

PRODUCT DATA SHEET

N-Hexanoyl-NBD-glucosylceramide

Catalog No: 1622, 1622-001

Common Name: N-C6:0-NBD-*beta*-D-Glucosylsphingosine; N-C6:0-NBD-Glucosylceramide

Source: semisynthetic, bovine

Solubility: chloroform/methanol (5:1),
methanol

CAS No: 94885-03-7

Molecular Formula: C₃₆H₅₉N₅O₁₁

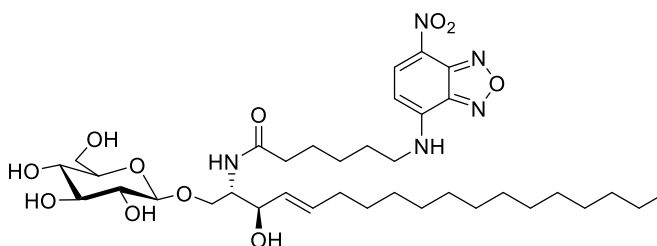
Molecular Weight: 738

Storage: -20°C

Purity: TLC > 98%; identity confirmed by MS

TLC System: chloroform/methanol/DI water
(65:25:3 by vol.)

Appearance: solid



Application Notes:

This high purity fluorescent product is ideal for the identification of glucocerebrosides in samples and biological systems.¹ 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 glucosylceramide is comparable to C6:0-glucosylceramide in many biological functions.² This cerebroside product is a glycosphingolipid containing a glucose attached to a ceramide (glucocerebroside) acylated with a C6:0-NBD fatty acid. Glucosylceramide is a major constituent of skin lipids where it has an important role in lamellar body formation and in maintaining the water permeability barrier. Glucocerebroside is very important due to its function as the biosynthetic precursor of lactosylceramide and from there of most of the neutral oligoglycolipids and gangliosides. Glucocerebroside is the only glycosphingolipid that is found in plants, fungi, and animals and is one of the most abundant glycosphingolipids in plants. Due to the relatively high melting point of cerebrosides (much greater than physiological body temperature) they have a *para*-crystalline structure. Glucocerebrosides tend to be concentrated in the outer leaflet of the plasma membrane in lipid rafts. It has been reported that glucocerebrosides are essential for the activity of tyrosinase (a key enzyme in melanin biosynthesis), to elicit defense responses in plants, and to help the plasma membrane in plants to withstand stresses brought about by cold and drought. In Gaucher's disease glucocerebrosides accumulate in the spleen, liver, lungs, bone marrow, and brain due to a deficiency of the enzyme glucocerebrosidase.³ This accumulation of glucocerebroside has been associated with chemotherapy resistance. Glucocerebroside has been shown to be able to modulate membrane traffic along the endocytic pathway.⁴

Selected References:

1. J. Kok et al. "Fluorescent, short-chain C6-NBD-sphingomyelin, but not C6-NBD-glucosylceramide, is subject to extensive degradation in the plasma membrane: implications for signal transduction related to cell differentiation" *Biochemistry Journal*, Vol. 309 pp. 905-912, 1995
2. Y Liu et al. "Glucosylceramide synthase upregulates *MDR1* expression in the regulation of cancer drug resistance through *cSrc* and *beta*-catenin signaling" *Molecular Cancer*, Vol. 9 pp. 145, 2010
3. C. Walden et al. "Accumulation of Glucosylceramide in Murine Testis, Caused by Inhibition of *beta*-Glucosidase 2: IMPLICATIONS FOR SPERMATOGENESIS" *The Journal of Biological Chemistry*, Vol. 282 pp. 32655-32664, 2007
4. D. Silience et al. "Glucosylceramide modulates membrane traffic along the endocytic pathway" *Journal of Lipid Research*, Vol. 43(11) pp. 1837-1845, 2002

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