

TrxR1 (T-16): sc-31056

BACKGROUND

Thioredoxin (Trx) is a 12 kDa 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 anti-tumor activity, suggesting that thioredoxin is involved in a variety of human diseases, including cancer. TrxR is a ubiquitously expressed flavoprotein that catalyzes the NADPH-dependent reduction of thioredoxin 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. There are two known forms of TrxR, TrxR1 and TrxR2, which 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

- Junn, E., et al. 2000. Vitamin D3 up-regulated protein 1 mediates oxidative stress via suppressing the thioredoxin function. *J. Immunol.* 164: 6287-6295.
- Tanaka, T., et al. 2000. Redox regulation by thioredoxin superfamily; protection against oxidative stress and aging. *Free Radic. Res.* 33: 851-855.
- Arner, E.S., et al. 2000. Physiological functions of thioredoxin and thioredoxin reductase. *Eur. J. Biochem.* 267: 6102-6109.
- 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.

CHROMOSOMAL LOCATION

Genetic locus: TXNRD1 (human) mapping to 12q23.3; Txnrd1 (mouse) mapping to 10 C1.

SOURCE

TrxR1 (T-16) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the C-terminus of TrxR1 of human origin.

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-31056 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

RESEARCH USE

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

APPLICATIONS

TrxR1 (T-16) is recommended for detection of precursor and mature TrxR1 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, 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).

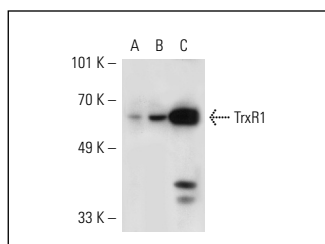
TrxR1 (T-16) is also recommended for detection of precursor and mature thioredoxin reductase 1 (TrxR1) in additional species, including equine, canine, bovine and porcine.

Suitable for use as control antibody for TrxR1 siRNA (h): sc-36750, TrxR1 siRNA (m): sc-36751, TrxR1 shRNA Plasmid (h): sc-36750-SH, TrxR1 shRNA Plasmid (m): sc-36751-SH, TrxR1 shRNA (h) Lentiviral Particles: sc-36750-V and TrxR1 shRNA (m) Lentiviral Particles: sc-36751-V.

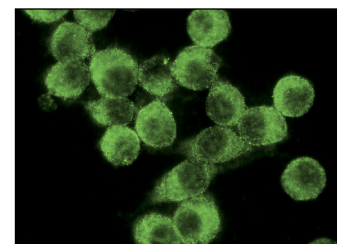
Molecular Weight of TrxR1: 55 kDa.

Positive Controls: IB4 whole cell lysate, TrxR1 (h): 293 Lysate: sc-113112 or A549 cell lysate: sc-2413.

DATA



TrxR1 (T-16): sc-31056. Western blot analysis of TrxR1 expression in non-transfected 293: sc-110760 (A), human TrxR1 transfected 293: sc-113112 (B) and A549 (C) whole cell lysates.



TrxR1 (T-16): sc-31056. Immunofluorescence staining of methanol-fixed KNRK cells showing cytoplasmic localization.

STORAGE

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

PROTOCOLS

See our web site at www.scbt.com or our catalog for detailed protocols and support products.



Try **TrxR1 (B-2): sc-28321** or **TrxR1 (A-9): sc-365658**, our highly recommended monoclonal alternatives to TrxR1 (T-16). Also, for AC, HRP, FITC, PE, Alexa Fluor® 488 and Alexa Fluor® 647 conjugates, see **TrxR1 (B-2): sc-28321**.