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Product Information



Prostaglandin D₂-d₉

Item No. 10010123

Formal Name: 9 α ,15S-dihydroxy-11-oxo-prosta-5Z,13E-dien-1-oic-17,17,18,18,19,19,20,20,20-d₉ acid

Synonyms: PGD₂-d₉

MF: C₂₀H₂₃D₉O₅

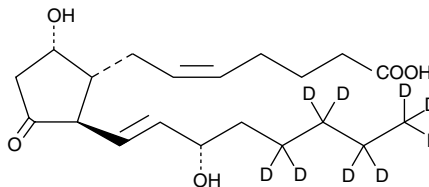
FW: 361.5

Chemical Purity: $\geq 95\%$

Deuterium Incorporation: $\geq 99\%$ deuterated forms (d₁-d₉); $\leq 1\%$ d₀

Stability: ≥ 1 year at -20°C

Supplied as: A solution in methyl acetate



Laboratory Procedures

Prostaglandin D₂-d₉ (PGD₂-d₉) contains nine deuterium atoms at the 17, 17', 18, 18', 19, 19', 20, 20, and 20 positions. It is intended for use as an internal standard for the quantification of PGD₂ by GC- or LC-mass spectrometry (MS). For long term storage, we suggest that PGD₂-d₉ be stored as supplied at -20°C. It will be stable for at least two years.

PGD₂-d₉ 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 purged with an inert gas can be used. The solubility of PGD₂-d₉ in these solvents is approximately 75, 50, and 100 mg/ml, respectively.

PGD₂-d₉ is used as an internal standard for the quantification of PGD₂ by stable isotope dilution 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).

PGD₂ is the major eicosanoid product of mast cells and is released in large quantities during allergic and asthmatic anaphylaxis.¹ Mastocytosis patients produce excessive amounts of PGD₂, which causes vasodilation, flushing, hypotension, and syncopal episodes.¹ PGD₂ is also produced in the brain *via* an alternative pathway involving a soluble, secreted PGD-synthase also known as β -trace.^{2,3} In the brain, PGD₂ produces normal physiological sleep and lowering of body temperature.^{2,3} Further pharmacological actions include inhibition of platelet aggregation and relaxation of vascular smooth muscle.⁴ PGD₂ inhibits human ovarian tumor cell proliferation with an IC₅₀ value of 6.8 μ M.⁵

References

1. Roberts, L.J., II and Sweetman, B.J. Metabolic fate of endogenously synthesized prostaglandin D₂ in a human female with mastocytosis. *Prostaglandins* **30**, 383-400 (1985).
2. Hayaishi, O. Sleep-wake regulation by prostaglandins D₂ and E₂. *J. Biol. Chem.* **263**, 14593-14596 (1988).
3. Onoe, H., Ueno, R., Fujita, I., *et al.* Prostaglandin D₂, a cerebral sleep-inducing substance in monkeys. *Proc. Natl. Acad. Sci. USA* **85**, 4082-4086 (1988).
4. Giles, H. and Leff, P. The biology and pharmacology of PGD₂. *Prostaglandins* **35**, 277-300 (1988).
5. Kikuchi, Y., Kita, T., Hirata, J., *et al.* Preclinical studies of antitumor prostaglandins by using human ovarian cancer cells. *Cancer. Metast. Rev.* **13**, 309-315 (1994).

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