PRODUCT INFORMATION

Thioredoxin Reductase 1 (human, recombinant)

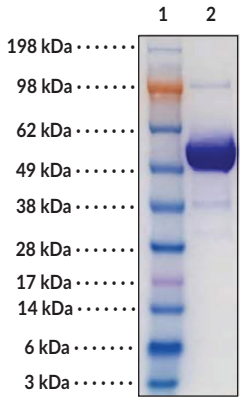
Item No. 39624

Overview and Properties

Synonyms: NADPH-dependent Thioredoxin Reductase, TrxR1, Txnrd1
Source: Active recombinant human TrxR1 expressed in *E. coli*
Amino Acids: 499 residues
Storage: -20°C (as supplied)
Stability: ≥1 year
Purity: ≥95% estimated by SDS-PAGE
Supplied in: TE buffer with 50% glycerol
Protein Concentration: 1 mg/ml
Unit Definition: One unit is defined as the amount of enzyme required to reduce 1 µmol DTNB per minute in 0.5 ml standard DTNB assay with 2.5 mM DTNB and 0.3 NADPH in TE buffer (50 nM Tris-HCl, 2 mM EDTA, pH 7.5)
Special Conditions: Centrifuge tube briefly before opening

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

Image



Lane 1: MW Markers
Lane 2: TrxR1

Coomassie stained SDS-PAGE Analysis of 10 µg TrxR1.

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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.[2,6] 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.[3,7] Genome-wide deletion of *Txnrd1* is embryonic lethal in mice.[8] Increased serum TrxR1 activity is associated with reduced progression-free survival in patients with non-small cell lung cancer (NSCLC).[9] Cayman's Thioredoxin Reductase 1 (human, recombinant) protein can be used for enzyme activity assay.

References

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