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PRODUCT INFORMATION

Prostaglandin F Synthease (human recombinant)

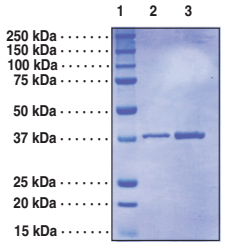
Item No. 10007940

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:	***batch specific*** 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 umol of $NADP^+$ per minute at 37°C in 50mM KPO4 pH 7.2 containing 250 uM NADPH and 25 uM 9,10-phenanthrenequinone.

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

Image



Lane 1: MW Markers
Lane 2: PGFS (2 µg)
Lane 3: PGFS (5 µg)

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PRODUCT INFORMATION

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 $PGF_{2\alpha}$ from PGH_2 (PGH_2 9,11-endoperoxide reductase activity) and the formation of 9α,11β-PGF_2 from PGD_2 (PGD_2 11-ketoreductase activity) in the presence of NADPH. It does not catalyze the reduction of PGE_2 to $PGF_{2\alpha}$.[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, PGD_2, 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).
2. Watanabe, K., Yoshida, R., Shimizu, T., *et al.* Enzymatic formation of prostaglandin $F_{2\alpha}$ from prostaglandin H_2 and D_2. 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).
4. Lovering, A.L., Ride, J.P., Bunce, C.M., *et al.* Crystal structures of prostaglandin D_2 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).
6. Komoto, J., Yamada, T., Watanabe, K., *et al.* Prostaglandin $F_{2\alpha}$ formation from prostaglandin H_2 by prostaglandin F synthase (PGFS): Crystal structure of PGFS containing bimatoprost. *Biochemistry* **45(7)**, 1987-1996 (2006).

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