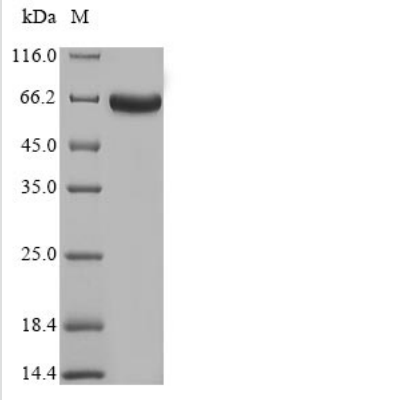
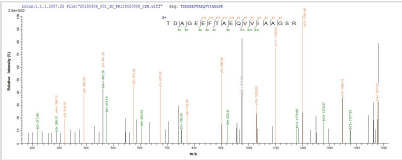
Recombinant Mycobacterium tuberculosis Mycothione reductase (mtr)

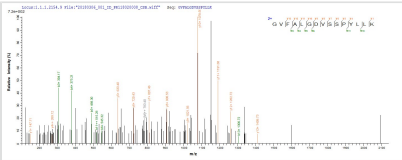
Product Code	CSB-EP517031MVZ
Relevance	Catalyzes the NAD(P)H-dependent reduction of mycothione (the oxidized disulfide form of mycothiol) to mycothiol.
Abbreviation	Recombinant Mycobacterium tuberculosis mtr protein
Storage	The shelf life is related to many factors, storage state, buffer ingredients, 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.	P9WHH2
Product Type	Recombinant Protein
Immunogen Species	Mycobacterium tuberculosis (strain CDC 1551 / Oshkosh)
Purity	Greater than 85% as determined by SDS-PAGE.
Sequence	METYDIAIIGTGSGNSILDERYASKRAAICEQGTFGGTCLNVGCIPTKMFVYAAE VAKTIRGASRYGIDAHIDRVRWDDVVSRVFGRIDPIALSGEDYRRCAPNIDVYR THTRFGPVQADGRYLLRTDAGEEFTAEQVVIAAGSRPVIPPAILASGVDYHTSD TVMRIAELPEHIVIVGSGFIAAEFAHVFSALGVRVTLVIRGSCLLRHCDDTICERF TRIASTKWELRTHRNVVDGQQRGSGVALRLDDGCTINADLLLVATGRVSNADL LDAEQAGVDVEDGRVIVDEYQRTSARGVFALGDVSSPYLLKHVANHEARVVQ HNLLCDWEDTQSMIVTDHRYVPAAVFTDPQIAAVGLTENQAVAKGLDISVKIQD YGDVAYGWAMEDTSGIVKLITERGSGRLLGAHIMGYQASSLIQPLIQAMSFGLT AAEMARGQYWIHPALPEVVENALLGLR
Research Area	others
Source	E.coli
Target Names	mtr
Protein Names	Mycothiol-disulfide reductase NADPH-dependent mycothione reductase
Expression Region	1-459aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 10xHis-SUMO-tagged and C-terminal Myc-tagged
Mol. Weight	69.9kDa
Protein Length	Full Length
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-EP517031MVZ could indicate that this peptide derived from E.coli-expressed Mycobacterium tuberculosis (strain CDC 1551 / Oshkosh) mtr.



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Description

Recombinant Mycobacterium tuberculosis Mycothione reductase (mtr) gets produced in E. coli and contains the complete protein spanning amino acids 1-459. The protein carries a 10xHis-SUMO tag at the N-terminus and a Myc tag at the C-terminus, which helps with purification and detection. SDS-PAGE analysis shows the purity exceeds 85%, making it suitable for research work.

Mycothione reductase appears to be a key enzyme in the antioxidant defense system of Mycobacterium tuberculosis. It seems to play an important role in maintaining redox balance by reducing mycothiol disulfide back to mycothiol. This function may be vital for protecting the bacterium from oxidative stress - something that's likely crucial for its survival and ability to cause disease. Given this role, it has become a significant focus in tuberculosis 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. Antibody Development and Immunoassay Studies

The dual-tagged recombinant mycothione reductase can work as an immunogen for creating polyclonal or monoclonal antibodies that target the M.

tuberculosis mtr protein. Both the N-terminal His-SUMO and C-terminal Myc tags offer multiple recognition sites for antibodies and allow validation through tag-specific detection methods. These antibodies could prove valuable for studying how mycothione reductase gets expressed, where it localizes, and how it's regulated in mycobacterial research. The >85% purity appears sufficient for immunization protocols and follow-up antibody characterization work.

2. Protein-Protein Interaction Studies Using Tag-Assisted Pull-Down Assays

That N-terminal His tag allows for nickel-affinity based pull-down experiments to hunt for potential binding partners of mycothione reductase in M. tuberculosis protein extracts or recombinant protein libraries. Meanwhile, the C-terminal Myc tag can be used for immunoprecipitation studies with anti-Myc antibodies to confirm interactions found through His-tag pull-downs. These two tagging approaches may provide solid methods for mapping out the protein interaction network of mycothione reductase in mycobacterial metabolism research.

3. Biochemical Characterization and Enzyme Kinetics Analysis

The full-length recombinant protein (1-459aa) offers a complete molecular framework for investigating mycothione reductase's biochemical properties. This includes protein stability, cofactor binding, and substrate specificity studies. While biological activity hasn't been tested yet, the protein could be put through various biochemical assays to figure out optimal conditions for potential enzymatic activity. The dual tags make protein purification and detection easier throughout these characterization experiments.

4. Comparative Protein Structure and Function Studies

The recombinant mtr protein might be useful in comparative studies with mycothione reductases from other mycobacterial strains or related oxidoreductases to understand how structure relates to function. The >85% purity level should support biophysical characterization techniques like dynamic light scattering, circular dichroism spectroscopy, and thermal stability assays. These studies could provide insights into protein folding, stability, and conformational changes under different experimental conditions that are relevant to mycobacterial physiology research.

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.