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Produktinformation

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PRODUCT INFORMATION

Thioredoxin Reductase 1 (rat, recombinant)

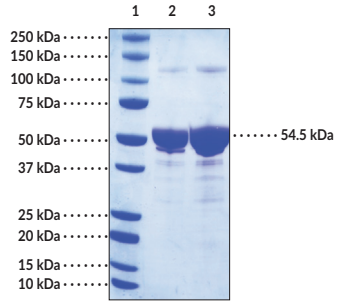
Item No. 30586

Overview and Properties

Synonyms:	TR1, TrxR1
Source:	Active recombinant rat TrxR1 expressed in *E. coli*
Amino Acids:	3-499
Uniprot No.:	O89049
Molecular Weight:	54.5 kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	≥85% estimated by SDS-PAGE
Supplied in:	50 mM Tris-HCl, pH 7.4, with 2 mM EDTA and 10% glycerol
Protein Concentration:	***batch specific*** mg/ml
Activity:	***batch specific*** U/ml
Specific Activity:	***batch specific*** U/mg
Unit Definition:	One unit is defined as the NADPH-dependent production of 2 µmol of 2-nitro-5-thiobenzoate per minute at 22°C in 50 mM potassium phosphate, pH 7.0, with 50 mM potassium chloride, 1 mM EDTA, and 0.2 mg/ml BSA. For inhibition, the selective TrxR1 inhibitor sodium aurothiomalate (ATM) was used at a concentration of 20 mM.

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

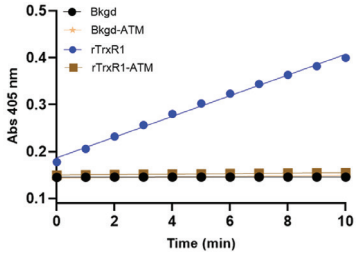
Images



Lane 1: MW Markers
Lane 2: Thioredoxin Reductase 1 (2 µg)
Lane 3: Thioredoxin Reductase 1 (4 µg)

SDS-PAGE Analysis of Thioredoxin Reductase 1. rTrxR1 concentration was determined spectrophotometrically by FAD absorption at 463 nm (ε = 13,600 $M^{-1}cm^{-1}$).

Representative gel image shown; actual purity may vary between each batch.



Rat Thioredoxin Reductase 1 (rTrxR1) activity determined using Cayman's Thioredoxin Reductase Colorimetric Assay Kit (Item No. 10007892).

10 MDDSKDAPKS	20 YDFDLIIIGG	30 GSGGLAAAKE	40 AAKFDKKVMV	50 LDFVTPTPLG
60 TRWGLGGTCV	70 NVGCIPKKLM	80 HQAALLGQAL	90 KDSRNYGWKL	100 EDTVKHDWEK
110 MTESVQNHIG	120 SLNWGYRVAL	130 REKKVVYENA	140 YGKFIGPHKI	150 MATNNKGKEK
160 VYSAERFLIA	170 TGERPRYLGI	180 PGDKEYCISS	190 DDLFSLPYCP	200 GKTLVVGASY
210 VALECAGFLA	220 GIGLDVTVMV	230 RSILLRGFDQ	240 DMANKIGEHM	250 EEHGIKFIRQ
260 FVPTKIEQIE	270 AGTPGRLKVT	280 AKSTNSEETI	290 EDEFNTVLLA	300 VGRDSCTRTI
310 GLETVGVKIN	320 EKTGKIPVTD	330 EEQTNVPYIY	340 AIGDILEGKL	350 ELTPVAIQAG
360 RLLAQRLYGG	370 STVKCDYDNV	380 PTTVFTPLEY	390 GCCGLSEEKA	400 VEKFGEENIE
410 VYHSFFWPLE	420 WTVPSRDNNK	430 CYAKVICNLK	440 DNERVVGFHV	450 LGPNAGEVTQ
460 GFAAALKCGL	470 TKQQLDSTIG	480 IHPVCAEIFT	490 TLSVTKRSGG	500 DILQSGCUG

Cayman's Thioredoxin Reductase 1 (rat, recombinant) (Item No. 30586) protein has a selenocysteine incorporated in the active site that has been confirmed by mass spectrometry. Selenocysteine (•) is incorporated in the active site at the UGA stop codon indicated in teal.

WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent *via* email to your institution.

WARRANTY AND LIMITATION OF REMEDY
Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

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PRODUCT INFORMATION

Description

Thioredoxin reductase 1 (TrxR1) is an oxidoreductase encoded by the *TXNRD1* gene in humans and a member of the antioxidant thioredoxin system, which is involved in the maintenance of cellular thiol redox homeostasis.[1-3] It exists as a homodimer and contains a dimer interface domain, FAD and NADPH binding domains, an N-terminal redox catalytic site, and a C-terminal selenocysteine residue, which is essential for the catalytic activity of TrxR1.[1,4] TrxR1 is ubiquitously expressed, localizes to the cytoplasm, and is regulated by the antioxidant transcription factor Nrf2.[2,5] TrxR1 catalyzes the NADPH-dependent reduction of oxidized thioredoxin (Trx), restoring the disulfide reductase function of Trx, which regulates redox-sensitive transcription factors, such as NF-κB and p53, and has roles in apoptosis and cell signaling.[3,6] Genome-wide deletion of *Txnrd1* is embryonic lethal in mice.[7] Increased serum TrxR1 activity is associated with reduced progression-free survival in patients with non-small cell lung cancer (NSCLC).[8] Cayman's Thioredoxin Reductase 1 (rat, recombinant) protein can be used for enzyme activity assay and Western blot (WB) applications.

References

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