

PRODUCT DATA SHEET

Psychosine, synthetic

Catalog No: 2087

Common Name: *lyso*-Cerebroside; 1-*beta*-D-Galactosylsphingosine

Source: synthetic

Solubility: ethanol, chloroform/methanol/DI water (5:1:0.1)

CAS No: 2238-90-6

Molecular Formula: C₂₄H₄₇NO₇

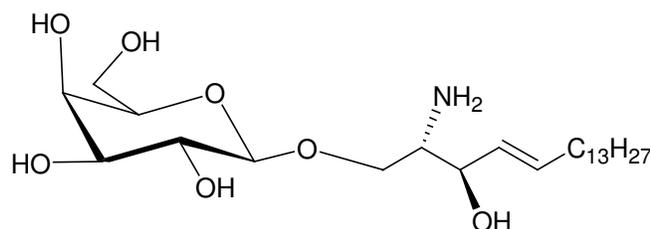
Molecular Weight: 461

Storage: -20°C

Purity: TLC >98%; identity confirmed by MS

TLC System: chloroform/methanol/DI water (60:40:8 by Vol.)

Appearance: solid



Application Notes:

This psychosine product is a fully synthetic standard containing only the most common naturally occurring isomer. Psychosine is a *beta*-galactose linked to a sphingosine and is an intermediate in the biosynthesis of cerebrosides, the largest single component of the myelin sheath of nerves. It is formed biologically by the reaction of sphingosine with UDP-galactose followed by acylation with a fatty acid. Krabbe disease is a demyelinating disease caused by a lack of the enzyme galactosylceramidase.¹ This deficiency results in the accumulation of cerebroside and psychosine in cells. Psychosine is highly cytotoxic and cannot be degenerated further due to the lack of galactosylceramidase in Krabbe cells. Although GM1 gangliosidase can degrade cerebrosides it cannot degrade psychosine. Psychosine can cause oligodendrocyte death, astrocyte activation and the formation of multinuclear globoid-like cells. It is present naturally in small amounts and has a role in the sphingosine-1-phosphate receptor superfamily. Psychosine has been found to induce cell apoptosis, cytokine activation, phospholipase activation, peroxisomal dysfunction, and altered calcium homeostasis.² Much attention has been given to psychosine due to its many important characteristics and standards are needed for ongoing research.³

Selected References:

1. S. Giri et al. "Krabbe disease: psychosine-mediated activation of phospholipase A2 in oligodendrocyte cell death" *Journal of Lipid Research*, Vol. 47 pp. 1478, 2006
2. X. Jiang, K. Yang, and X. Han "Direct quantitation of psychosine from alkaline-treated lipid extracts with a semi-synthetic internal standard" *Journal of Lipid Research*, Vol. 50 pp. 162, 2009
3. L. Orfi, C. Larive and S. LeVine "Physicochemical characterization of psychosine by ¹H nuclear magnetic resonance and electron microscopy" *Lipids*, Vol. 32 pp. 1035-1040, 1997

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