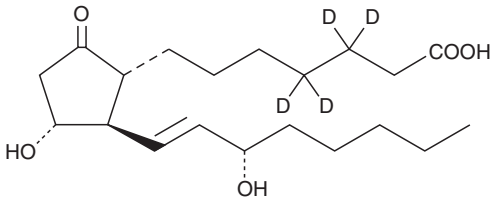
PRODUCT INFORMATION

Prostaglandin E_1-d_4

Item No. 313010

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
Supplied as: A solution in methyl acetate
Storage: -20°C
Stability: ≥2 years



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

Laboratory Procedures

Prostaglandin E_1-d_4 (PGE_1-d_4) is intended for use as an internal standard for the quantification of PGE_1 (Item No. 13010) by GC- or LC-MS. The accuracy of the sample weight in this vial is between 5% over and 2% under the amount shown on the vial. If better precision is required, the deuterated standard should be quantitated against a more precisely weighed unlabeled standard by constructing a standard curve of peak intensity ratios (deuterated *versus* unlabeled).

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 DMF is approximately 100 mg/ml and approximately 50 mg/ml in ethanol and DMSO.

Description

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).
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5. Yamamoto, T., Habuchi, Y., Tanaka, H., *et al. Am. J. Physiol.* **277(4),** H1369-H1374 (1999).
6. Nakano, J. *Br. J. Pharmacol.* **44(1),** 63-70 (1972).

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