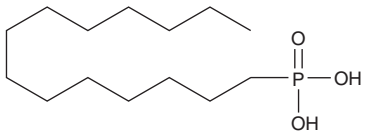
PRODUCT INFORMATION

Tetradecyl Phosphonate

Item No. 10007565

CAS Registry No.: 4671-75-4
Formal Name: tetradecylphosphonic acid
MF: $C_{14}H_{31}O_3P$
FW: 278.4
Purity: ≥98%
Supplied as: A crystalline 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

Tetradecyl phosphonate is supplied as a crystalline solid. A stock solution may be made by dissolving the tetradecyl phosphonate in the solvent of choice, which should be purged with an inert gas. Tetradecyl phosphonate is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide. The solubility of tetradecyl phosphonate in these solvents is approximately 30, 2, and 5 mg/ml, respectively.

Tetradecyl phosphonate is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, tetradecyl phosphonate should first be dissolved in ethanol and then diluted with the aqueous buffer of choice. Tetradecyl phosphonate has a solubility of approximately 0.25 mg/ml in a 1:3 solution of ethanol:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

Description

Lysophosphatidic acid (LPA) is a lipid signaling molecule formed by the hydrolysis of lysophosphatidyl choline by lysophospholipase D, also known as autotaxin (ATX).[1] LPA signals through four different G protein-coupled receptors, LPA_1/EDG-2, LPA_2/EDG-4, LPA_3/EDG-7, and LPA_4/GPR23.[2,3] Activation of peroxisome proliferator-activated receptor γ (PPARγ) by LPA has also been reported.[4] Tetradecyl phosphonate is a pan-antagonist of LPA_1, LPA_2, and LPA_3 receptors with IC_{50} values for inhibition of LPA-induced calcium mobilization of 10 µM, 5.5 µM, and 3.1 µM, respectively.[5] At a concentration of 10 µM, tetradecyl phosphonate activates a PPARγ reporter construct 4-fold compared to controls and partially inhibits ATX with an IC_{50} of approximately 3 µM.[5]

References

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2. Chun, J., Goetzl, E.J., Hla, T., *et al.* International union of pharmacology. XXXIV. Lysophospholipid receptor nomenclature. *Pharmacol. Rev.* **54**, 265-269 (2002).
3. Noguchi, K., Ishii, S., and Shimizu, T. Identification of p2y9/GPR23 as a novel G protein-coupled receptor for lysophosphatidic acid, structurally distant from the Edg family. *J. Biol. Chem.* **278(28)**, 25600-25606 (2003).
4. McIntyre, T.M., Pontsler, A.V., Silva, A.R., *et al.* Identification of an intracellular receptor for lysophosphatidic acid (LPA): LPA is a transcellular PPARγ agonist. *Proc. Natl. Acad. Sci. USA* **100(1)**, 131-136 (2003).
5. Durgam, G.G., Virag, T., Walker, M.D., *et al.* Synthesis, structure-activity relationships, and biological evaluation of fatty alcohol phosphates as lysophosphatidic acid receptors ligands, activators of PPARγ, and inhibitors of autotaxin. *J. Med. Chem.* **48**, 4919-4930 (2005).

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