SANTA CRUZ BIOTECHNOLOGY, INC.

TrxR2 (F-5): sc-376868

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

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 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 auto-immune diseases as well as bacterial infections and parasitic diseases.

REFERENCES

1. Soderberg, A., et al. 1998. Monoclonal antibodies to human Thioredoxin reductase. Biochem. Biophys. Res. Commun. 249: 86-89.
2. 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 IgG_1 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

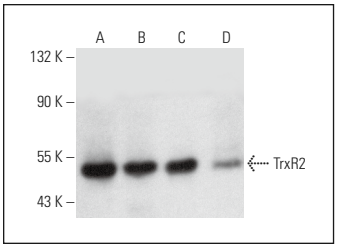
TrxR2 (F-5) is recommended for detection of TrxR2 of mouse and rat origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500),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

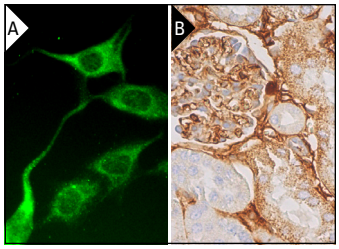
Molecular Weight of TrxR2: 56-57 kDa.

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

1. 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.
2. 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.
3. Kim, H.Y., et al. 2021. Auranofin prevents liver fibrosis by system Xc- mediated inhibition of NLRP3 inflammasome. Commun. Biol. 4: 824.
4. 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.