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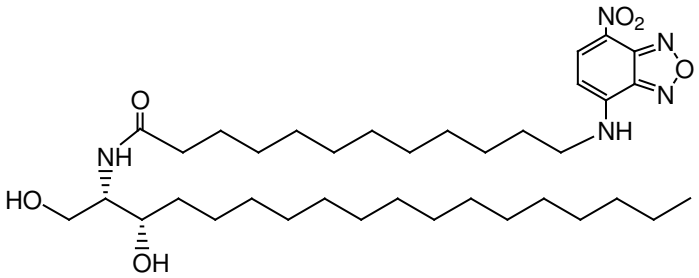
PRODUCT DATA SHEET

N-Dodecanoyl-NBD-L-*threo*-dihydrosphingosine

Catalog number: 1623
Common names: N-C12:0-NBD-Dihydroceramide; N-C12:0-NBD-L-*threo*-Dihydrosphingosine
Source: synthetic
Solubility: chloroform/methanol, 2:1; methanol
CAS number: 474943-07-2

Molecular Formula: $C_{36}H_{63}N_5O_6$
Molecular Weight: 662
Storage: -20°C
Purity: TLC >98%
TLC System: chloroform/methanol (90:10)
Appearance: orange solid



Application Notes:

N-Dodecanoyl-NBD-L-*threo*-dihydrosphingosine is a synthetic dihydroceramide analog containing the 7-(4-nitrobenzo-2-oxa-1,3-diazole) (NBD) fluorescent group. NBD has been shown to have only a small influence on lipid adsorption into cells and cellular membranes in many applications. This fluorescent analog of L-*threo*-dihydroceramide is comparable to C12:0-L-*threo*-dihydroceramide in some biological functions. Safingol is a fully saturated, non-natural analog of sphingosine that has anticancer properties and is being investigated for its potential as an antitumor therapy. It has been shown to inhibit both protein kinase C (PKC) and sphingosine kinase. Safingol competitively interacts at the regulatory phorbol-binding domain of PKC, a kinase involved in tumorigenesis. Safingol has been shown to potentiate the effect of doxorubicin (DOX) in tumor-bearing animals.[1] It has been reported that safingol is able to increase the activity of DOX and other chemotherapeutic agents, including mitomycin C, by generating the pro-apoptotic second messenger ceramide, even in tumor cell lines that were resistant to chemotherapy due to mutations.[2] However, a study has recently claimed that safingol induces cell death of an exclusively autophagic character and lacking any of the hallmarks of apoptosis.[3] Safingol inhibited the reactive oxygen intermediates (ROI) released from isolated neutrophils and phorbol ester-induced edema and neutrophil influx. Safingol also demonstrates anti-inflammatory activity. Safingol, like the natural D-*erythro*-sphinganine, is used as a biosynthetic precursor for all complex sphingolipids althogh the metabolism of the natural and the non-natural compounds are different.[4]

Selected References:

1. Darges, et al. "Inhibition of leukotriene B4 (LTB4) in human neutrophils by L-threo-dihydrosphingosine" *Adv. Exp. Med. Biol,* Vol. 400A pp. 387-392, *1997*
2. G. Schwartz, et al. "A pilot clinical/pharmacological study of the protein kinase C-specific inhibitor safingol alone and in combination with doxorubicin" *Clin. Cancer Res,* Vol. 3 pp. 537-543, *1997*
3. J. Coward et al. "Safingol (L-threo-sphinganine) induces autophagy in solid tumor cells through inhibition of PKC and the PI3-kinase pathway" *Autophagy* Vol. 5(2) pp.184-193, *2009*
4. M. Dragusin et al. **"**Metabolism of the unnatural anticancer lipid safingol,L-*threo*-dihydrosphingosine, in cultured cells" Vol. 44 pp. 1772, *2003*