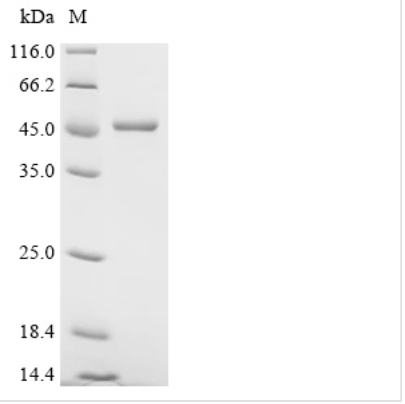
Recombinant Human Fructose-bisphosphate aldolase A (ALDOA)

Product Code	CSB-EP001583HUa0
Abbreviation	Recombinant Human ALDOA 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.	P04075
Form	Liquid or Lyophilized powder
Storage Buffer	If the delivery form is liquid, the default storage buffer is Tris/PBS-based buffer, 5%-50% glycerol. If the delivery form is lyophilized powder, the buffer before lyophilization is Tris/PBS-based buffer, 6% Trehalose.
Product Type	Recombinant Protein
Immunogen Species	Homo sapiens (Human)
Purity	Greater than 85% as determined by SDS-PAGE.
Sequence	PYQYPALTPEQKKELSDIAHRIVAPGKGILAADESTGSIAKRLQSIGTENTEENR RFYRQLLLTADDRVNPCIGGVILFHETLYQKADDGRPFPQVIKSKGGVVGIKVD KGVVPLAGTNGETTTQGLDGLSERCAQYKKDGADFAKWRCVLKIGEHTPSAL AIMENANVLARYASICQQNGIVPIVEPEILPDGDHDLKRCQYVTEKVLAAVYKAL SDHHIYLEGTLLKPNMVTPGHACTQKFSHEEIAMATVTALRRTVPPAVTGITFL SGGQSEEEASINLNAINKCPLLKPWALTFSYGRALQASALKAWGGKKENLKAA QEEYVKRALANSLACQGKYTPSGQAGAAASESLFVSNHAY
Research Area	Metabolism
Source	E.coli
Target Names	ALDOA
Expression Region	2-364aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 6xHis-tagged
Mol. Weight	45.3 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 Human Fructose-bisphosphate aldolase A (ALDOA) is produced in E. coli and contains the complete mature protein sequence spanning amino acids 2 to 364. The protein includes an N-terminal 6xHis-tag, which makes purification and detection more straightforward. SDS-PAGE analysis confirms the product achieves greater than 85% purity. It's designed strictly for research purposes, with endotoxin levels carefully monitored to meet the requirements of different experimental setups.

In glycolysis, Fructose-bisphosphate aldolase A (ALDOA) appears to serve a fundamental function by catalyzing the reversible breakdown of fructose-1,6-bisphosphate into glyceraldehyde-3-phosphate and dihydroxyacetone phosphate. Energy production in cells seems to depend heavily on this enzyme, particularly in tissues like muscle and brain where energy demands run high. Scientists often focus on ALDOA when investigating how metabolic pathways operate and how energy gets regulated at the cellular level.

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. Glycolytic Pathway Enzyme Activity Studies

This recombinant ALDOA protein works well as a positive control or reference standard when running biochemical assays that examine how glycolytic enzymes function and get regulated. The complete mature protein (2-364aa) expressed in E. coli offers researchers a clearly defined substrate for exploring aldolase properties - things like kinetic parameters and which substrates it prefers. Scientists can establish baseline aldolase activity measurements for comparative studies looking at metabolic problems or enzyme variants. The N-terminal 6xHis tag makes purification simpler and allows for easy immobilization during enzyme kinetics experiments.

2. Antibody Development and Validation

For generating and validating antibodies that target human aldolase A specifically, this recombinant protein may prove ideal as an antigen. The >85% purity and complete sequence length should ensure that epitopes present themselves properly during immunization and antibody screening procedures. Scientists can use the His-tagged protein in ELISA-based characterization, Western blot validation, and tests for specificity. This becomes especially useful when developing research tools to track ALDOA expression levels and figure out where it's located within different cell types under various experimental conditions.

3. Protein-Protein Interaction Studies

Pull-down assays and co-immunoprecipitation experiments can take advantage of the His-tagged recombinant ALDOA to find and characterize proteins that bind to it. The N-terminal His tag allows immobilization on nickel-affinity matrices, which can then capture interacting proteins from cell lysates or purified protein mixtures. This method helps researchers explore what ALDOA might be doing beyond its role in glycolysis - perhaps structural or regulatory functions through forming protein complexes. The full-length protein maintains the folding domains that appear necessary for interactions that actually occur in living cells.

4. Structural and Biophysical Characterization

For structural biology work - X-ray crystallography, NMR spectroscopy, and cryo-electron microscopy - this recombinant ALDOA protein provides suitable starting material. The high purity (>85%) and complete sequence make it appropriate for biophysical techniques like dynamic light scattering, thermal stability testing, and circular dichroism spectroscopy. Scientists can study how the protein changes shape, how it folds, and what happens when different buffer conditions or small molecules interact with ALDOA structure. The His tag works for oriented attachment in surface plasmon resonance studies that measure binding kinetics.

5. Metabolic Pathway Reconstitution Assays

In vitro experiments that reconstruct metabolic pathways can incorporate this recombinant ALDOA protein to study how glycolytic flux operates and gets controlled. Scientists can mix this aldolase with other purified glycolytic enzymes to build defined biochemical systems for investigating pathway behavior and metabolic control mechanisms. This approach allows precise control over enzyme amounts and reaction conditions, which makes quantitative analysis of metabolic network behavior more feasible. The standardized recombinant protein should help ensure that results remain consistent across different experimental designs and laboratories.

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.

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