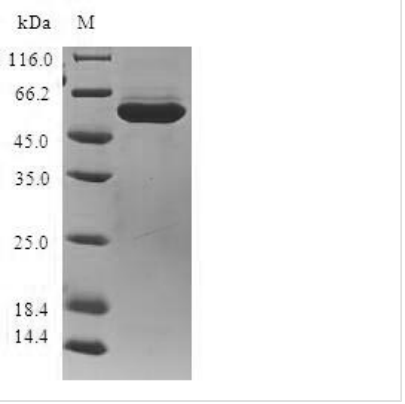
Recombinant Human Aldo-keto reductase family 1 member B10 (AKR1B10)

Product Code	CSB-EP001540HU
Relevance	Acts as all-trans-retinaldehyde reductase. Can efficiently reduce aliphatic and aromatic aldehydes, and is less active on hexoses (in vitro). May be responsible for detoxification of reactive aldehydes in the digested food before the nutrients are passed on to other organs.
Abbreviation	Recombinant Human AKR1B10 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.	O60218
Alias	ARL-1 Aldose reductase-like Aldose reductase-related protein
Product Type	Recombinant Protein
Immunogen Species	Homo sapiens (Human)
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	MATFVELSTKAKMPIVGLGTWKSPLGKVKEAVKVAIDAGYRHIDCAYVYQNEH EVGEAIQEKIQEKAVKREDLFIVSKLWPTFFERPLVRKAFEKTLKDLKLSYLDVY LIHWPQGFKSGDDLFPKDDKGNAIGGKATFLDAWEAMEELVDEGLVKALGVS NFSHFQIEKLLNKPGLKYKPVTNQVECHPYLTQEKLIQYCHSKGITVTAYSPLG SPDRPWAKPEDPSLLEDPKIKEIAAKHKKTAAQVLIRFHIQRNVIVIPKSVTPARI VENIQVFDFKLSDEEMATILSFNRNWRACNVLQSSHLEDYPFNAEY
Research Area	Signal Transduction
Source	E.coli
Target Names	AKR1B10
Protein Names	Recommended name: Aldo-keto reductase family 1 member B10 EC= 1.1.1.- Alternative name(s): ARL-1 Aldose reductase-like Aldose reductase-related protein Short name= ARP Short name= hARP Small intestine reductase
Expression Region	1-316aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal GST-tagged
Mol. Weight	63.0kDa
Protein Length	Full Length
Image	



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

Description

Recombinant Human Aldo-keto reductase family 1 member B10 (AKR1B10) is expressed in E. coli and contains the complete protein region spanning amino acids 1-316. The protein carries an N-terminal GST tag and shows purity levels above 90% when analyzed by SDS-PAGE. This product is designed strictly for research purposes and cannot be used in clinical settings.

AKR1B10 belongs to the aldo-keto reductase superfamily and appears to play an important role in converting aldehydes and ketones to their corresponding alcohols. The enzyme participates in multiple metabolic pathways and has drawn considerable attention from researchers studying detoxification mechanisms and lipid metabolism.

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. Enzyme Kinetics and Substrate Specificity Studies

This full-length recombinant AKR1B10 protein offers researchers a way to examine the enzymatic properties of this particular aldo-keto reductase member using in vitro biochemical assays. Scientists can measure kinetic parameters like Km and Vmax values with different aldehyde and ketone substrates, which may help clarify the enzyme's catalytic efficiency. The high purity level (>90%) should provide reliable and consistent results when measuring enzyme activity. Such work could advance our understanding of how AKR1B10 functions in cellular metabolism and which substrates it prefers.

2. GST Pull-Down Assays for Protein-Protein Interactions

The N-terminal GST tag makes this recombinant protein suitable for GST pull-down experiments aimed at finding potential AKR1B10 binding partners. Cell lysates or purified proteins can be mixed with GST-AKR1B10 that's been attached to glutathione-sepharose beads, allowing interacting proteins to be captured. This method gives researchers a tool to explore AKR1B10's protein

interaction network and possibly identify regulatory proteins or metabolic pathway components that work with this enzyme. The GST tag also makes purification and immobilization more straightforward for these interaction studies.

3. Antibody Development and Validation

This highly pure recombinant protein works well as an antigen for creating antibodies specific to human AKR1B10. Since it includes the full-length protein (1-316aa), it offers numerous epitopes for producing both monoclonal and polyclonal antibodies. Researchers might use this protein to immunize animals or screen phage display libraries when developing research-grade antibodies. The recombinant protein can also help validate how specific antibodies are through Western blotting, ELISA, and similar immunoassays.

4. Structural and Biophysical Characterization

The purified recombinant AKR1B10 protein may prove valuable for structural biology studies, including X-ray crystallography, NMR spectroscopy, or cryo-electron microscopy to map out its three-dimensional structure. Biophysical approaches like dynamic light scattering, circular dichroism spectroscopy, and thermal stability assays could reveal details about protein folding, stability, and how the protein changes shape. These investigations might deepen our grasp of structure-function relationships in the aldo-keto reductase family and inform future protein engineering work.

5. Inhibitor Screening and Drug Discovery Research

This recombinant protein can function as a target for high-throughput screening of small molecule libraries to find potential AKR1B10 inhibitors for research applications. In vitro enzyme assays developed with this purified protein allow testing of various compounds' inhibitory effects and determination of IC50 values. The high purity and consistent quality should ensure that screening results remain reproducible across different experimental batches. Studies like these may contribute to understanding how AKR1B10 is regulated and provide research tools for investigating what the protein does biologically.

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.