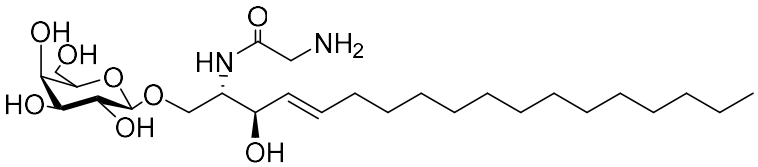
PRODUCT DATA SHEET

MATREYA LLC
Lipids and Biochemicals
A Cayman Chemical Company

N-Glycinated galactosylsphingosine

Catalog No: 2091
Common Name: N-Glycinated cerebroside; N-Glycinated galactosylceramide; N-Glycinated psychosine
Source: synthetic
Solubility: chloroform/methanol 80:20; ethanol
CAS No: N/A

Molecular Formula: $C_{26}H_{50}N_2O_8$
Molecular Weight: 519
Storage: -20°C
Purity: TLC > 98%; identity confirmed by MS
TLC System: chloroform/methanol/2.5M ammonium hydroxide (65:25:4 by vol.)
Appearance: solid



Application Notes:

N-Glycinated galactosylsphingosine is an analogue of the important biomolecule galactosylsphingosine (psychosine). It is ideal for use as an internal standard in the extraction and mass spectrometry analysis of galactosylsphingosine from natural samples.[1] The free amine group gives this product very similar physical characteristics to the natural glycolipid while the glycine adds an additional 57 units to the molecule making it easy to detect by mass spectroscopy.

Galactosylceramides are found primarily in neuronal tissues and are the major glycosphingolipids in the central nervous system. They constitute the largest single component of the myelin sheath of nerves and act, along with other components, to form part of the structural support of the myelin sheath.[2] They are involved in a very wide range of biological activities such as cell agglutination, intracellular communication, cellular development, and antitumor/cytotoxic effects.[3] Galactosylceramides can be metabolized into sulfatide which is also abundant in the nervous system and myelin sheaths.

Krabbe disease is a demyelinating disease caused by a lack of the enzyme galactosylceramidase.[4] This deficiency results in the accumulation of galactosylceramide and galactosylsphingosine in cells, making both of these lipids potentially useful biomarkers in Krabbe disease diagnosis.[4] Galactosylsphingosine is highly cytotoxic and cannot be degenerated further in Krabbe cells due to the lack of galactosylceramidase. Although GM1 gangliosidase can degrade galactosylceramide it cannot degrade galactosylsphingosine. Galactosylsphingosine can cause oligodendrocyte death, astrocyte activation and the formation of multinuclear globoid-like cells. It is present naturally in small amounts and has a role in the sphingosine-1-phosphate receptor superfamily. Galactosylsphingosine has been found to induce cell apoptosis, cytokine activation, phospholipase activation, peroxisomal dysfunction, and altered calcium homeostasis.[5]

Selected References:

1. R. Krüger et al. Quantification of the Fabry marker lysoGb3 in human plasma by tandem mass spectrometry. *Journal of Chromatography B*., Vol. 883-884, pp. 128-135, 2012
2. M. Sheldon, D.Lyudmila, "Cycloserine-induced decrease of cerebroside in myelin" *Lipids,* Vol. 33:4 pp. 441-443, *1998*
3. X. Zhou, L. Tang and Y. Liu "An Isomeric Mixture of Novel Cerebrosides Isolated from *Impatiens pritzellii* Reduces Lipopolysaccharide-Induced Release of IL-18 from Human Peripheral Blood Mononuclear Cells" *Lipids,* Vol. 44:8 pp. 759-763, *2009*
4. M. Escolar et al., "Psychosine, a marker of Krabbe phenotype and treatment effect" *Molecular Genetics and Metabolism* Vol. 121 pp. 271–278, *2017*
5. X. Jiang, K. Yang, and X. Han "Direct quantitation of psychosine from alkaline-treated lipid extracts with a semi-synthetic internal standard" *Journal of Lipid Research*, Vol. 50 pp. 162, *2009*

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