SANTA CRUZ BIOTECHNOLOGY, INC.

IKKβ siRNA (m): sc-35645

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The Power to Question

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. IKKα appears to be critical for NFκB activation in response to proinflammatory cytokines. Phosphorylation of IκB by IKKα is stimulated by the NFκB inducing kinase (NIK), which itself is a central regulator for NFκB activation in response to TNF and IL-1. The functional IKK complex contains three subunits, IKKα, IKKβ and IKKγ (also designated NEMO), and each appear to make essential contributions to IκB phosphorylation.

REFERENCES

1. Conelly, M.A., et al. 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.
2. Thanos, D., et al. 1995. NFκB: a lesson in family values. Cell 80: 529-532.
3. Verma, I.M., et al. 1995. Rel/NFκB/IκB family: intimate tales of association and dissociation. Genes Dev. 9: 2723-2735.
4. Malinin, N.L., et al. 1997. MAP3K-related kinase involved in NFκB induction by TNF, CD95 and IL-1. Nature 385: 540-544.

CHROMOSOMAL LOCATION

Genetic locus: Ikbkb (mouse) mapping to 8 A2.

PRODUCT

IKKβ 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 IKKβ shRNA Plasmid (m): sc-35645-SH and IKKβ shRNA (m) Lentiviral Particles: sc-35645-V as alternate gene silencing products.

For independent verification of IKKβ (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-35645A, sc-35645B and sc-35645C.

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

IKKβ siRNA (m) is recommended for the inhibition of IKKβ 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 IKKβ gene expression knockdown using RT-PCR Primer: IKKβ (m)-PR: sc-35645-PR (20 µl, 528 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Jiao, P., et al. 2009. Obesity-related upregulation of monocyte chemotactic factors in adipocytes: involvement of nuclear factor-κB and c-Jun NH_2-terminal kinase pathways. Diabetes 58: 104-115.
2. Zhou, J., et al. 2015. Hypochlorous acid via peroxynitrite activates protein kinase Cθ and Insulin resistance in adipocytes. J. Mol. Endocrinol. 54: 25-37.
3. Tarapore, R.S., et al. 2016. NFκB has a direct role in inhibiting Bmp- and Wnt-induced matrix protein expression. J. Bone Miner. Res. 31: 52-64.
4. Padilla, J., et al. 2018. TRAF3IP2 mediates high glucose-induced endothelin-1 production as well as endothelin-1-induced inflammation in endothelial cells. Am. J. Physiol. Heart Circ. Physiol. 314: H52-H64.
5. Higashi, Y., et al. 2019. Minocycline inhibits PDGF-BB-induced human aortic smooth muscle cell proliferation and migration by reversing miR-221- and -222-mediated RECK suppression. Cell. Signal. 57: 10-20.
6. Xu, D.D., et al. 2020. Akt^+ IKKα/β$^+$ $Rab5^+$ signalosome mediate the endosomal recruitment of Sec61 and contribute to cross-presentation in bone marrow precursor cells. Vaccines 8: 539.
7. Xu, W., et al. 2020. Occlusal trauma inhibits osteoblast differentiation and bone formation through IKK-NFκB signaling. J. Periodontol. 91: 683-692.
8. Panajatovic, M.V., et al. 2020. Simvastatin impairs glucose homeostasis in mice depending on PGC-1α skeletal muscle expression. Biomedicines 8: 351.
9. Lee, D.K., et al. 2022. REDD1 promotes obesity-induced metabolic dysfunction via atypical NFκB activation. Nat. Commun. 13: 6303.

RESEARCH USE

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