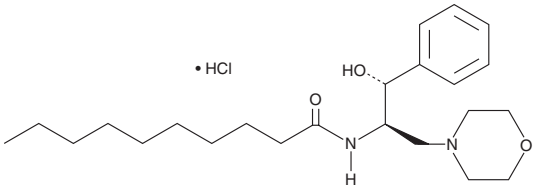
PRODUCT INFORMATION

(+)-D-*threo*-PDMP (hydrochloride)

Item No. 10178

CAS Registry No.: 139889-62-6
Formal Name: N-[(1R,2R)-2-hydroxy-1-(4-morpholinylmethyl)-2-phenylethyl]-decanamide, monohydrochloride
Synonym: D-PDMP
MF: $C_{23}H_{38}N_2O_3 \bullet HCl$
FW: 427.0
Purity: ≥98%
Supplied as: A solid
Storage: -20°C
Stability: ≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

(+)-D-*threo*-PDMP (hydrochloride) is supplied as a solid. A stock solution may be made by dissolving the (+)-D-*threo*-PDMP (hydrochloride) in the solvent of choice, which should be purged with an inert gas. (+)-D-*threo*-PDMP (hydrochloride) is soluble in ethanol and methanol.

Description

(+)-D-*threo*-PDMP is a ceramide analog and is one of the four possible stereoisomers of PDMP (Item No. 62595).[1] (+)-D-*threo*-PDMP is an inhibitor of glucosylceramide synthase.[2,3] It inhibits glucosylceramide synthase by 50% when used at a concentration of 5 µM in an enzyme assay.[2] (+)-D-*threo*-PDMP is the active component of racemic DL-*threo*-PDMP (Item No. 10005276). *In vitro*, (+)-D-*threo*-PDMP inhibits the synthesis of glucosylceramide synthase and lactosylceramide in B16 melanoma cells when used at a concentration of 25 µM and inhibits cell binding to laminin and collagen when used at concentrations of 10 and 25 µM.[4] It also inhibits β-1,4-galactosyltransferase 6 (B4GALT6) and prevents lactosylceramide synthesis, which is a promotor of neuroinflammation in mice during chronic experimental autoimmune encephalomyelitis (EAE), a model of multiple sclerosis.[5] (+)-D-*threo*-PDMP inhibits ganglioside biosynthesis, reduces long-term potentiation (LTP) in mouse hippocampal CA1 neurons, and impairs learning in the four-pellet taking test in mice.[6]

References

1. Vunnam, R.R. and Radin, N.S. Analogs of ceramide that inhibit glucocerebroside synthetase in mouse brain. *Chem. Phys. Lipids* **26(3)**, 265-278 (1980).
2. Abe, A., Inokuchi, J.-i., Jimbo, M., *et al.* Improved inhibitors of glucosylceramide synthase. *J. Biochem.* **111(2)**, 191-196 (1992).
3. Inokuchi, J. and Radin, N.S. Preparation of the active isomer of 1-phenyl-2-decanoylamino-3-morpholino-1-propanol, inhibitor of murine glucocerebroside synthetase. *J. Lipid Res.* **28(5)**, 565-571 (1987).
4. Inokuchi, J.-I., Momosaki, K., Shimeno, H., *et al.* Effects of D-threo-PDMP, an inhibitor of glucosylceramide synthetase, on expression of cell surface glycolipid antigen and binding to adhesive proteins by B16 melanoma cells. *J. Cell. Physiol.* **141(3)**, 573-583 (1989).
5. Mayo, L., Trauger, S.A., Blain, M., *et al.* Regulation of astrocyte activation by glycolipids drives chronic CNS inflammation. *Nat. Med.* **20(10)**, 1147-1156 (2014
6. Fujiwara, H., Ikarashi, K., Yamazaki, Y., *et al.* Impairment of hippocampal long-term potentiation and failure of learning in mice treated with D-threo-1-phenyl-2-decanoylamino-3-morpholino-1-propanol. *Biomed Res.* **33(5)**, 265-271 (2012).

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