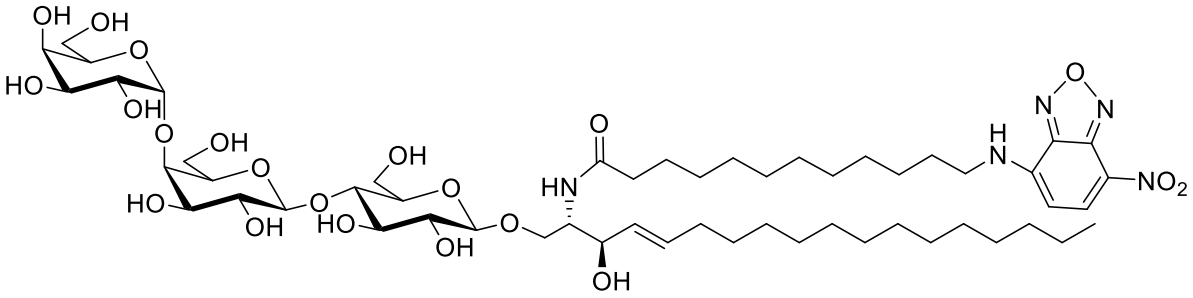
PRODUCT DATA SHEET

N-Dodecanoyl-NBD-ceramide trihexoside

Catalog No: 1631; 1631-001
Common Name: N-C12:0-NBD-CTH; N-C12:0-NBD Globotriaosylceramide
Source: semisynthetic, procine RBC
Solubility: chloroform/methanol (2:1 by vol.), DMSO, hot methanol
CAS No: N/A

Molecular Formula: $C_{54}H_{91}N_5O_{21}$
Molecular Weight: 1146
Storage: -20°C
Purity: TLC > 98%; identity confirmed by MS
TLC System: chloroform/methanol/DI water (65:25:4 by vol.)
Appearance: solid



Application Notes:

This high purity fluorescent product is ideal for the identification of ceramide trihexoside in samples and biological systems. 7-nitrobenzofurazan (NBD) has been shown to have only a small influence on lipid adsorption into cells and cellular membranes. This fluorescent analog of natural ceramide trihexoside is comparable to C12:0-ceramide trihexoside in many biological functions.[1,2] Ceramide trihexoside (CTH) is a glycosphingolipid found mostly in mammalian cell membranes. It is involved in cellular signaling and has been identified as a receptor for various toxins including shiga toxins and shiga-like toxins. Some toxins, such as veratoxins from Escherichia coli, require specific fatty acids on the ceramide portion of CTH to show affinity in binding. An accumulation of CTH in the cellular membranes due to a lack of *alpha*-galactosidase to convert it into lactosyl ceramide results in Fabry disease. This product can be used as an excellent standard for the identification of CTH in Fabry disease by HPLC[3] and mass spectrometry.[4] An inability to convert CTH to globoside due to mutations in the gene sequence leads to the P^k blood group phenotype. It appears that under certain conditions CTH can enhance anticoagulant activity. CTH has also been studied as a tool to investigate lymphocyte activation.[5]

Selected References:

1. J. Kok et al. "Dihydroceramide Biology STRUCTURE-SPECIFIC METABOLISM AND INTRACELLULAR LOCALIZATION" *Journal of Biological Chemistry*, Vol. 272 pp. 21128-21136, *1997*
2. J. Hsu et al. "Enhanced endothelial delivery and biochemical effects of *alpha*-galactosidase by ICAM-1-targeted nanocarriers for Fabry disease" Journal of Controlled Release, doi:10.1016/j.jconrel.2010.10.031, *2010*
3. J. E. Groener, B. J. Poorthuis, S. Kuiper, M. T. Helmond, C. E. Hollak, J. M. Aerts. "HPLC for simultaneous quantification of total ceramide, glucosylceramide, and ceramide trihexoside concentrations in plasma." *Clin Chem.*, Apr;53(4):742-7, *2007*. Epub Mar 1 *2007*
4. K. Mills, A. Johnson, B. Winchester. "Synthesis of novel internal standards for the quantitative determination of plasma ceramide trihexoside in Fabry disease by tandem mass spectrometry." *FEBS Lett.*, Mar 27;515(1-3):171-6, *2002*
5. C. Menge, I. Stamm, M. Wuhrer, R. Geyer, L. H. Wieler, G. Baljer. "Globotriaosylceramide (Gb(3)/CD77) is synthesized and surface expressed by bovine lymphocytes upon activation in vitro." *Vet Immunol Immunopathol.*, Nov;83(1-2):19-36, *2001*

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