SANTA CRUZ BIOTECHNOLOGY, INC.

TrxR2 (D-12): sc-166259

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 autoimmune 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.
3. Miranda-Vizuete, A., et al. 1999. Human mitochondrial thioredoxin reductase cDNA cloning, expression and genomic organization. Eur. J. Biochem. 261: 405-412.
4. Gorlatov, S.N. and Stadtman, T.C. 1999. Human selenium-dependent thioredoxin reductase from HeLa cells: properties of forms with differing heparin affinities. Arch. Biochem. Biophys. 369: 133-142.

SOURCE

TrxR2 (D-12) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 376-402 near the C-terminus of TrxR2 of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2b} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-166259 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

STORAGE

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

APPLICATIONS

TrxR2 (D-12) is recommended for detection of TrxR2 isoforms 1, 2, 3 and 4 of mouse, rat and human 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) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

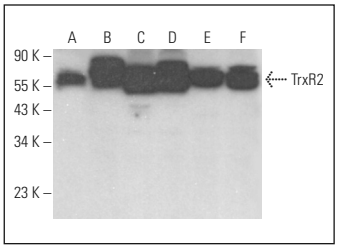
TrxR2 (D-12) is also recommended for detection of TrxR2 isoforms 1, 2, 3, and 4 in additional species, including equine, canine, porcine and avian.

Suitable for use as control antibody for TrxR2 siRNA (h): sc-45819, TrxR2 siRNA (m): sc-45820, TrxR2 shRNA Plasmid (h): sc-45819-SH, TrxR2 shRNA Plasmid (m): sc-45820-SH, TrxR2 shRNA (h) Lentiviral Particles: sc-45819-V and TrxR2 shRNA (m) Lentiviral Particles: sc-45820-V.

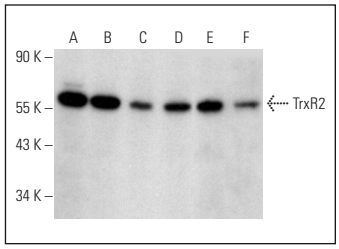
Molecular Weight of TrxR2: 56-57 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, K-562 whole cell lysate: sc-2203 or Hep G2 cell lysate: sc-2227.

DATA



TrxR2 (D-12): sc-166259. Western blot analysis of TrxR2 expression in K-562 (**A**), A-431 (**B**), Caki-1 (**C**), A549 (**D**), A-10 (**E**) and c4 (**F**) whole cell lysates.



TrxR2 (D-12): sc-166259. Western blot analysis of TrxR2 expression in HeLa (**A**), K-562 (**B**), Hep G2 (**C**), RAW 264.7 (**D**), PC-12 (**E**) and RBL-1 (**F**) whole cell lysates.

SECELCT PRODUCT CITATIONS

1. Yan, J., et al. 2013. Selenium effect on selenoprotein transcriptome in chondrocytes. Biometals 26: 285-296.
2. Folda, A., et al. 2016. Mitochondrial thioredoxin system as a modulator of cyclophilin D redox state. Sci. Rep. 6: 23071.
3. Song, Y., et al. 2018. Sirtuin 3-dependent mitochondrial redox homeostasis protects against AGEs-induced intervertebral disc degeneration. Redox Biol. 19: 339-353.
4. Scalcon, V., et al. 2019. Dimers of glutaredoxin 2 as mitochondrial redox sensors in selenite-induced oxidative stress. Metallomics 11: 1241-1251.
5. Singh, L.P., et al. 2021. Potential combination drug therapy to prevent redox stress and mitophagy dysregulation in retinal Müller cells under high glucose conditions: implications for diabetic retinopathy. Diseases 9: 91.

RESEARCH USE

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