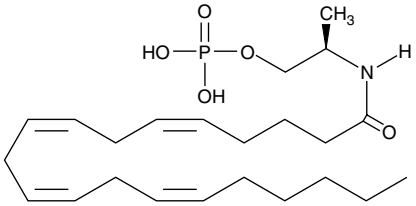
Product Information

R-1 Methanandamide Phosphate

Item No. 10004281

CAS Registry No.: 649569-33-5
Formal Name: N-(2-phosphate-1R-methylethyl)-5Z,8Z,11Z,14Z-eicosatetraenamide
Synonyms: R-1MAP, (R)-(+)-Arachidonyl-1'-Hydroxy-2'-Propylamide Phosphate
MF: $C_{23}H_{40}NO_5P$
FW: 441.5
Purity: ≥98%
Stability: ≥1 year at -20°C
Supplied as: A solution in ethanol



Laboratory Procedures

For long term storage, we suggest that R-1 methanandamide phosphate (R-1MAP) be stored as supplied at -20°C. It should be stable for at least one year.

R-1MAP is supplied as a solution in ethanol. To change the solvent, simply evaporate the ethanol under a gentle stream of nitrogen and immediately add the solvent of choice. Solvents such as DMSO and dimethyl formamide purged with an inert gas can be used. The solubility of R-1MAP in these solvents is at least 15 mg/ml.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. If an organic solvent-free solution of R-1MAP is needed, it can be prepared by evaporating the ethanol and directly dissolving the neat oil in aqueous buffers. The solubility of R-1MAP in PBS (pH 7.2) is at least 2 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Arachidonoyl ethanolamide (AEA) was the first endogenous cannabinoid (CB) to be isolated and characterized as an agonist acting on the same receptors (CB_1 and CB_2) as Δ^9-THC.[1,2] Since that time, a number of related endocannabinoids have been isolated, most notably 2-arachidonoyl glycerol (2-AG).[2] The phosphate ester of R-1 methanandamide, R-1MAP, has been tested as a water soluble prodrug analog of AEA.[3] The activity of R-1MAP was essentially equivalent to that of AEA in the growth inhibition of C6 glioma cells. However, when tested for inhibition of AEA binding to isolated rat brain CB_1 receptors, arachidonoyl ethanolamide phosphate (AEA-P) is about 5-fold less potent as an agonist with a K_i of about 200 nM.[4] The phosphate esters of AEA and its analogs are also structural variants of lysophosphatidic acid (LPA). However, the effects of R-1MAP on the various LPA receptors have not been tested.

References

1. Devane, W.A., Hanus, L., Breuer, A., *et al.* Isolation and structure of a brain constituent that binds to the cannabinoid receptor. *Science* **258**, 1946-1949 (1992).
2. Felder, C.C., Briley, E.M., Axelrod, J., *et al.* Anandamide, an endogenous cannabimimetic eicosanoid, binds to the cloned human cannabinoid receptor and stimulates receptor-mediated signal transduction. *Proc. Natl. Acad. Sci. USA* **90**, 7656-7660 (1993).
3. Fowler, C.J., Jonsson, K.-O., Andersson, A., *et al.* Inhibition of C6 glioma cell proliferation by anandamide, 1-arachidonoylglycerol, and by a water soluble phosphate ester of anandamide: Variability in response and involement of arachidonic acid. *Biochem. Pharmacol.* **66**, 757-767 (2003).
4. Sheskin, T., Hanus, L., Slager, J., *et al.* Structural requirements for binding of anandamide-type compounds to the brain cannabinoid receptor. *J. Med. Chem.* **40**, 659-667 (1997).

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