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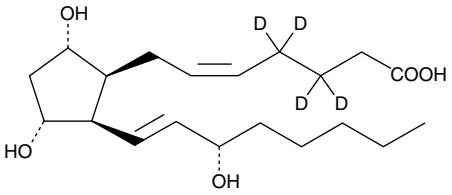
Product Information

8-*iso* Prostaglandin $F_{2\alpha}$-d_4

Item No. 316350



CAS Registry No.: 211105-40-7
Formal Name: 9α,11α,15S-trihydroxy-(8β)-prosta-5Z,13E-dien-1-oic-3,3,4,4-d_4 acid
Synonyms: iP$F_{2\alpha}$-III-d_4, 8-Isoprostane-d_4, 15-F_{2t}-Isoprostane-d_4, 8-*epi* $PGF_{2\alpha}$-d_4
MF: $C_{20}H_{30}D_4O_5$
FW: 358.5
Chemical Purity: ≥98% 8-*iso* Prostaglandin $F_{2\alpha}$
Deuterium Incorporation: ≥99% deuterated forms (d_1- d_4); ≤1% d_0
Stability: ≥2 years at -20°C
Supplied as: A solution in methyl acetate

Laboratory Procedures

8-*iso* Prostaglandin $F_{2\alpha}$-d_4 (8-*iso* $PGF_{2\alpha}$-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 8-*iso* $PGF_{2\alpha}$ by GC- or LC-mass spectrometry (MS). For long term storage, we suggest that 8-*iso* $PGF_{2\alpha}$-d_4 be stored as supplied at -20°C. It will be stable for at least two years.

8-*iso* $PGF_{2\alpha}$-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, or dimethyl formamide purged with an inert gas can be used. The solubility of 8-*iso* $PGF_{2\alpha}$-d_4 in these solvents is approximately 100 mg/ml.

8-*iso* $PGF_{2\alpha}$-d_4 is used as an internal standard for the quantification 8-*iso* $PGF_{2\alpha}$ by stable isotope dilution MS. The accuracy of the sample weight in this vial is between 5% over and 2% under. If better precision is required, the deuterated standard should be quantitated against a more precisely weighed unlabeled standard 8-*iso* $PGF_{2\alpha}$ by constructing a standard curve of peak intensity ratios (deuterated *versus* unlabeled).

8-*iso* Prostaglandin $F_{2\alpha}$ (8-*iso* $PGF_{2\alpha}$) is an isoprostane produced by the non-enzymatic peroxidation of arachidonic acid in membrane phospholipids.[1-3] It circulates in human plasma in two distinct forms - esterified in LDL phospholipids and as the free acid. The ratio of these two forms is approximately 2:1, with a total plasma 8-*iso* $PGF_{2\alpha}$ level of about 150 pg/ml in normal volunteers. In normal human urine, 8-*iso* $PGF_{2\alpha}$ levels are about 180-200 pg/mg of creatinine.[1,2] 8-*iso* $PGF_{2\alpha}$ is a weak TP receptor agonist in vascular smooth muscle.[4] Conversely, 8-*iso* $PGF_{2\alpha}$ inhibits platelet aggregation induced by U-46619 (10^{-6} M) and I-BOP (3 x 10^{-7} M) with IC_{50} values of 1.6 x 10^{-6} M and 1.8 x 10^{-6} M, respectively.[3]

References

1. Morrow, J.D., Hill, K.E., Burk, R.F., *et al.* A series of prostaglandin F_2-like compounds are produced *in vivo* in humans by a non-cyclooxygenase, free radical-catalyzed mechanism. *Proc. Natl. Acad. Sci. USA* **87,** 9383-9387 (1990).
2. Morrow, J.D., Harris, T.M., Roberts, L.J., II. Noncyclooxygenase oxidative formation of a series of novel prostaglandins: Analytical ramifications for measurement of eicosanoids. *Anal. Biochem.* **184,** 1-10 (1990).
3. Morrow, J.D., Minton, T.A., Roberts, L.J., II. The F_2-isoprostane, 8-*epi*-prostaglandin $F_{2\alpha}$, a potent agonist of the vascular thromboxane/endoperoxide receptor, is a platelet thromboxane/endoperoxide receptor antagonist. *Prostaglandins* **44,** 155-163 (1992).
4. Kiriyama, M., Ushikubi, F., Kobayashi, T., *et al.* Ligand binding specificities of the eight types and subtypes of the mouse prostanoid receptors expressed in Chinese hamster ovary cells. *Br. J. Pharmacol.* **122**, 217-224 (1997).

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