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# Product Information



## Prostaglandin E<sub>2</sub>-d<sub>4</sub>-1-glyceryl ester

Item No. 14029

**Formal Name:** 9-oxo-11 $\alpha$ ,15S-dihydroxy-prosta-5Z,13E-dien-1-oic-2,2,3,3-d<sub>4</sub> acid, 1-glycerol ester

**Synonym:** PGE<sub>2</sub>-d<sub>4</sub>-1-glyceryl ester

**MF:** C<sub>23</sub>H<sub>34</sub>D<sub>4</sub>O<sub>7</sub>

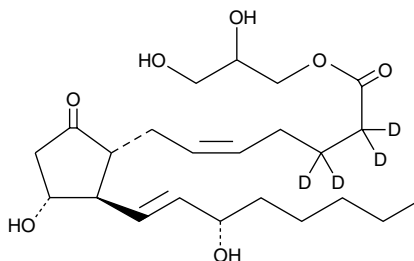
**FW:** 430.6

**Chemical Purity:**  $\geq$ 98% (isomeric mixture) PGE<sub>2</sub>-d<sub>4</sub>-1-glyceryl ester

**Deuterium Incorporation:**  $\geq$ 99% deuterated forms (d<sub>1</sub>-d<sub>4</sub>);  $\leq$ 1% d<sub>0</sub>

**Stability:**  $\geq$ 1 year at -20°C

**Supplied as:** A solution in acetonitrile



### Laboratory Procedures

Prostaglandin E<sub>2</sub>-d<sub>4</sub>-1-glyceryl ester (PGE<sub>2</sub>-d<sub>4</sub>-1-glyceryl ester) contains four deuterium atoms at the 2, 2', 3, and 3' positions. It is intended for use as an internal standard for the quantification of PGE<sub>2</sub>-1-glyceryl ester by GC- or LC-mass spectrometry (MS). For long term storage, we suggest that PGE<sub>2</sub>-d<sub>4</sub>-1-glyceryl ester be stored as supplied at -20°C. It should be stable for at least one year.

PGE<sub>2</sub>-d<sub>4</sub>-1-glyceryl ester is supplied as a solution in acetonitrile. To change the solvent, simply evaporate the acetonitrile 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 PGE<sub>2</sub>-d<sub>4</sub>-1-glyceryl ester in these solvents is approximately 10 mg/ml.

PGE<sub>2</sub>-d<sub>4</sub>-1-glyceryl ester is used as an internal standard for the quantification of PGE<sub>2</sub>-1-glyceryl ester 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).

2-Arachidonoyl glycerol (2-AG) has been isolated from porcine brain, and has been characterized as the natural endocannabinoid ligand for the CB<sub>1</sub> receptor.<sup>1,2</sup> Incubation of 2-AG with COX-2 and specific prostaglandin H<sub>2</sub> (PGH<sub>2</sub>) isomerases in cell cultures and isolated enzyme preparations results in prostaglandin glycerol ester formation.<sup>3</sup> The biosynthesis of PGH, PGD, PGE, PGF, and TXA-2-glyceryl ester compounds have all been documented. The 2-glyceryl ester moiety equilibrates rapidly (within minutes) with the more stable 1-glyceryl ester, producing a 10:90 2:1-glyceryl ester mixture in typical aqueous media. While the stability and metabolism of these prostaglandin products has been investigated, little is known about their intrinsic biological activity.<sup>4</sup>

### References

1. Sugiura, T., Kodaka, T., Kondo, S., *et al.* 2-Arachidonoylglycerol, a putative endogenous cannabinoid receptor ligand, induces rapid, transient elevation of intracellular free Ca<sup>2+</sup> in neuroblastoma X glioma hybrid NG108-15 cells. *Biochem. Biophys. Res. Commun.* **229**, 58-64 (1996).
2. Sugiura, T., Kodaka, T., Kondo, S., *et al.* Is the cannabinoid CB<sub>1</sub> receptor a 2-arachidonoylglycerol receptor? Structural requirements for triggering a Ca<sup>2+</sup> transient in NG108-15 cells. *J. Biochem.* **122**, 890-895 (1997).
3. Kozak, K.R., Crews, B.C., Morrow, J.D., *et al.* Metabolism of the endocannabinoids, 2-arachidonoylglycerol and anandamide, into prostaglandin, thromboxane, and prostacyclin glycerol esters and ethanolamides. *J. Biol. Chem.* **277**(47), 44877-44885 (2002).
4. Kozak, K.R., Crews, B.C., Ray, J.L., *et al.* Metabolism of prostaglandin glycerol esters and prostaglandin ethanolamides *in vitro* and *in vivo*. *J. Biol. Chem.* **276**(40), 36993-36998 (2001).

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