

# NQO1 (h2): 293T Lysate: sc-172015

## BACKGROUND

NAD(P)H:quinone oxidoreductase 1 (NQO1) and NRH:quinone oxidoreductase (NQO2) are flavoproteins that catalyze the metabolic detoxification of quinones and their derivatives to hydroquinones, using either NADH or NADPH as the electron donor. This protects cells against quinone-induced oxidative stress, cytotoxicity and mutagenicity. Many tumors overexpress NQO1, which is an obligate two-electron reductase that deactivates toxins and activates bioreductive anticancer drugs. NQO1, a 274 amino acid protein, is ubiquitously expressed, but the expression level varies among tissues. NQO1 gene expression is coordinately induced in response to xenobiotics, antioxidants, heavy metals and radiation. The antioxidant response element (ARE) in the NQO1 gene promoter is essential for expression and coordinated induction of NQO1. ARE activation by tert-butylhydroquinone is dependent on PI 3-kinase, which lies upstream of Nrf2. Nrf2, c-Jun, Nrf1, Jun-B and Jun-D bind to the ARE and regulate expression and induction of NQO1 gene. Maf-Maf homodimers and possibly Maf-Nrf2 heterodimers play a role in negative regulation of ARE-mediated transcription, but Maf-Nrf1 heterodimers fail to bind with the NQO1 gene ARE and do not repress NQO1 transcription.

## REFERENCES

- Long, D.J., 2nd, Waikel, R.L., Wang, X.J., Perlaky, L., Roop, D.R. and Jaiswal, A.K. 2000. AD(P)H:quinone oxidoreductase 1 deficiency increases susceptibility to benzo(a)pyrene-induced mouse skin carcinogenesis. *Cancer Res.* 60: 5913-5915.
- Chen, S., Wu, K. and Knox, R. 2000. Structure-function studies of DT-diaphorase (NQO1) and NRH: quinone oxidoreductase (NQO2). *Free Radic. Biol. Med.* 29: 76-84.
- Jaiswal, A.K. 2000. Regulation of genes encoding NAD(P)H:quinone oxidoreductase. *Free Radic. Biol. Med.* 29: 254-262.
- Sharp, S.Y., Kelland, L.R., Valenti, M.R., Brunton, L.A., Hobbs, S. and Workman, P. 2000. Establishment of an isogenic human colon tumor model for NQO1 gene expression: application to investigate the role of DT-diaphorase in bioreductive drug activation *in vitro* and *in vivo*. *Mol. Pharmacol.* 58: 1146-1155.
- Dhakshinamoorthy, S. and Jaiswal, A.K. 2000. Small maf (MafG and MafK) proteins negatively regulate antioxidant response element-mediated expression and antioxidant induction of the NAD(P)H:quinone oxidoreductase 1 gene. *J. Biol. Chem.* 275: 40134-40141.
- Lee, J.M., Hanson, J.M., Chu, W.A. and Johnson, J.A. 2001. Phosphatidylinositol 3-kinase, not extracellular signal-regulated kinase, regulates activation of the antioxidant responsive element in IMR-32 human neuroblastoma cells. *J. Biol. Chem.* 276: 20011-20016.
- Valerio, L.G. Jr., Kepa, J.K., Pickwell, G.V. and Quattrocchi, L.C. 2001. Induction of human NAD(P)H:quinone oxidoreductase (NQO1) gene expression by the flavonol quercetin. *Toxicol. Lett.* 119: 49-57.

## STORAGE

Store at -20° C. Repeated freezing and thawing should be minimized. Sample vial should be boiled once prior to use. Non-hazardous. No MSDS required.

## CHROMOSOMAL LOCATION

Genetic locus: NQO1 (human) mapping to 16q22.1.

## PRODUCT

NQO1 (h2): 293T Lysate represents a lysate of human NQO1 transfected 293T cells and is provided as 100 µg protein in 200 µl SDS-PAGE buffer.

## APPLICATIONS

NQO1 (h2): 293T Lysate is suitable as a Western Blotting positive control for human reactive NQO1 antibodies. Recommended use: 10-20 µl per lane.

Control 293T Lysate: sc-117752 is available as a Western Blotting negative control lysate derived from non-transfected 293T cells.

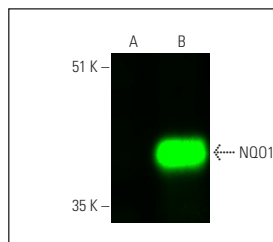
NQO1 (A180): sc-32793 is recommended as a positive control antibody for Western Blot analysis of enhanced human NQO1 expression in NQO1 transfected 293T cells (starting dilution 1:100, dilution range 1:100-1:1,000).

## RECOMMENDED SUPPORT REAGENTS

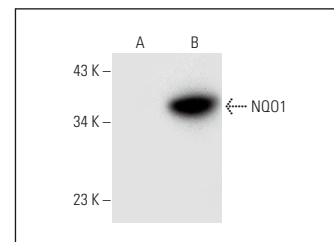
To ensure optimal results, the following support reagents are recommended:

1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048.

## DATA



NQO1 (A180): sc-32793. Near-infrared western blot analysis of NQO1 expression in non-transfected: sc-117752 (A) and human NQO1 transfected: sc-172015 (B) whole cell lysates. Blocked with UltraCruz® Blocking Reagent: sc-516214. Detection reagent used: m-IgGκ BP-CFL 680: sc-516180.



NQO1 (A180): sc-32793. Western blot analysis of NQO1 expression in non-transfected: sc-117752 (A) and human NQO1 transfected: sc-172015 (B) 293T whole cell lysates.

## RESEARCH USE

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

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.