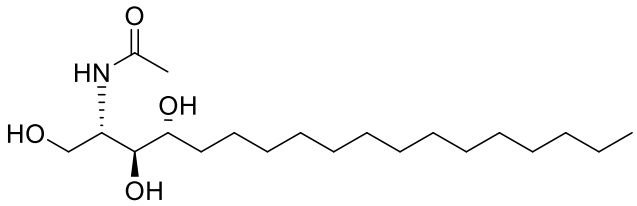
PRODUCT DATA SHEET

MATREYA LLC
Lipids and Biochemicals
A Cayman Chemical Company

N-Acetyl-phytosphingosine

Catalog number: 1897
Common names: N-C2:0-Phytoceramide
Source: semisynthetic, yeast (*Pichia ciferri*)
Solubility: ethanol, methanol, chloroform/methanol (1:1) (warm), warm DMSO
CAS number: N/A

Molecular Formula: $C_{20}H_{41}NO_4$
Molecular Weight: 360
Storage: -20°C
Purity: TLC >98%, HPLC >98%; identity confirmed by MS
TLC System: chloroform/methanol (90:10 by vol.)
Appearance: solid



Application Notes:

This product is a phytoceramide containing an acetyl group on the amide linkage which enables it to easily enter into cells. N-acetyl-phytosphingosine elevates Cyclooxygenase-2 expression via tyrosine kinase and protein kinase C, with subsequent extracellular signal–regulated kinase activation.[1] This may be in response to N-acetyl-phytosphingosine induced apoptosis in cells.[2] Phytosphingosine is a long-chain sphingoid base having important cellular functions such as signaling, 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-jB and c-jun in histamine-stimulated skin tissues.[3] Phytosphingosine can lead to apoptosis via two distinct pathways and has been investigated as a possible cancer therapeutic treatment. Phytoceramides (fatty acid acylated to Phytosphingosine) 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.[4] The kidney and skin also contain phytosphingoglycolipids although in much lower concentrations than in the small intestine. Phytoceramides form part of the water barrier lipids of the skin. Phytoceramides have lately been studied in regards to their role in the central nervous system and have been found to have important functions in neuroprotection.[5]

Selected References:

1. H. Tang et al. "Resveratrol-induced cyclooxygenase-2 facilitates p53-dependent apoptosis in human breast cancer cells" *Molecular Cancer Therapeutics*, vol. 5 pp. 2034, *2006*
2. H. Kim et al. "Differential Regulation of Cyclooxygenase-2 Expression by Phytosphingosine Derivatives, NAPS and TAPS, and its Role in the NAPS or TAPS-Mediated Apoptosis" *Journal of Investigative Dermatology*, vol. 121 pp. 1126-1134, *2003*
3. K. Ryu et al. "Anti-scratching Behavioral Effects of N-Stearoylphytosphingosine and 4-Hydroxysphinganine in Mice" *Lipids*, Vol. 45 pp. 615-618, *2010*
4. 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*
5. J-C. Jung et al. "Phytoceramide Shows Neuroprotection and Ameliorates Scopolamine-Induced Memory Impairment" *Molecules*, vol. 16 pp. 9090-9100, *2011*

2178 High Tech Road, State College, PA 16803
www.matreya.com · Phone (814) 355-1030 · Fax (814) 355-1031