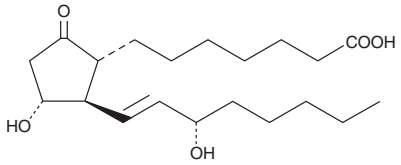
PRODUCT INFORMATION

Prostaglandin E_1 Quant-PAK

Item No. 10006844

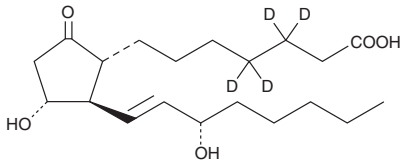
Prostaglandin E_1

CAS Registry No.: 745-65-3
Formal Name: 11α,15S-dihydroxy-9-oxo-prost-13E-en-1-oic acid
Synonyms: Alprostadil, NSC 165559, PGE_1
MF: $C_{20}H_{34}O_5$
FW: 354.5
Purity: ≥98%
Stability: ≥4 years at -20°C
Supplied as: A crystalline solid



Prostaglandin E_1-d_4

CAS Registry No.: 211105-33-8
Formal Name: 9-oxo-11α,15S-dihydroxy-prost-13E-en-1-oic-3,3,4,4-d_4 acid
Synonyms: Alprostadil-d_4, PGE_1-d_4
MF: $C_{20}H_{30}D_4O_5$
FW: 358.5
Chemical Purity: ≥98% (Prostaglandin E_1)
Deuterium Incorporation: ≥99% deuterated forms (d_1-d_4); ≤1% d_0
Stability: ≥4 years at -20°C
Supplied as: A solution in methyl acetate



This prostaglandin E_1 (PGE_1) Quant-PAK contains 50 µg of PGE_1-d_4 and 2-4 mg of PGE_1 (please see the vial for exact amount and concentration).

PGE_1 is supplied as a crystalline solid. A stock solution may be made by dissolving the PGE_1 in the solvent of choice, which should be purged with an inert gas. PGE_1 is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF). The solubility of PGE_1 in ethanol and DMSO is approximately 50 mg/ml and approximately 100 mg/ml in DMF.

PGE_1-d_4 is supplied as a solution in methyl acetate. To change the solvent, simply evaporate the methyl acetate under a gentle stream of nitrogen and immediately add the solvent of choice. Solvents such as ethanol, DMSO, and dimethyl formamide (DMF) purged with an inert gas can be used. The solubility of PGE_1-d_4 in ethanol and DMSO is approximately 50 mg/ml and approximately 100 mg/ml in DMF.

PGE_1-d_4 contains four deuterium atoms at the 3, 3', 4, and 4' positions. It is intended for use as an internal standard for the quantification of PGE_1 by GC- or LC-mass spectrometry. The accuracy of the sample weight in the PGE_1-d_4 vial is between 5% over and 2% under the weight indicated on the vial. For better precision we have provided a precisely weighed unlabeled PGE_1, with the precise weight (2-4 mg) indicated on the vial. Using this vial the deuterated standard can be quantified by constructing a standard curve of peak intensity ratios (deuterated *versus* unlabeled).

PGE_1 is a vasoactive prostaglandin and an active metabolite of dihomo-γ-linolenic acid (DGLA; Item No. 90230).[1,2] It is formed from DGLA by COX-1 and COX-2. PGE_1 is an agonist of the PGE_2 (Item No. 14010) receptor subtypes EP_1, EP_2, EP_3, and EP_4, and the IP receptor (K_is = 36, 10, 1.1, 2.1, and 33 nM, respectively, for the mouse receptors).[3] It inhibits ADP-induced platelet aggregation of isolated human platelet-rich plasma (IC_{50} = 40 nM) and isoproterenol-induced increases in L-type calcium current (I_{Ca}) in isolated rabbit atrial cells (EC_{50} = 27 nM).[4,5] PGE_1 (100 nM) induces vasodilation in isolated rat aortic rings and activates ATP-sensitive potassium channels (K_{ATP}) in a cell-attached patch clamp assay using isolated rat vascular smooth muscle cells (VSMCs).[1] It decreases femoral arterial perfusion pressure in dogs.[6] Formulations containing PGE_1 have been used in the treatment of erectile dysfunction and to maintain patency of the ductus arteriosus in neonates with congenital heart defects who depend on a patent ductus arteriosus for survival.

References

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3. Kiriyama, M., Ushikubi, F., Kobayashi, T., *et al. Br. J. Pharmacol.* **122(2)**, 217-224 (1997).
4. Kobzar, G., Mardla, V., Järving, I., *et al. Proc. Estonian Acad. Sci. Chem.* **40(N3)**, 179-180 (1991).
5. Yamamoto, T., Habuchi, Y., Tanaka, H., *et al. Am. J. Physiol.* **277(4)**, H1369-H1374 (1999).
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