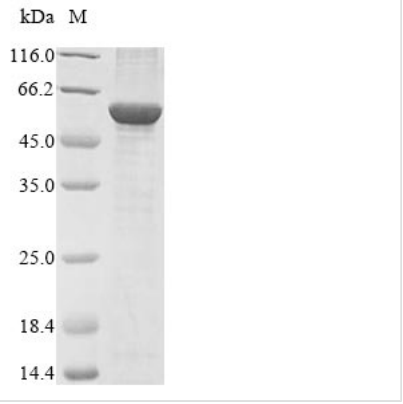
Recombinant Bovine NADPH:adrenodoxin oxidoreductase, mitochondrial (FDXR)

Product Code	CSB-EP008575BO
Abbreviation	Recombinant Bovine FDXR protein
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.
Uniprot No.	P08165
Product Type	Recombinant Protein
Immunogen Species	Bos taurus (Bovine)
Purity	Greater than 85% as determined by SDS-PAGE.
Sequence	STQEQTPQICVVGSGPAGFYTAQHLLKHHSRAHVDIYEKQLVPFGLVRFGVAP DHPEVKNVINTFTQTARSDRCAFYGNVEVGRDVTVQELQDAYHAVVLSYGAE DHQALDIPGEELPGVFSARAFVGWYNGLPENRELAPDLSCDTAVILGQGNVAL DVARILLTPPDHLEKTDITEAALGALRQSRVKTVWIVGRRGPLQVAFTIKELREM IQLPGTRPMLDPADFLGLQDRIKEAARPRKRLMELLLRTATEKPGVEEAARRA SASRAWGLRFFRSPQQVLPSPDGRRAAGIRLAVTRLEGIGEATRAVPTGDVE DLPCGLVLSSIGYKSRPIDPSVPFDPKLGVVPNMEGRVVDVPGLYCSGWVKR GPTGVITTTMTDSFLTGQILLQDLKAGHLPSGPRPGSAFIKALLDSRGVWPVSF SDWEKLDAEEVSRGQASGKPREKLLDPQEMLRLLGH
Research Area	Cell Biology
Source	E.coli
Target Names	FDXR
Protein Names	Recommended name: NADPH:adrenodoxin oxidoreductase, mitochondrial Short name= AR Short name= Adrenodoxin reductase EC= 1.18.1.2 Alternative name(s): Ferredoxin--NADP(+) reductase Short name= Ferredoxin reductase
Expression Region	33-492aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 10xHis-tagged
Mol. Weight	55.8 kDa
Protein Length	Full Length of Mature Protein
Image	



(Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.

Description

Recombinant Bovine NADPH:adrenodoxin oxidoreductase, mitochondrial (FDXR) is expressed in E. coli and spans the full length of the mature protein, covering amino acids 33 to 492. The product comes with an N-terminal 10xHis tag, which makes purification and detection more straightforward. SDS-PAGE analysis confirms the protein reaches greater than 85% purity—this level appears adequate for most research applications.

NADPH:adrenodoxin oxidoreductase, mitochondrial (FDXR) plays a critical role in electron transfer processes within the mitochondria. The protein acts as an essential bridge in steroidogenesis, moving electrons from NADPH to adrenodoxin. Its importance in steroid hormone synthesis and mitochondrial electron transport pathways likely makes it valuable for biochemical and physiological research.

Potential Applications

Note: The applications listed below are based on what we know about this protein's biological functions, published research, and experience from experts in the field. However, we haven't fully tested all of these applications ourselves yet. We'd recommend running some preliminary tests first to make sure they work for your specific research goals.

1. Protein-Protein Interaction Studies with Adrenodoxin and Cytochrome P450 Enzymes

Researchers can use this recombinant FDXR to explore how it interacts with adrenodoxin and various cytochrome P450 enzymes in vitro. Techniques like surface plasmon resonance, isothermal titration calorimetry, or co-immunoprecipitation assays may prove useful here. The N-terminal His-tag allows for immobilization on nickel-coated surfaces, which could help with binding kinetics analysis. Such studies might shed light on the molecular mechanisms behind electron transfer in steroidogenic pathways. The 85% purity should be sufficient for most protein-protein interaction assays where the target protein dominates the mixture.

2. Antibody Development and Validation

This recombinant bovine FDXR could work well as an antigen for creating

polyclonal or monoclonal antibodies specific to the protein. The His-tagged version can be purified relatively easily and used in immunization protocols. Following this, antibody screening through ELISA or Western blot techniques becomes more manageable. These antibodies would likely prove valuable for studying FDXR expression, localization, and regulation in bovine tissues. Since the protein includes the full-length mature sequence, any antibodies generated should recognize native epitopes found in endogenous FDXR.

3. Biochemical Characterization and Enzyme Kinetics Analysis

Detailed biochemical characterization becomes possible with this recombinant protein. Researchers might determine cofactor binding properties, thermal stability, and pH optima using spectroscopic methods and activity assays with NADPH as substrate. The His-tag simplifies purification, making it easier to obtain concentrated protein samples for these analyses. Comparative studies between bovine FDXR and similar proteins from other species could reveal interesting patterns in evolutionary conservation of function. The E. coli expression system appears to provide adequate protein yield for multiple experimental replicates.

4. Reconstitution of Mitochondrial Electron Transfer Systems

Scientists can incorporate this recombinant FDXR into reconstituted electron transfer systems in vitro to study the complete steroidogenic electron transport chain. These experiments would combine purified FDXR with adrenodoxin and cytochrome P450 enzymes to rebuild functional steroid hydroxylation activity in liposomes or other membrane-like systems. The well-defined composition allows researchers to systematically investigate how each component contributes to overall system efficiency. Reconstituted systems like these may offer valuable insights into the stoichiometry and regulation of mitochondrial steroidogenesis.

Reconstitution	We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Please reconstitute protein in deionized sterile water to a concentration of 0.1-1.0 mg/mL.We recommend to add 5-50% of glycerol (final concentration) and aliquot for long-term storage at -20°C/-80°C. Our default final concentration of glycerol is 50%. Customers could use it as reference.
Shelf Life	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.