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- Mindermengenzuschlag
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PRODUCT INFORMATION



Thioredoxin Reductase 1 (*C. elegans*, recombinant)

Item No. 39628

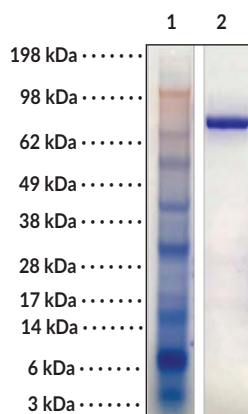
Overview and Properties

Synonyms:	NADPH-dependent Thioredoxin Reductase, TrxR1, Txnrd1
Source:	Active recombinant <i>C. elegans</i> TrxR1 expressed in <i>E. coli</i>
Amino Acids:	667 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 mM 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: CeTrxR1

Coomassie stained SDS-PAGE Analysis
of 10 μg CeTrxR1.

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.

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PRODUCT INFORMATION



Description

Thioredoxin reductase 1 (TrxR1) is a selenocysteine-containing oxidoreductase and the only selenoprotein in *C. elegans*.¹ It contains a dimerization 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. TrxR1 is expressed in the hypodermis, pharynx, vulva, intestine, and nervous system and localizes to the cytoplasm in *C. elegans*.^{1,2} Knockout of *trxr1* sensitizes *C. elegans* to oxidative stress in a context-dependent manner and does not affect *C. elegans* lifespan, brood size, or molting.^{1,3} However, double knockout of *trxr1* and the gene encoding glutathione reductase (*gsr1*) induces arrest at the molting stage, an effect that can be rescued by exogenous glutathione (GSH).¹ Increased serum TrxR1 activity is associated with reduced progression-free survival in patients with non-small cell lung cancer (NSCLC).⁴ Cayman's Thioredoxin Reductase 1 (*C. elegans*, recombinant) protein can be used for enzyme activity assays.

References

1. Stenvall, J., Fierro-González, J.C., Swoboda, P., *et al.* Selenoprotein TRXR-1 and GSR-1 are essential for removal of old cuticle during molting in *Caenorhabditis elegans*. *Proc. Natl. Acad. Sci. USA* **108(3)**, 1064-1069 (2011).
2. Li, W., Bandyopadhyay, J., Hwaang, H.S., *et al.* Two thioredoxin reductases, *trxr-1* and *trxr-2*, have differential physiological roles in *Caenorhabditis elegans*. *Mol. Cells* **34(2)**, 209-218 (2012).
3. Rohn, I., Raschke, S., Aschner, M., *et al.* Treatment of *Caenorhabditis elegans* with small selenium species enhances antioxidant defense systems. *Mol. Nutr. Food Res.* **63(9)**, e1801304 (2019).
4. Chen, G., Chen, Q., Zeng, F., *et al.* The serum activity of thioredoxin reductases 1 (TrxR1) is correlated with the poor prognosis in EGFR wild-type and ALK negative non-small cell lung cancer. *Oncotarget* **8(70)**, 115270-115279 (2017).

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