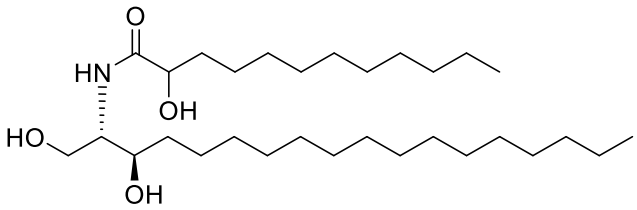
PRODUCT DATA SHEET

MATREYA LLC
Lipids and Biochemicals
A Cayman Chemical Company

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: $C_{30}H_{61}NO_4$
Molecular Weight: 500
Storage: -20ºC
Purity: TLC: >98%, GC: >98%; identity confirmed by MS
TLC System: chloroform/methanol (90:10)
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-hydrozylase 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 "Identifcation 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. Kruer 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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