

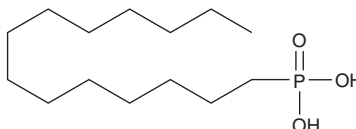
Product Information



Tetradecyl Phosphonate

Catalog No. 10007565

CAS Registry No.: 4671-75-4
Formal Name: tetradecylphosphonic acid
MF: C₁₄H₃₁O₃P
FW: 278.4
Purity: ≥98%
Stability: ≥2 years at -20°C
Supplied as: A crystalline solid



Laboratory Procedures

For long term storage, we suggest that tetradecyl phosphonate be stored as supplied at -20°C. It should be stable for at least two years.

Tetradecyl phosphonate is supplied as a crystalline solid. A stock solution may be made by dissolving the tetradecyl phosphonate in an organic solvent 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.

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, LPA₁/EDG-2, LPA₂/EDG-4, LPA₃/EDG-7, and LPA₄/GPR23.^{2,3} Activation of peroxisome proliferator-activated receptor γ (PPAR γ) by LPA has also been reported.⁴ Tetradecyl phosphonate is a pan-antagonist of LPA₁, LPA₂, and LPA₃ receptors with IC₅₀ values for inhibition of LPA-induced calcium mobilization of 10 μ M, 5.5 μ M, and 3.1 μ M, respectively.⁵ At a concentration of 10 μ M, tetradecyl phosphonate activates a PPAR γ reporter construct 4-fold compared to controls and partially inhibits ATX with an IC₅₀ of approximately 3 μ M.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 PPAR γ 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 PPAR γ , and inhibitors of autotaxin. *J. Med. Chem.* **48**, 4919-4930 (2005).

Related Products

1-Oleoyl Lysophosphatidic Acid (sodium salt) - Cat. No. 62215 • LPA₃ Polyclonal Antibody - Cat. No. 10004840 • LPA₁ Polyclonal Antibody - Cat. No. 10005280 • Lysophospholipase D Polyclonal Antibody - Cat. No. 10005375 • FTY720 - Cat. No. 10006292 • SEW2871 - Cat. No. 10006440

WARNING: THIS PRODUCT IS FOR LABORATORY RESEARCH ONLY: NOT FOR ADMINISTRATION TO HUMANS. NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

MATERIAL SAFETY DATA

This material should be considered hazardous until information to the contrary becomes available. Do not ingest, swallow, or inhale. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. This information contains some, but not all, of the information required for the safe and proper use of this material. Before use, the user must review the complete Material Safety Data Sheet, which has been sent via email to your institution.

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