PRODUCT INFORMATION



Prostaglandin F Synthease (human recombinant)

Item No. 10007940

Overview and Properties

Synonyms:	AKR1C3, Aldo-keto Reductase Family 1 Member C3, 3-α-HSD Type II (Brain), 17-β-HSD 5, PGFS
Source:	Active recombinant C-terminal hexahistidine-tagged protein expressed in E. coli
Amino Acids:	1-323 (full length)
Uniprot No.:	P42330
Molecular Weight:	40.4 kDa/subunit
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	batch specific (≥85% estimated by SDS-PAGE)
Supplied in:	100 mM sodium phosphate, pH 7.2, containing 20% glycerol, 100 mM sodium chloride, and 1 mM EDTA
Protein	
Concentration:	<i>batch specific</i> mg/ml
Activity:	batch specific U/ml
Specific Activity:	batch specific U/mg
Unit Definition:	One unit is defined as the amount of enzyme required to produce 1 μmol of NADP ⁺ per minute at 37°C in 50 mM KPO4 pH 7.2 containing 250 μM NADPH and 25 μM 9,10-phenanthrenequinone.

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Image



WARNING THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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Description

Human prostaglandin (PG) F synthase is a monomeric protein with a MW of ~37 kDa and belongs to the aldo-keto reductase family based on its substrate specificity, molecular weight, and amino acid sequence.¹ It catalyzes the formation of PGF_{2α} from PGH₂ (PGH₂ 9,11-endoperoxide reductase activity) and the formation of 9α,11β-PGF₂ from PGD₂ (PGD₂ 11-ketoreductase activity) in the presence of NADPH. It does not catalyze the reduction of PGE₂ to PGF_{2α}.² This enzyme also exhibits reductase activity toward carbonyl compounds such as *p*-nitroacetophenone, *p*-nitrobenzaldehyde, and 9,10-phenanthrene quinone (PQ).³ Crystal structures of the enzyme in complex with flufenamic acid, Indomethacin, PGD₂, rutin, and Bimatoprost have been determined.⁴⁻⁶

Cayman's PGFS is expressed and purified from *E. coli*. 11-keto-reductase activity of the enzyme was determined by measuring the absorbance of NADPH at 340 nm using PGD_2 as substrate in phosphate buffer containing 2% ethanol. Specific activity of the enzyme was established using 9,10-phenanthrenequinone as the substrate.

References

- 1. Urade, Y., Watanabe, K., and Hayaishi, O. Prostaglandin D, E, and F synthases. J. Lipid Mediat. Cell Signal. **12**, 257-273 (1995).
- Watanabe, K., Yoshida, R., Shimizu, T., *et al.* Enzymatic formation of prostaglandin F_{2α} from prostaglandin H₂ and D₂. Purification and properties of prostaglandin F synthetase from bovine lung. *J. Biol. Chem.* 260(11), 7035-7041 (1985).
- 3. Suzuki, T., Fuji, Y., Miyano, M., et al. cDNA cloning, expression, and mutagenesis study of liver-type prostaglandin F synthase. J. Biol. Chem. 274, 241-248 (1999).
- Lovering, A.L., Ride, J.P., Bunce, C.M., *et al.* Crystal structures of prostaglandin D₂ 11-ketoreductase (AKR1C3) in complex with the nonsteroidal anti-inflammatory drugs flufenamic acid and indomethacin. *Cancer Res.* 64, 1802-1810 (2004).
- 5. Komoto, J., Yamada, T., Watanabe, K., *et al.* Crystal structure of human prostaglandin F synthase (AKR1C3). *Biochemistry* **43**, 2188-2198 (2004).
- Komoto, J., Yamada, T., Watanabe, K., *et al.* Prostaglandin F_{2α} formation from prostaglandin H₂ by prostaglandin F synthase (PGFS): Crystal structure of PGFS containing bimatoprost. *Biochemistry* 45(7), 1987-1996 (2006).

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