

PRODUCT DATA SHEET

N-(R)-*alpha*-Hydroxytetracosanoyl-phytosphingosine

Catalog number: 2094

Synonyms: N-(R)-*alpha*-Hydroxy-C24:0-phytoceramide; N-(R)-Cerebronoyl-phytoceramide

Source: semisynthetic, yeast (*Pichia cifferri*)

Solubility: chloroform/methanol 4:1, warm ethanol

CAS number: 154801-30-6

Molecular Formula: C₄₂H₈₅NO₅

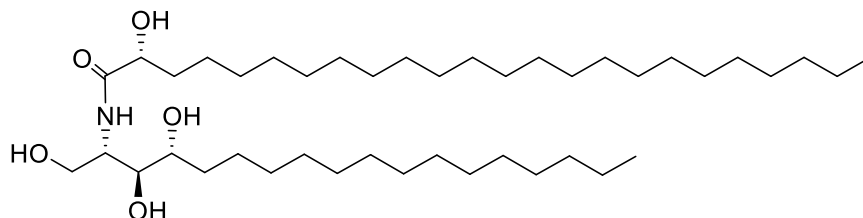
Molecular Weight: 684

Storage: -20°C

Purity: TLC: >98%; HPLC: >98%; identity confirmed by MS

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

Appearance: solid



Application Notes:

Phytosphingosine is a long-chain sphingoid base having important cellular functions such as signaling, skin barrier function, cytoskeletal structure, cellular cycle, and heat stress response. It is found largely in mammals, plants, and yeast. Phytosphingosine has seen much use in cosmetics due to its effects on the skin such as reducing inflammation by inhibiting the expression of the allergic cytokines IL-4 and TNF- α and the activation of the transcription factors NF- κ B and c-jun in histamine-stimulated skin tissues.¹ Phytosphingosine can lead to apoptosis via two distinct pathways and has been investigated as a possible cancer therapeutic treatment.² Phytoceramides are distributed at the microvillous membrane of the epithelial cells of the small intestine. Crypt cells and the adjacent epithelial cells produce phytosphingoglycolipids in much greater quantities than more differentiated epithelial cells.³ The kidney and skin also contain phytosphingoglycolipids although in much lower concentrations than in the small intestine. Skin cells contain significant amounts of long chain ceramides, such as *alpha*-hydroxyphytoceramides, that are vital for maintaining skin barrier functions.⁴

Selected References:

1. K. Ryu et al. "Anti-scratching Behavioral Effects of N-Stearoylphytosphingosine and 4-Hydroxysphinganine in Mice" *Lipids*, Vol. 45 pp. 615-618, 2010
2. M. Park et al. "Suppression of Extracellular Signal-related Kinase and Activation of p38 MAPK Are Two Critical Events Leading to Caspase-8- and Mitochondria-mediated Cell Death in Phytosphingosine-treated Human Cancer Cells" *Journal of Biological Chemistry*, Vol. 278, pp. 50624-50634, 2003
3. F. Omae et al. "DES2 protein is responsible for phytoceramide biosynthesis in the mouse small intestine" *Journal of Biochemistry*, vol. 379 pp. 687-695, 2004
4. S. Grond et al., "PNPLA1 Deficiency in Mice and Humans Leads to a Defect in the Synthesis of Omega-O-Acylceramides" *J Invest Dermatol*. Vol. 137(2) pp. 394-402, 2017

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