SANTA CRUZ BIOTECHNOLOGY, INC.

Nrf2 siRNA (m): sc-37049

BACKGROUND

The NF-E2 DNA binding protein is composed of two subunits, p45 and MafK. It regulates expression of globin genes in developing erythroid cells through interaction with Maf recognition elements (Mares). A family of NF-E2- related-proteins, which are collectively known as the Cap "n" collar (CNC) family and include Nrf1 (also designated TCF11), Nrf2 and Nrf3, are bZIP transcription factors that heterodimerize with Maf proteins to bind Mare sequences. The Nrf proteins also bind the antioxidant response element (ARE) and are implicated in the regulation of detoxification enzymes and the oxidative stress response. They do so by heterodimerizing with Jun family members (c-Jun, Jun B and Jun D) to activate gene expression, specifically the detoxifying enzyme NQO1. Nrf2 is widely expressed and is thought to translocate to the nucleus after treatment with xenobiotics and antioxidants, which stimulate its release from its repressor protein, Keap1.

REFERENCES

1. Chan, J.Y., et al. 1995. Chromosomal localization of the human NF-E2 family of bZIP transcription factors by fluorescence *in situ* hybridization. Hum. Genet. 95: 265-269.
2. Chan, K., et al. 1996. Nrf2, a member of the NF-E2 family of transcription factors, is not essential for murine erythropoiesis, growth and development. Proc. Natl. Acad. Sci. USA 93: 13943-13948.

CHROMOSOMAL LOCATION

Genetic locus: Nfe2l2 (mouse) mapping to 2 C3.

PRODUCT

Nrf2 siRNA (m) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see Nrf2 shRNA Plasmid (m): sc-37049-SH and Nrf2 shRNA (m) Lentiviral Particles: sc-37049-V as alternate gene silencing products.

For independent verification of Nrf2 (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-37049A, sc-37049B and sc-37049C.

STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNAses and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330 µl of the RNAse-free water provided. Resuspension of the siRNA duplex in 330 µl of RNAse-free water makes a 10 µM solution in a 10 µM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

Nrf2 siRNA (m) is recommended for the inhibition of Nrf2 expression in mouse cells.

SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 µM in 66 µl. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Nrf2 gene expression knockdown using RT-PCR Primer: Nrf2 (m)-PR: sc-37049-PR (20 µl, 542 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Jeong, S.O., et al. 2009. Dimethoxycurcumin, a synthetic curcumin analogue, induces heme oxygenase-1 expression through Nrf2 activation in RAW264.7 macrophages. J. Clin. Biochem. Nutr. 44: 79-84.
2. Park, E.J., et al. 2013. Induction of HO-1 through p38 MAPK/Nrf2 signaling pathway by ethanol extract of *Inula helenium L.* reduces inflammation in LPS-activated RAW 264.7 cells and CLP-induced septic mice. Food Chem. Toxicol. 55: 386-395.
3. Kang, J.S., et al. 2014. Nrf2-mediated HO-1 induction contributes to antioxidant capacity of a Schisandrae Fructus ethanol extract in C2C12 myoblasts. Nutrients 6: 5667-5678.
4. Ning, S., et al. 2015. Nrf2 activity as a potential biomarker for the pan-epigenetic anticancer agent, RRx-001. Oncotarget 6: 21547-21556.
5. Onasanwo, S.A., et al. 2016. Inhibition of neuroinflammation in BV2 microglia by the biflavonoid kolaviron is dependent on the Nrf2/ARE antioxidant protective mechanism. Mol. Cell. Biochem. 414: 23-36.
6. Arany, I., et al. 2017. Age-dependent sensitivity of the mouse kidney to chronic nicotine exposure. Pediatr. Res. 82: 822-828.
7. Calahorra, J., et al. 2018. Hypoxia modulates the antioxidant effect of hydroxytyrosol in MCF7 breast cancer cells. PLoS ONE 13: e0203892.
8. Nagasu, H., et al. 2019. Bardoxolone methyl analog attenuates proteinuria-induced tubular damage by modulating mitochondrial function. FASEB J. 33: 12253-12263.
9. Chen, R., et al. 2020. Ischemic postconditioning attenuates acute kidney injury following intestinal ischemia-reperfusion through Nrf2-regulated autophagy, anti-oxidation, and anti-inflammation in mice. FASEB J. 34: 8887-8901.

RESEARCH USE

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