SANTA CRUZ BIOTECHNOLOGY, INC.

NQO1 (A-5): sc-271116

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

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 PI3-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.

CHROMOSOMAL LOCATION

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

SOURCE

NQO1 (A-5) is a mouse monoclonal antibody raised against amino acids 185-274 of NQO1 of human origin.

PRODUCT

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

NQO1 (A-5) is available conjugated to agarose (sc-271116 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-271116 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-271116 PE), fluorescein (sc-271116 FITC), Alexa Fluor® 488 (sc-271116 AF488), Alexa Fluor® 546 (sc-271116 AF546), Alexa Fluor® 594 (sc-271116 AF594) or Alexa Fluor® 647 (sc-271116 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-271116 AF680) or Alexa Fluor® 790 (sc-271116 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

NQO1 (A-5) is recommended for detection of NQO1 of 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), 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).

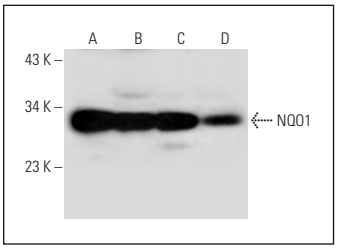
Suitable for use as control antibody for NQO1 siRNA (h): sc-37139, NQO1 shRNA Plasmid (h): sc-37139-SH and NQO1 shRNA (h) Lentiviral Particles: sc-37139-V.

Molecular Weight of NQO1: 31 kDa.

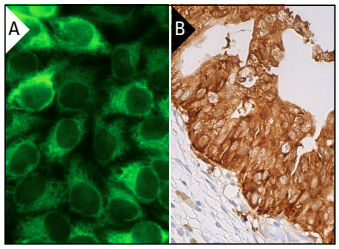
STORAGE

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

DATA



NQO1 (A-5): sc-271116. Western blot analysis of NQO1 expression in HeLa (**A**), SW480 (**B**) and HCT-116 (**C**) whole cell lysates and human kidney tissue extract (**D**).



NQO1 (A-5): sc-271116. Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic localization (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human gall bladder tissue showing cytoplasmic and nuclear staining of glandular cells (**B**).

SELECT PRODUCT CITATIONS

1. Ji, L., et al. 2013. Nrf2 pathway regulates multidrug-resistance-associated protein 1 in small cell lung cancer. PLoS ONE 8: e63404.
2. Ji, L., et al. 2014. Correlation of Nrf2, NQO1, MRP1, cMyc and p53 in colorectal cancer and their relationships to clinicopathologic features and survival. Int. J. Clin. Exp. Pathol. 7: 1124-1131.
3. East, D.A., et al. 2014. PMI: a $\Delta\Psi_m$ independent pharmacological regulator of mitophagy. Chem. Biol. 21: 1585-1596.
4. Sajja, R.K., et al. 2015. Altered Nrf2 signaling mediates hypoglycemia-induced blood-brain barrier endothelial dysfunction *in vitro*. PLoS ONE 10: e0122358.
5. Xu, L.L., et al. 2015. Discovery and modification of *in vivo* active Nrf2 activators with 1,2,4-oxadiazole core: hits identification and structure-activity relationship study. J. Med. Chem. 58: 5419-5436.
6. Jiang, Z.Y., et al. 2015. Structure-activity and structure-property relationship and exploratory *in vivo* evaluation of the nanomolar Keap1-Nrf2 protein-protein interaction inhibitor. J. Med. Chem. 58: 6410-6421.
7. Xu, L.L., et al. 2016. Molecular similarity guided optimization of novel Nrf2 activators with 1,2,4-oxadiazole core. Bioorg. Med. Chem. 24: 3540-3547.
8. Zhang, L., et al. 2016. Miltirone protects human EA.hy926 endothelial cells from oxidized low-density lipoprotein-derived oxidative stress via a heme oxygenase-1 and MAPK/Nrf2 dependent pathway. Phytomedicine 23: 1806-1813.
9. Todoric, J., et al. 2017. Stress-activated Nrf2-MDM2 cascade controls neoplastic progression in pancreas. Cancer Cell 32: 824-839.e8.

RESEARCH USE

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