PRODUCT INFORMATION

Thioredoxin 1 (human) Polyclonal Antibody - Biotinylated

Item No. 11541

Overview and Properties

Contents:	This vial contains 100 µg of affinity-purified polyclonal antibody.
Synonyms:	Trx1, Txn1
Immunogen:	Recombinant human Trx1
Species Reactivity:	(+) Human; other species not tested
Form:	Liquid
Storage:	-20°C (as supplied)
Stability:	≥3 years
Storage Buffer:	PBS, pH 7.2, with 0.02% sodium azide
Host:	Goat
Applications:	ELISA, Western blot (WB), and immunohistochemistry (IHC); the recommended starting dilution is 1:1,000 for ELISA and WB and the recommended starting concentration for IHC is 10 µg/ml. Other applications were not tested, therefore optimal 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] Trx1 contains two active site cysteine residues at positions 32 and 35, with additional cysteines at positions 62, 69, and 73.[2] 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] It 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] Exogenous administration of extracellular recombinant human Trx1 has anti-inflammatory effects in a variety of animal models.[2] Trx1 levels are increased in a variety of human primary tumors, and increased tumor levels of Trx1 are associated with decreased survival in patients with colorectal cancer.[4] Cayman's Thioredoxin 1 (human) Polyclonal Antibody can be used for ELISA, immunohistochemistry (IHC), and Western blot (WB) applications.

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).

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