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Product Information

Prostaglandin E₂ Cell Culture Tested

Product Number **P 0409**
Storage Temperature -0 °C

Product Description

Molecular Formula: C₂₀H₃₂O₅
Molecular Weight: 352.5
CAS Number: 363-24-6
Melting Point: 66-68 °C¹
Critical Micelle Concentration: 5 mg/ml¹
Synonym: PGE₂

Prostaglandin E₂ is a signaling molecule produced by activated platelets. The release of PGE₂ by activated platelets is part of a mechanism by which activated platelets utilize adjacent erythrocytes to help in clot formation.² This product was shown to lower the filterability of human erythrocytes by approximately 30% at a concentration of 10⁻¹⁰ M and also caused a reduction in mean cell volume by about 10%. The cause of cell shrinkage was the induction of a PGE₂-stimulated K⁺ efflux pathway leading to rapid loss of cellular K⁺ ions. This loss was shown to be Ca²⁺ dependent.

PGE₂ has been shown to stimulate of the production of interleukin-6 (IL-6) by neonatal mouse parietal bones. After 6 hours in culture, cells stimulated with 10⁻⁸ M PGE₂ produced significantly more IL-6 than controls.³ The pyrogenic activity of PGE₂ was not inhibited by dexamethasone, unlike prostaglandin F_{2α}.⁴

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

For use in cell culture, the following procedure is suggested:
Prepare a 50 µg/ml stock solution by first dissolving this product at 1 mg/ml in absolute ethanol. Gently rotate the contents to completely dissolve the product. Add 19 ml as sterile medium for every ml of ethanol used. The working concentration for cell culture is 0.25-100 ng/ml. Solutions prepared in this manner can be stored frozen in working aliquots for up to 30 days.

This product is also soluble in water at 1.05 mg/ml at 25 °C. The formation of aqueous solutions is pH-dependent, i.e., at a pH above 6 the solubility is about 5 mg/ml (the Critical Micelle Concentration, CMC).¹

Stock solutions of 10 mg/ml can be prepared in ethanol and further diluted with 0.1 M phosphate buffer to obtain the desired concentration (the remaining amount of ethanol is usually insignificant). Alternatively, the ethanol stock solution may be diluted with a sodium carbonate solution (the amount of Na₂CO₃ used should not exceed the amount needed to neutralize the prostaglandin acid). The preparation of aqueous stock solutions of PGE₂ is difficult to achieve. However, in cases where even traces of ethanol are undesirable, PGE₂ can be dissolved by prolonged agitation in 0.1 M phosphate buffer. Rapid dissolution may be effected by ultrasonication, but not for an extended time which may cause heating of the solution.

Storage/Stability

All solutions should be stored at 2-8 °C and protected from light. When aqueous solutions are frozen, PGE₂ may precipitate. Usually, gentle shaking or brief sonication of the solution will dissolve the precipitate.

The aqueous stability of PGE₂ at 25 °C:⁵

pH	Hours for 10% loss
3-4	133
6	53
8	42
9	4.2
10	0.42 (25 min.)

In absolute ethanol, PGE₂ loses about 10% potency in about 24 to 36 months at 4 °C (1 to 10 mg/ml). At lower concentrations solutions are less stable.

References

1. The Merck Index, 12th, Entry# 8064.
2. Li, Q., et al., Prostaglandin E₂ stimulates a Ca²⁺-dependent K⁺ channel in human erythrocytes and alters cell volume and filterability. J. Biol. Chem., **271(31)**, 18651-18656 (1996).
3. Holt, I., et al., Prostaglandin E₂ stimulates the production of interleukin-6 by neonatal mouse parietal bones. Bone and Mineral, **25(1)**, 47-57 (1994).
4. Coelho, M.M., et al., Dexamethasone inhibits the pyrogenic activity of prostaglandin F_{2α}, but not Prostaglandin E₂. Eur. J. Pharmacol., **238(2-3)**, 391-394 (1993).
5. Stehle, R.G., Physical Chemistry, Stability, and Handling of Prostaglandins E₂, F_{2α}, D₂ and I₂: A Critical Summary. Methods in Enzymology, **86**, 436-458 (1982).

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