SANTA CRUZ BIOTECHNOLOGY, INC.

NGAL siRNA (m): sc-60044

BACKGROUND

In addition to the monomeric mammalian progelatinase, two additional forms of progelatinase have been identified. The shorter of these additional forms is a covalently linked, disulfide-bridged protein that heterodimerizes with a short protein; an α-2-Microglobulin-related protein known as neutrophil gelatinase-associated lipocalin (NGAL), which is moderately expressed in breast and lung tissues. NGAL belongs to the lipocalin family and has a high degree of similarity with rat α-2-Microglobulin-related protein and mouse protein 24p3. NGAL is able to bind a derivative of the bacterial chemotactic peptide, suggesting that it has important immunomodulatory functions. NGAL has been described as an inflammatory protein; it is released into the circulation as a result of the inflammatory activation of leukocytes initiated by the extra-corporeal circulation. In addition, NGAL synthesis is induced in epithelial cells in inflammatory and neoplastic colorectal diseases. In conclusion, NGAL may serve as a scavenger of bacterial products to function in the anti-inflammatory process.

REFERENCES

1. Triebel, S., et al. 1992. A 25 kDa α-2-Microglobulin-related protein is a component of the 125 kDa form of human gelatinase. FEBS Lett. 314: 386-388.
2. Kjeldsen, L., et al. 1993. Isolation and primary structure of NGAL, a novel protein associated with human neutrophil gelatinase. J. Biol. Chem. 268: 10425-10432.
3. Bundgaard, J.R., et al. 1994. Molecular cloning and expression of a cDNA encoding NGAL: a lipocalin expressed in human neutrophils. Biochem. Biophys. Res. Commun. 202: 1468-1475.

CHROMOSOMAL LOCATION

Genetic locus: Lcn2 (mouse) mapping to 2 B.

PRODUCT

NGAL 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 NGAL shRNA Plasmid (m): sc-60044-SH and NGAL shRNA (m) Lentiviral Particles: sc-60044-V as alternate gene silencing products.

For independent verification of NGAL (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-60044A, sc-60044B and sc-60044C.

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

NGAL siRNA (m) is recommended for the inhibition of NGAL 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.

GENE EXPRESSION MONITORING

NGAL (H-7): sc-515876 is recommended as a control antibody for monitoring of NGAL gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor NGAL gene expression knockdown using RT-PCR Primer: NGAL (m)-PR: sc-60044-PR (20 µl, 434 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Ghosh, S., et al. 2019. Neutrophils homing into the retina trigger pathology in early age-related macular degeneration. Commun. Biol. 2: 348.
2. Peng, D.H., et al. 2020. Epidermal growth factor alleviates cerebral ischemia-induced brain injury by regulating expression of neutrophil gelatinase-associated lipocalin. Biochem. Biophys. Res. Commun. 524: 963-969.
3. Jeong, E.A., et al. 2021. Tonicity-responsive enhancer-binding protein promotes diabetic neuroinflammation and cognitive impairment via upregulation of lipocalin-2. J. Neuroinflammation 18: 278.
4. Kim, S.L., et al. 2022. Lipocalin 2 activates the NLRP3 inflammasome via LPS-induced NFκB signaling and plays a role as a pro-inflammatory regulator in murine macrophages. Mol. Med. Rep. 26: 358.
5. Li, Q., et al. 2022. Lipocalin-2-mediated insufficient oligodendrocyte progenitor cell remyelination for white matter injury after subarachnoid hemorrhage via SCL22A17 receptor/early growth response protein 1 signaling. Neurosci. Bull. 38: 1457-1475.
6. An, H.S., et al. 2023. Lipocalin-2 promotes acute lung inflammation and oxidative stress by enhancing macrophage iron accumulation. Int. J. Biol. Sci. 19: 1163-1177.

RESEARCH USE

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