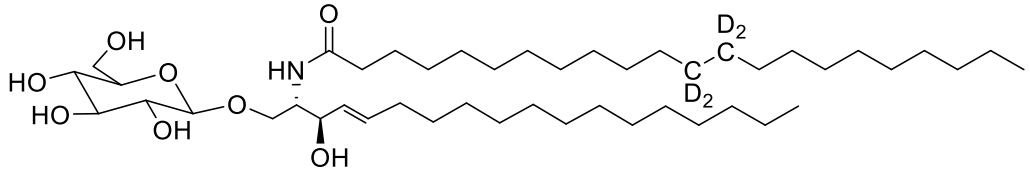
PRODUCT DATA SHEET

N-Docosanoyl-*beta*-glucosylsphingosine-d_4

Catalog number: 2216
Synonyms: N-C22:0-Glucocerebroside-d_4; N-Docosanoyl-*beta*-glucosylceramide-d_4; N-Docosanoyl-glucopsychosine-d_4
Source: semisynthetic, bovine buttermilk
Solubility: chloroform/methanol/DI water 2:1:0.1

CAS number: N/A
Molecular Formula: $C_{46}H_{85}D_4NO_8$
Molecular Weight: 788
Storage: -20˚C
Purity: identity confirmed by MS
Appearance: solid



Application Notes:

This cerebroside product is a well-defined glucosylceramide containing docosanoic acid acylated to the ceramide making it ideal as an internal standard and for biological systems. 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.[1] 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.[2,3] 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. 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*
2. C. Walden et al. "Accumulation of Glucosylceramide in Murine Testis, Caused by Inhibition of β-Glucosidase 2: IMPLICATIONS FOR SPERMATOGENESIS" *The Journal of Biological Chemistry*, Vol. 282 pp. 32655-32664, *2007*
3. R. Brady "Gaucher's disease: past, present and future" *Baillieres Clin Haematol*, Vol. 10:4 pp. 621-634, *1997*
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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