

PRODUCT DATA SHEET

N-Hexanoyl-biotin-glucosylceramide

Catalog number: 2085

Synonyms: N-C6:0-Biotin-*beta*-D-glucosylsphingosine; N-C6:0-Biotin-glucosylceramide

Source: semisynthetic, plant

Solubility: chloroform/methanol 2:1, methanol, DMF

CAS number: N/A

Molecular Formula: C₄₀H₇₀N₄O₁₀S

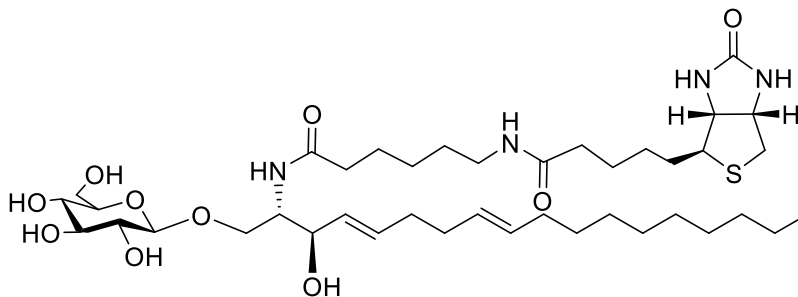
Molecular Weight: 799

Storage: -20°C

Purity: TLC: >98%, identity confirmed by MS

TLC System: chloroform/methanol/DI water (80:20:1 by vol.)

Appearance: solid



Application Notes:

This glucosylceramide analogue contains a biotin unit attached to the amine of the sphingosine moiety via a hexanoic acid linker and is ideal for use in sphingolipid studies. The biotin structure allows for attachment of the glucosylceramide to streptavidin and avidin making it extremely useful for binding to substrates and for toxin detection¹.

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.² 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 also been shown to be able to modulate membrane traffic along the endocytic pathway.⁴

Selected References:

1. A. Mukhopadhyay et al. "Direct interaction between the inhibitor 2 and ceramide *via* sphingolipid-protein binding is involved in the regulation of protein phosphatase 2A activity and signaling" *FASEB*, Vol. 23(3) pp. 751-763, 2009
2. D. Sillence et al. "Assay for the transbilayer distribution of glycolipids: selective oxidation of glucosylceramide to glucuronylceramide by TEMPO nitroxyl radicals" *Journal of Lipid Research*, Vol. 41(8) pp. 1252-1260, 2000
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. Sillence 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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