

PRODUCT INFORMATION



Thioredoxin 1 (*E. coli*) Polyclonal Antiserum

Item No. 11537

Overview and Properties

Contents:	This vial contains 1 ml of sheep polyclonal antiserum.
Synonyms:	Trx1, Txn1
Immunogen:	Thioredoxin 1 from <i>E. coli</i>
Species Reactivity:	(+) <i>E. coli</i> ; other species not tested
Form:	Liquid
Storage:	-20°C (as supplied)
Stability:	≥3 years
Storage Buffer:	Dialyzed to 0.15 M sodium chloride, 50 mM Tris-HCl, 1 mM EDTA, pH 7.5 (sterile filtered)
Host:	Sheep
Applications:	Suitable for inhibitory antiserum, working concentration/dilution should be determined empirically.

Description

Thioredoxin 1 (Trx1) is a thiol-disulfide oxidoreductase and part of the antioxidant thioredoxin system that is involved in the maintenance of cellular thiol redox homeostasis.¹⁻³ It is ubiquitously expressed, localizes primarily to the cytoplasm with some nuclear localization, and is upregulated in and released from cells under conditions of oxidative stress.^{1,2,4} *E. coli* Trx1 contains two active site cysteine residues at positions 32 and 35, and human Trx1 contains additional cysteines at positions 62, 69, and 73.^{2,5} During the catalytic cycle, the active site cysteines are oxidized to a disulfide upon reduction of oxidized protein disulfide substrates and are subsequently restored to their reduced state by thioredoxin reductase (TrxR) and NADPH.^{1,2} In mammals, Trx1 regulates redox-sensitive transcription factors including NF-κB, p53, and the glucocorticoid receptor, as well as inhibits apoptosis through redox-sensitive binding and regulation of apoptosis signal-regulating kinase 1 (ASK1).^{2,4} *E. coli* Trx is a substrate for mammalian thioredoxin reductase but is more stable than mammalian Trx, with oxidation not affecting its activity or inducing its aggregation.⁵ Cayman's Thioredoxin 1 (*E. coli*) Polyclonal Antiserum can be used for immuno-inhibition of Trx1 activity.

References

1. Haendeler, J. Thioredoxin-1 and posttranslational modifications. *Antioxid. Redox Signal.* **8(9-10)**, 1723-1728 (2006).
2. Watanabe, R., Nakamura, H., Masutani, H., *et al.* Anti-oxidative, anti-cancer and anti-inflammatory actions by thioredoxin 1 and thioredoxin-binding protein-2. *Pharmacol. Ther.* **127(3)**, 261-270 (2010).
3. Berndt, C., Lillig, C.H., and Holmgren, A. Thiol-based mechanisms of the thioredoxin and glutaredoxin systems: Implications for diseases in the cardiovascular system. *Am. J. Physiol. Heart Circ. Physiol.* **292(3)**, H1227-H1236 (2007).
4. Raffel, J., Bhattacharyya, A.K., Gallegos, A., *et al.* Increased expression of thioredoxin-1 in human colorectal cancer is associated with decreased patient survival. *J. Lab. Clin. Med.* **142(1)**, 46-51 (2003).
5. Holmgren, A. and Björnstedt, M. Thioredoxin and thioredoxin reductase. *Methods Enzymol.* **252**, 199-208 (1995).

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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