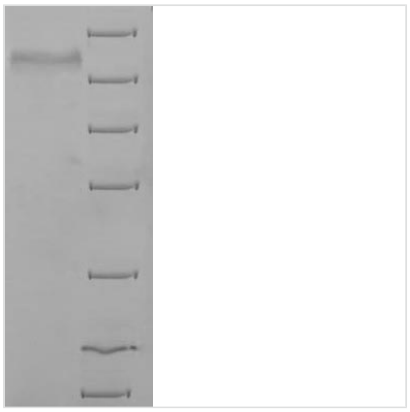
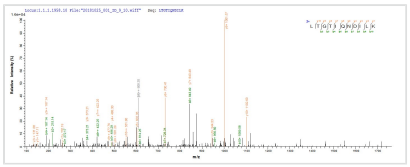
Recombinant Mouse Methylmalonyl-CoA mutase, mitochondrial (Mutc)

Product Code	CSB-EP015243MO
Relevance	Involved in the degradation of several amino acids, odd-chain fatty acids and cholesterol via propionyl-CoA to the tricarboxylic acid cycle.
Abbreviation	Recombinant Mouse Mut 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.	P16332
Alias	Methylmalonyl-CoA isomerase
Product Type	Recombinant Protein
Immunogen Species	Mus musculus (Mouse)
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	LHQQQPLHPEWAVLAKKQLKGKNPEDLIWHTPEGISIKPLYSRADTLDLPEELP GVKPFTRGPYPTMYTYRPWTIRQYAGFSTVEESNKFYKDNIKAGQQGLSVAF DLATHRGYDSDNPRVRGDVGMAGVAIDTVEDTKILFDGIPLEKMSVSMTMNG AVIPVLATFIVTGEEQGVPKEKLTGTIQNDILKEFMVRNTYIFPPEPSMKIIADIFQ YTAQHMPKFNSISISGYHMQEAGADAILELAYTIADGLEYCRTGLQAGLTIDEFA PRLSFFWGIGMNFYMEIAKMRAGRRLWAHLIEKMFQPKNSKSLLLRAHCQTS GWSLTEQDPYNNIVRTAIEAMAAVFGGTQSLHTNSFDEALGLPTVKSARIARN TQIIIQEESGIPKVADPWGGSYMMESLTNDVYEAALKLIYEVEEMGGMAKAVAE GIPKLRIEECAARRQARIDSGSEVIVGVNKYQLEKEDSVEVLAIDNTSVRKKQIE KLKKIKSSRDQALAEQCLSALTQCAASGDGNILALAVDAARARCTVGEITDALK KVFGEHKANDRMVSGAYRQEFGESKEITSAIKRVNKFMEREGRRPRLLVAKM GQDGHDRGAKVIATGFADLGFDVDIGPLFQTPREVAQQAVDADVHAVGVSTL AAGHKTLVPELIKELTALGRPDILVMCGGVIPPQDYEFLYEVGVSNVFGPGTRI PRAAVQVLDDIEKCLAEKQQSV
Research Area	Metabolism
Source	E.coli
Target Names	Mmut
Expression Region	31-748aa
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	83.2kDa
Protein Length	Full Length of Mature Protein

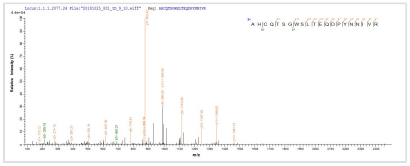
Image



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



Based on the SEQUEST from database of E.coli host and target protein, the LC-MS/MS Analysis result of CSB-EP015243MO could indicate that this peptide derived from E.coli-expressed Mus musculus (Mouse) Mut.



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Description

Recombinant Mouse Methylmalonyl-CoA mutase, mitochondrial (Mutc) is expressed in E.coli and covers the full length of the mature protein from amino acids 31 to 748. The protein carries an N-terminal 6xHis tag, which makes purification and detection more straightforward. Purity exceeds 90% according to SDS-PAGE verification, though this should provide reliable results for most experimental applications. This product is intended for research use only.

Methylmalonyl-CoA mutase plays a crucial role in cellular metabolism—specifically converting methylmalonyl-CoA to succinyl-CoA. This conversion appears vital for breaking down certain amino acids and fatty acids. The enzyme's activity seems essential for metabolic pathways that keep normal cellular function intact. Given this central role, Mutc has become a significant focus in metabolic research. Scientists are using it to better understand energy production and various metabolic disorders.

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 Using His-Tag Pull-Down Assays

The N-terminal 6xHis-tag allows researchers to immobilize this recombinant mouse methylmalonyl-CoA mutase on nickel-affinity resins for pull-down experiments. Scientists can then investigate potential binding partners or cofactors that may interact with the mitochondrial enzyme. This involves incubating the immobilized protein with cell lysates or purified protein candidates. The >90% purity level should be sufficient for identifying specific interactions while reducing non-specific binding from contaminants. This approach might help clarify the protein's role in metabolic pathways and reveal regulatory mechanisms.

2. Antibody Development and Validation

The high purity (>90%) and full-length mature protein sequence (31-748aa) suggest this recombinant protein could work well for immunizing laboratory animals. Researchers can generate polyclonal or monoclonal antibodies against mouse methylmalonyl-CoA mutase this way. The resulting antibodies can then be validated using the same recombinant protein in Western blot, ELISA, or immunoprecipitation assays. The His-tag makes purification and immobilization easier for antibody screening and characterization experiments.

3. Biochemical Characterization and Cofactor Binding Studies

This recombinant protein may be useful for investigating the biochemical properties of mouse methylmalonyl-CoA mutase. Studies could examine cofactor requirements, optimal buffer conditions, and stability parameters. Researchers can perform binding assays to study interactions with known cofactors such as adenosylcobalamin (vitamin B12). They might also examine how the protein responds to different pH and salt conditions. The E. coli expression system appears to provide sufficient protein yield for multiple experimental conditions and replicates.

4. Comparative Species Analysis

The mouse-specific sequence (Mus musculus) makes comparative studies with methylmalonyl-CoA mutases from other species possible. Researchers can identify conserved regions and species-specific differences this way. Scientists might use this protein alongside human or other mammalian orthologs to study evolutionary relationships, structural differences, or functional variations. The standardized expression system and purification approach should allow for consistent comparison across different species variants.

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.