

PRODUCT DATA SHEET

Glucocerebrosides, plant

Catalog No: 1522; 1522-100

Common Name: Glucosylceramide; Ceramide
beta-D-glucoside

Source: natural, plant

Solubility: chloroform/methanol (2:1)

CAS No: 497155-61-0

Molecular Formula: C₄₀H₇₅NO₉

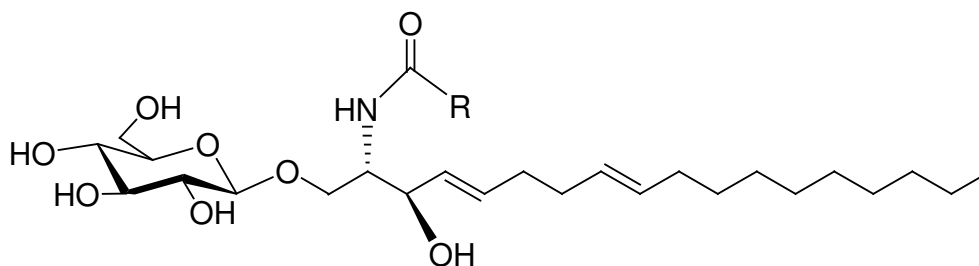
Molecular Weight: 714 (2-hydroxyhexadecanoyl)

Storage: -20°C

Purity: TLC > 98%; identity confirmed by MS

TLC System: chloroform/methanol/acetic acid/DI
water (90:10:10:1 by vol.)

Appearance: solid



Application Notes:

This cerebroside product is a glycosphingolipid containing a glucose attached to a ceramide (glucocerebroside) acylated with hydroxy and non-hydroxy fatty acids. It 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 cerebroside (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 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.³

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 *beta*-Glucosidase 2: IMPLICATIONS FOR SPERMATOGENESIS" *The Journal of Biological Chemistry*, Vol. 282 pp. 32655-32664, 2007
3. 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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