

TrxR2 (F-5): sc-376868

BACKGROUND

Thioredoxin (Trx) is a redox protein that is 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 antitumor 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 flavo-proteins 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 auto-immune diseases as well as bacterial infections and parasitic diseases.

REFERENCES

- Soderberg, A., et al. 1998. Monoclonal antibodies to human Thioredoxin reductase. *Biochem. Biophys. Res. Commun.* 249: 86-89.
- Lee, S.R., et al. 1999. Molecular cloning and characterization of a mitochondrial selenocysteine-containing Thioredoxin reductase from rat liver. *J. Biol. Chem.* 274: 4722-4734.

CHROMOSOMAL LOCATION

Genetic locus: Txnrd2 (mouse) mapping to 16 A3.

SOURCE

TrxR2 (F-5) is a mouse monoclonal antibody raised against amino acids 261-310 mapping within an internal region of TrxR2 of mouse origin.

PRODUCT

Each vial contains 200 µg IgG₁ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

TrxR2 (F-5) is available conjugated to agarose (sc-376868 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-376868 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-376868 PE), fluorescein (sc-376868 FITC), Alexa Fluor® 488 (sc-376868 AF488), Alexa Fluor® 546 (sc-376868 AF546), Alexa Fluor® 594 (sc-376868 AF594) or Alexa Fluor® 647 (sc-376868 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-376868 AF680) or Alexa Fluor® 790 (sc-376868 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

STORAGE

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

APPLICATIONS

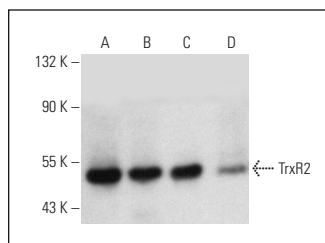
TrxR2 (F-5) is recommended for detection of TrxR2 of mouse and rat origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for TrxR2 siRNA (m): sc-45820, TrxR2 shRNA Plasmid (m): sc-45820-SH and TrxR2 shRNA (m) Lentiviral Particles: sc-45820-V.

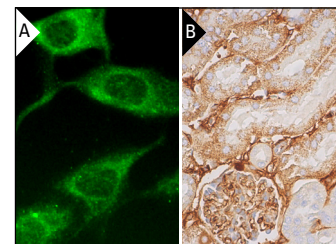
Molecular Weight of TrxR2: 56-57 kDa.

Positive Controls: RAW 264.7 whole cell lysate: sc-2211, PC-12 cell lysate: sc-2250 or WEHI-231 whole cell lysate: sc-2213.

DATA



TrxR2 (F-5): sc-376868. Western blot analysis of TrxR2 expression in RAW 264.7 (A), WEHI-231 (B), PC-12 (C) and RBL-1 (D) whole cell lysates.



TrxR2 (F-5): sc-376868. Immunofluorescence staining of methanol-fixed NIH/3T3 cells showing cytoplasmic localization (A). Immunoperoxidase staining of formalin fixed, paraffin-embedded mouse kidney tissue showing cytoplasmic staining of cells in glomeruli and cells in tubules (B).

SELECT PRODUCT CITATIONS

- Akahoshi, N., et al. 2019. Dietary selenium deficiency or selenomethionine excess drastically alters organ selenium contents without altering the expression of most selenoproteins in mice. *J. Nutr. Biochem.* 69: 120-129.
- Hao, L., et al. 2020. Edaravone inhibits procaspase-3 denitrosylation and activation through FasL-Trx2 pathway in KA-induced seizure. *Fundam. Clin. Pharmacol.* 34: 662-670.
- Kim, H.Y., et al. 2021. Auranofin prevents liver fibrosis by system Xc-mediated inhibition of NLRP3 inflammasome. *Commun. Biol.* 4: 824.
- Pires, V., et al. 2022. Thioredoxin reductase inhibitors as potential anti-tumors: mercury compounds efficacy in glioma cells. *Front. Mol. Biosci.* 9: 889971.

RESEARCH USE

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

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