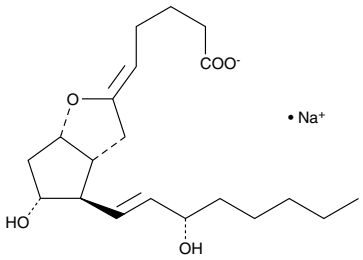
Product Information

Prostaglandin I_2 (sodium salt)

Item No. 18220

CAS Registry No.: 61849-14-7
Formal Name: 6,9α-epoxy-11α,15S-dihydroxy-prosta-5Z,13E-dien-1-oic acid, monosodium salt
Synonyms: Epoprostenol, PGI_2, Prostacyclin
MF: $C_{20}H_{31}O_5 \bullet Na$
FW: 374.5
Purity: ≥98%
Stability: ≥6 months at -20°C
Supplied as: A crystalline solid



Laboratory Procedures

For long term storage, we suggest that prostaglandin I_2 (sodium salt) (PGI_2) be stored as supplied at -20°C. It should be stable for at least six months.

PGI_2 is a hygroscopic crystalline solid soluble in water. It is unstable at neutral or acidic pH. On exposure to open air, the compound will absorb moisture and hydrolyze rapidly to 6-keto $PGF_{1\alpha}$. An aqueous stock solution of PGI_2 can be prepared by dissolving the crystalline solid directly in basic buffers (pH >10.2). The solubility of PGI_2 in PBS (pH 9.0) is approximately 11 mg/ml. Solutions of PGI_2 at physiologic pH and room temperature will have a half-life from 1 to 12 minutes depending on buffer concentration.[1,2]

PGI_2 is an unstable cyclooxygenase metabolite detected first in vascular endothelial cells.[1,3,4] It elevates platelet cAMP and is a potent vasodilator and inhibitor of human platelet aggregation with an IC_{50} value of 5 nM.[5] PGI_2 is stable in basic buffers (pH = 8), but it is rapidly hydrolyzed to 6-keto $PGF_{1\alpha}$ in neutral or acidic solutions. The half-life is short both *in vivo* and *in vitro*, ranging from 30 seconds to a few minutes. PGI_2 is administered by continuous infusion in humans for the treatment of idiopathic pulmonary hypertension.[6]

References

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3. Moncada, S., Gryglewski, R., Bunting, S., *et al.* An enzyme isolated from arteries transforms prostaglandin endoperoxides to an unstable substance that inhibits platelet aggregation. *Nature* **263**, 663-665 (1976).
4. Johnson, R.A., Morton, D.R., Kinner, J.H., *et al.* The chemical structure of prostaglandin X (prostacyclin). *Prostaglandins* **12**, 915-928 (1976).
5. Aristoff, P.A., Johnson, P.D., and Harrison, A.W. Synthesis of 9-substituted carbacyclin analogues. *J. Org. Chem.* **48**, 5341-5348 (1983).
6. McLaughlin, V.V., Genthner, D.E., Panella, M.M., *et al.* Reduction in pulmonary vascular resistance with long-term epoprostenol (prostacyclin) therapy in primary pulmonary hypertension. *N. Engl. J. Med.* **338**, 273-277 (1998).

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