

Trx-2 (D-20): sc-22980

BACKGROUND

Thioredoxin (Trx) is a redox protein found in several species, such as bacteria, plants and mammals, and contains a conserved active site, consisting of Trp-Cys-Gly-Pro-Cys. Trx has several biological functions. It acts as a hydrogen donor for ribonucleotide reductase, which is critical for DNA synthesis, and modulates the DNA-binding activity of several transcription factors, including NFκB, AP-1, p53, TFIIIC and glucocorticoid receptor. Trx also stimulates cell growth, is an inhibitor of apoptosis and plays a role in the protection against oxidative stress. Drugs that inhibit Trx have anti-tumor activity, suggesting that Trx is involved in a variety of human diseases, including cancer. Thioredoxin 2 (Trx-2) is a small redox protein that is localized to the mitochondria and is essential for cell viability, playing a crucial role in the scavenging of ROS in mitochondria and regulating the mitochondrial apoptosis signaling pathway. Trx reductases (TrxR1 and TrxR2) are ubiquitously expressed flavoproteins that catalyze the NADPH-dependent reduction of Trx as well as several other oxidized cellular components. Mammalian Trx reductases are a part of a selenium-containing pyridine nucleotide-disulphide oxidoreductase family, which has a conserved catalytic site of Cys-Val-Asn-Val-Gly-Cys. TrxR1 and TrxR2 are also involved in the prevention of oxidative stress. Inhibition of TrxR activity may provide for potential treatments of cancer, AIDS and other autoimmune diseases as well as bacterial infections and parasitic diseases.

REFERENCES

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- Williams, C.H., et al. 2000. Thioredoxin reductase two modes of catalysis have evolved. *Eur. J. Biochem.* 267: 6110-6117.
- Becker, K., et al. 2000. Thioredoxin reductase as a pathophysiological factor and drug target. *Eur. J. Biochem.* 267: 6118-6125.
- Mustacich, D., et al. 2000. Thioredoxin reductase. *Biochem. J.* 346: 1-8.
- Powis, G., et al. 2001. Properties and biological activities of thioredoxins. *Annu. Rev. Pharmacol. Toxicol.* 41: 261-295.

CHROMOSOMAL LOCATION

Genetic locus: TXN2 (human) mapping to 22q12.3; Txn2 (mouse) mapping to 15 E1.

SOURCE

Trx-2 (D-20) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of Trx-2 of human origin.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-22980 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

Trx-2 (D-20) is recommended for detection of Trx-2 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Trx-2 (D-20) is also recommended for detection of Trx-2 in additional species, including equine, canine, bovine, porcine and avian.

Suitable for use as control antibody for Trx-2 siRNA (h): sc-44173, Trx-2 siRNA (m): sc-60084, Trx-2 shRNA Plasmid (h): sc-44173-SH, Trx-2 shRNA Plasmid (m): sc-60084-SH, Trx-2 shRNA (h) Lentiviral Particles: sc-44173-V and Trx-2 shRNA (m) Lentiviral Particles: sc-60084-V.

Molecular Weight of Trx-2: 18 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

SELECT PRODUCT CITATIONS

- Zhang, S., et al. 2007. Evidence of oxidative stress-induced BNIP3 expression in amyloid β neurotoxicity. *Brain Res.* 1138: 221-230.
- Sreekumar, P.G., et al. 2009. Regulation of thioredoxin by ceramide in retinal pigment epithelial cells. *Exp. Eye Res.* 88: 410-417.

RESEARCH USE

For research use only, not for use in diagnostic procedures.



MONOS
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Try **Trx-2 (F-10): sc-133201** or **Trx-2 (B-3): sc-137028**, our highly recommended monoclonal alternatives to Trx-2 (D-20).