} (NH_4^+ salt), porcine

Catalog No: 1548
Common Name: GT_{1b}
Source: natural, porcine
Solubility: chloroform/methanol/DI water, (2:1:0.2); forms micellar solution in water
CAS No: 59247-13-1
Molecular Formula: $C_{95}H_{165}N_5O_{47} \bullet 3NH_3$ (stearoyl; d18:1 sphingoid base)
Molecular Weight: 2129 + $3NH_3$ (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.

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. 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. GT_{1b} induces degeneration of dopaminergic neurons and this may contribute to the initiation and/or progression of Parkinson's disease.[2] GT_{1b} inhibits antigen or mitogen induced T-cell proliferative responses and has been identified as the botulinum toxin receptor, a rare toxin having severe physiological results.[3] Borrelia burgdorferi (a gram negative bacteria) binds several glycosphingolipids including GT_{1b}. GT1b is a scavenger for •OH radicals and protects against brain mtDNA damage, seizures, and lipid peroxidation induced by reactive oxygen species producers.[4] Ehrlich tumor expresses the ganglioside GT_{1b}, and anti-GT_{1b} has great therapeutic potential against this cancer. This ganglioside has also been implicated in Miller Fisher syndrome.

Selected References:

1. L. Svennerholm, et al. (eds.), *Structure and Function of Gangliosides,* New York, Plenum, *1980*
2. J. K. Ryu, et al. "Trisialoganglioside GT1b induces in vivo degeneration of nigral dopaminergic neurons: role of microglia." *Glia* Vol. 38(1) pp. 15, *2002*
3. Ahn-Yoon, Soohyoun; DeCory, Thomas; Durst, Richard "Ganglioside–liposome immunoassay for the detection of botulinum toxin" Analytical and Bioanalytical Chemistry, Vol. 378(1) pp. 68-75, *2004*
4. Hiro-aki Yamamoto and Parayanthala V. Mohanan "*In Vivo* and *in Vitro* Effects of Melatonin or Ganglioside GT1B on L-Cysteine–Induced Brain Mitochondrial DNA Damage in Mice" Toxicological Sciences, Vol. 73 pp. 416-422, *2003*