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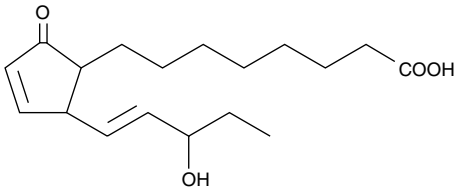
Product Information

A_1-Phytoprostane-I

Item No. 9000593

CAS Registry No.:	1035557-09-5
Formal Name:	2-(3-hydroxy-1-penten-1-yl)-5-oxo-3-cyclopentene-1-octanoic acid
Synonyms:	16-A_1-Phytoprostane, Phytoprostane A_1, PPA_1
MF:	$C_{18}H_{28}O_4$
FW:	308.4
Purity:	≥90% (*trans* isomer mix)
Stability:	≥1 year at -20°C
Supplied as:	A solution in methyl acetate
UV/Vis.:	λ_{max}: 217 nm



Laboratory Procedures

For long term storage, we suggest that A_1-phytoprostane-I be stored as supplied at -20°C. It should be stable for at least one year.

A_1-Phytoprostane-I 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 (DMF) purged with an inert gas can be used. The solubility of A_1-phytoprostane-I in ethanol is approximately 10 mg/ml and approximately 20 mg/ml in DMSO and DMF.

A_1-Phytoprostane-I is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, the methyl acetate solution of A_1-phytoprostane-I should be diluted with the aqueous buffer of choice. A_1-Phytoprostane-I has a solubility of approximately 0.5 mg/ml in a 1:1 solution of DMSO:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

A_1-Phytoprostane-I is a cyclopentenone isoprostane produced by the action of reactive oxygen species on α-linolenic acid in plants.[1-3] There are two A_1-phytoprostanes, both having the single ketone group on the ring structure. This isoform results from cyclization between carbons 9 and 13 of linolenic acid, as opposed to carbons 3 and 7 in A_1-phytoprostane-II. A_1-Phytoprostanes induce the expression of glutathione-S-transferase, increase phytoalexin biosynthesis, and trigger the expression of several genes involved in primary and secondary metabolism in plants.[1,3,4]

References

1. Thoma, I., Loeffler, C., Sinha, A.K., *et al.* Cyclopentenone isoprostanes induced by reactive oxygen species trigger defense gene activation and phytoalexin accumulation in plants. *Plant J.* **34(3)**, 363-375 (2003).
2. Jahn, U., Galano, J.-M., and Durand, T. Beyond prostaglandins--chemistry and biology of cyclic oxygenated metabolites formed by free-radical pathways from polyunsaturated fatty acids. *Angew. Chem. Int. Ed.* **47**, 5894-5955 (2008).
3. Mueller, M.J. and Berger, S. Reactive electrophilic oxylipins: Pattern recognition and signalling. *Phytochem.* **70**, 1511-1521 (2009).
4. Dueckershoff, K., Mueller, S., Mueller, M.J., *et al.* Impact of cyclopentenone-oxylipins on the proteome of *Arabidopsis thaliana*. *Biochim. Biophys. Acta.* **1784**, 1975-1985 (2008).

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