Recombinant Rat Txnrd1 Protein

Cat. No. Txnrd1-001R **Lot. No.** (See product label)

SPECIFICATION

Product Overview	Active recombinant rat TrxR1 protein (3-499) without tag was expressed in E. coli.
Species	Rat
Source	E.coli
ProteinLength	3-499
Description	The protein encoded by this gene belongs to the pyridine nucleotide-disulfide oxidoreductase family, and is a member of the thioredoxin (Trx) system. Three thioredoxin reductase (TrxR) isozymes are found in mammals. TrxRs are selenocysteine-containing flavoenzymes, which reduce thioredoxins, as well as other substrates, and play a key role in redox homoeostasis. This gene encodes an ubiquitously expressed, cytosolic form of TrxR, which functions as a homodimer containing FAD, and selenocysteine (Sec) at the active site. Sec is encoded by UGA codon that normally signals translation termination. The 3' UTRs of selenoprotein mRNAs contain a conserved stem-loop structure, the Sec insertion sequence (SECIS) element, which is necessary for the recognition of UGA as a Sec codon rather than as a stop signal. Alternative splicing, primarily at the 5' end, results in transcript variants encoding same or different isoforms.
Molecular Mass	54.5 kDa
Purity	≥90% as determined by SDS-PAGE

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Unit Definition	One unit is defined as the NADPH-dependent production of 2 mmol of 2-nitro-5-thiobenzoate per minute at 22 centigrade 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.
Applications	WB, Enzyme activity assay
Stability	≥ 1 year
Storage	At -80 centigrade.
Storage Buffer	50 mM Tris-HCl, pH 7.4, with 2 mM EDTA and 10% glycerol

GENE INFORMATION

Gene Name	Txnrd1 thioredoxin reductase 1 [Rattus norvegicus (Norway rat)]
Official Symbol	Txnrd1
Synonyms	Txnrd1; thioredoxin reductase 1; Tr; thioredoxin reductase 1, cytoplasmic; NADPH-dependent thioredoxin reductase; selenoprotein oxidoreductase; thioredoxin reductase TR1; EC 1.8.1.9
Gene ID	58819
mRNA Refseq	NM_031614
Protein Refseq	NP_113802
UniProt ID	O89049

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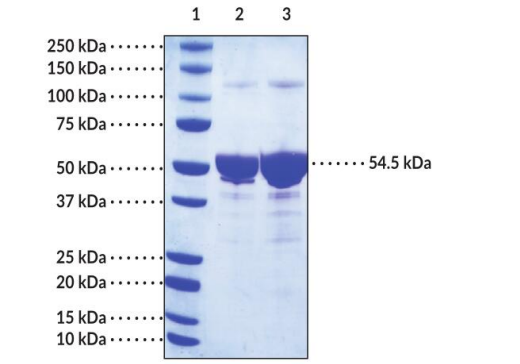
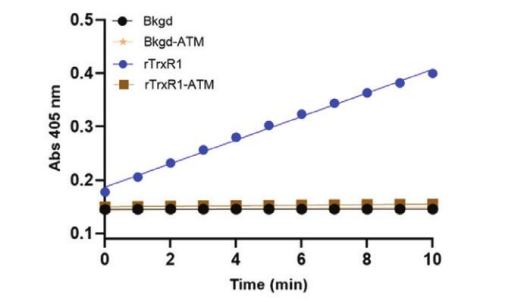
SDS-PAGE analysis of thioredoxin Reductase 1	 Lane 1: MW Markers Lane 2: Thioredoxin Reductase 1 (2 µg) Lane 3: Thioredoxin Reductase 1 (4 µg) rTrxR1 concentration was determined spectrophotometrically by FAD absorption at 463 nm(ε=13600M-1cm-1)
Rat Thioredoxin Reductase 1 (rTrxR1) activity determined using Thioredoxin Reductase Colorimetric Assay Kit.	

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Thioredoxin Reductase 1 (rat, recombinant) 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.

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