SANTA CRUZ BIOTECHNOLOGY, INC.

IKK-ε siRNA (h): sc-39056

BACKGROUND

The transcription factor NFκB is retained in the cytoplasm in an inactive form by the inhibitory protein IκB. Activation of NFκB requires that IκB be phosphorylated on specific serine residues, which results in targeted degradation of IκB. IκB kinase α (IKKα), previously designated CHUK, interacts with IκB-α and specifically phosphorylates IκB-α on the sites that trigger its degradation, Serines 32 and 36. The functional IKK complex contains three subunits, IKKα, IKKβ and IKKγ (also designated NEMO), and each appear to make essential contributions to IκB phosphorylation. IKK-ε, also designated IKK-i or IKBKE, is a serine/threonine kinase that shares homology with IKKα and IKKβ. IKK-ε is primarily expressed in immune cells and is induced by lipopolysaccharide and by proinflammatory cytokines including TNFα, IL-1 and IL-6. Overexpression of IKK-ε has been shown to result in phosphorylation of IκBα on Ser 32 and Ser 36, and in NFκB activation, suggesting that IKK-ε may act as an IκB kinase in the immune system.

REFERENCES

1. Verma, I.M., et al. 1995. Rel/NFκB/IκB family: intimate tales of association and dissociation. Genes Dev. 9: 2723-2735.
2. Conelly, M.A. and Marcu, K.B. 1995. CHUK, a new member of the helix-loop-helix and leucine zipper families of interacting proteins, contains a serine-threonine kinase catalytic domain. Cell. Mol. Biol. Res. 41: 537-549.
3. Thanos, D. and Maniatis, T. 1995. NFκB: a lesson in family values. Cell 80: 529-532.
4. DiDonato, J.A., et al. 1997. A cytokine-responsive IκB kinase that activates the transcription factor NFκB. Nature 388: 548-554.

CHROMOSOMAL LOCATION

Genetic locus: IKBKE (human) mapping to 1q32.1.

PRODUCT

IKK-ε siRNA (h) 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 IKK-ε shRNA Plasmid (h): sc-39056-SH and IKK-ε shRNA (h) Lentiviral Particles: sc-39056-V as alternate gene silencing products.

For independent verification of IKK-ε (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-39056A, sc-39056B and sc-39056C.

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

IKK-ε siRNA (h) is recommended for the inhibition of IKK-ε expression in human 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

IKK-ε (A-11): sc-376114 is recommended as a control antibody for monitoring of IKK-ε 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 IKK-ε gene expression knockdown using RT-PCR Primer: IKK-ε (h)-PR: sc-39056-PR (20 µl, 549 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Lee, S.H., et al. 2009. The major outer membrane protein of a periodontopathogen induces IFN-β and IFN-stimulated genes in monocytes via lipid raft and TANK-binding kinase 1/IFN regulatory factor-3. J. Immunol. 182: 5823-5835.
2. Manna, S., et al. 2013. Proteasome inhibition by bortezomib increases IL-8 expression in androgen-independent prostate cancer cells: the role of IKKα. J. Immunol. 191: 2837-2846.
3. Li, Q., et al. 2013. Increased expression of estrogen receptor α-36 by breast cancer oncogene IKK-ε promotes growth of ER-negative breast cancer cells. Cell. Physiol. Biochem. 31: 833-841.
4. Uddin, M.M., et al. 2018. Proteasome inhibition induces IKK-dependent interleukin-8 expression in triple negative breast cancer cells: opportunity for combination therapy. PLoS ONE 13: e0201858.
5. Uchida, T., et al. 2023. Promotion of knee cartilage degradation by IκB kinase ε in the pathogenesis of osteoarthritis in human and murine models. Arthritis Rheumatol. 75: 937-949.

RESEARCH USE

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