

PRODUCT DATA SHEET

N-(R,S)-*alpha*-Hydroxydodecanoyl-D-erythro-dihydrosphingosine

Catalog number: 2043

Synonyms: synthetic

Source: N-(R,S)-*alpha*-Hydroxy-C12:0-D-*erythro*-dihydroceramide

Solubility: chloroform/methanol/water (2:1:0.5)

CAS number: N/A

Molecular Formula: C₃₀H₆₁NO₄

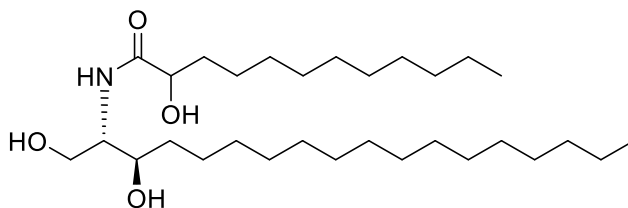
Molecular Weight: 500

Storage: -20°C

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

TLC System: chloroform/methanol (90:10 by vol.)

Appearance: solid



Application Notes:

This product is a high purity *alpha*-hydroxydihydroceramide and is ideal as a standard and for biological studies. Dihydroceramide is a critical intermediate in the synthesis of many complex sphingoid bases. Inhibition of dihydroceramide synthesis by some fungal toxins that have a similar structure causes an increase in sphinganine and sphinganine-1-phosphate and a decrease in other sphingolipids leading to a number of diseases including oesophageal cancer. Dihydroceramide, synthesized by the acylation of sphinganine, is subsequently converted into ceramide via a desaturase enzyme or into phytosphingosine via the C4-hydroxylase enzyme.¹ The presence of a hydroxyl group on the fatty acyl chain of dihydroceramides significantly affects the function and properties of the molecule. While 2(S)-hydroxydihydroceramides can be converted to non-hydroxydihydroceramides *in vivo* 2(R)-hydroxydihydroceramides cannot. Data presented suggests that 2(R)-hydroxydihydroceramides may interact with some distinct cellular regulatory targets in a specific and more effective manner than their nonhydroxylated analogs.² 2-hydroxydihydroceramides have been shown to be incorporated into the galactosylceramides and sulfatides of the myelin where they are essential to neuronal functions.³

Selected References:

1. Y. Mizutani, A. Kihara, and Y. Igarashi "Identification of the human sphingolipid C4-hydroxylase, hDES2, and its up-regulation during keratinocyte differentiation" *FEBS Letters*, vol. 563 pp. 93-97, 2004
2. Z. Szulc et al. "Synthesis, NMR characterization and divergent biological actions of 2-hydroxy-ceramide/dihydroceramide stereoisomers in MCF7 cells" *Bioorg Med Chem*, vol. 18 pp. 7565-7579, 2010
3. M. Krüer et al. "Defective *FA2H* leads to a novel form of neurodegeneration with brain iron accumulation (NBIA)" *Annals of Neurology*, vol. 68 pp. 611-618, 2010

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