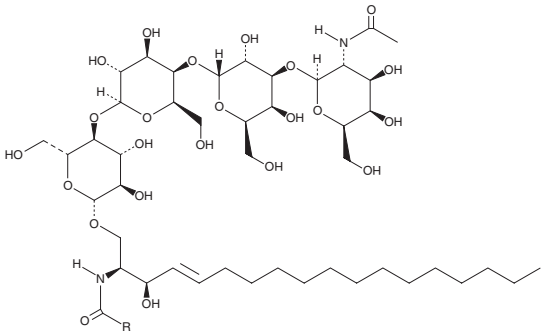
PRODUCT INFORMATION

Globotetraosylceramide (porcine RBC)

Item No. 24881

CAS Registry No.:	11034-93-8
Formal Name:	1-O-[O-2-(acetylamino)-2-deoxy-β-D-galactopyranosyl-(1→3)-O-α-D-galactopyranosyl-(1→4)-O-β-D-galactopyranosyl-(1→4)-β-D-glucopyranosyl]-ceramide
Synonyms:	Gb_4Cer (porcine RBC), Globoside (procine RBC), Globotetrahexosylceramide (porcine RBC)
MF:	$C_{68}H_{126}N_2O_{23}$ (for tetracosanoyl)
FW:	1,339.7
Purity:	≥98%
Supplied as:	A solid
Storage:	-20°C
Stability:	≥4 years



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

Laboratory Procedures

Globotetraosylceramide (porcine RBC) is supplied as a solid. A stock solution may be made by dissolving the globotetraosylceramide (porcine RBC) in the solvent of choice. Globotetraosylceramide (porcine RBC) is soluble in DMSO, methanol (warmed), and a 2:1 solution of chloroform:methanol.

Description

Globotetraosylceramides are bioactive neutral glycosphingolipids. They are the major glycolipids in human erythrocytes.[1] They act as receptors for the Shiga toxins Stx1, Stx2, and Stx2e, the cytotoxic protein pierisin-1, and parvovirus B19.[2-4] Globotetraosylceramides increase the expression of proteins responsible for enamel deposition, including ameloblastin, amelogenin, and enamelin, in dental epithelial cells and activate the ERK and p38 MAPK signaling pathways.[5] Levels of globotetraosylceramides are elevated in fibroblasts from patients with salt and pepper syndrome, a neurocutaneous condition characterized by intellectual disability and hyper- and hypo-pigmented skin.[6] This product contains globotetraosylceramides with primarily C24:0, C22:0, and 2-hydroxy C24:0 fatty acyl chains. *As this product is derived from a natural source, there may be variations in the sphingoid backbone.*

References

1. Yamakawa, T., Yokoyama, S., and Kiso, N. Structure of main globoside of human erythrocytes. *J. Biochem.* **52(3)**, 228-229 (1962).
2. Müthing, J., Scheweppe, C.H., Karch, H., *et al.* Shiga toxins, glycosphingolipid diversity, and endothelial cell injury. *Thromb. Haemost.* **101(2)**, 252-264 (2009).
3. Matsushima-Hibiya, Y., Watanabe, M., Hidari, J.I.-P.J., *et al.* Identification of glycosphingolipid receptors for pierisin-1, a guanine-specific ADP-ribosylating toxin from the cabbage butterfly. *J. Biol. Chem.* **278(11)**, 9972-9978 (2003).
4. Nasir, W., Nilsson, J., Ologsson, S., *et al.* Parvovirus B19 VLP recognizes globoside in supported lipid bilayers. *Virology* **456-457**, 364-369 (2014).
5. Nakamura, T., Chiba, Y., Naruse, M., *et al.* Globoside accelerates the differentiation of dental epithelial cells into ameloblasts. *Int. J. Oral Sci.* **8(4)**, 205-212 (2016).
6. Boccuto, L., Aoki, K., Flanagan-Steet, H., *et al.* A mutation in a ganglioside biosynthetic enzyme, ST3GAL5, results in salt & pepper syndrome, a neurocutaneous disorder with altered glycolipid and glycoprotein glycosylation. *Hum. Mol. Genet.* **23(2)**, 418-433 (2014).

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