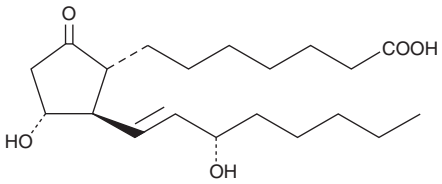
PRODUCT INFORMATION

Prostaglandin E_1

Item No. 13010

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%
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

Prostaglandin E_1 (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.

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. Organic solvent-free aqueous solutions of PGE_1 can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of PGE_1 in PBS (pH 7.2) is approximately 0.5 mg/ml. Avoid adding PGE_1 to basic solutions (pH >7.4), since base treatment will degrade PGE_1 to PGA and PGB compounds. We do not recommend storing the aqueous solution for more than one day.

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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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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