SANTA CRUZ BIOTECHNOLOGY, INC.

insulin R siRNA (h): sc-29370

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

The Insulin receptor (IR) is a heterodimeric protein complex that has an intracellular β subunit and an extracellular α subunit, which is disulfide-linked to a transmembrane segment. The Insulin ligand binds to the IR and initiates molecular signaling pathways that promote glucose uptake in cells and glycogen synthesis. Insulin binding to IR induces phosphorylation of intracellular tyrosine kinase domains and recruitment of multiple SH2 and SH3 domain-containing intracellular proteins that serve as signaling intermediates for pleiotropic effects of insulin. The human Insulin receptor gene maps to chromosome 19p13.2 and encodes a 1382 amino acid protein that cleaves apart to form α and β subunits. Type 1 diabetes is an auto-immune condition of the endocrine pancreas that results in destruction of Insulin secreting cells and a progressive loss in Insulin glucose uptake by cells. Type 2 diabetes is a condition where cells become resistant to Insulin action.

REFERENCES

1. Marino-Buslje, C., et al. 1999. The Insulin receptor: from protein sequence to structure. Biochem. Soc. Trans. 27: 715-726.
2. Ottensmeyer, F.P., et al. 2000. Mechanism of transmembrane signaling: insulin binding and the Insulin receptor. Biochemistry 39: 12103-12112.
3. Sesti, G. 2000. Insulin receptor variant forms and type 2 diabetes mellitus. Pharmacogenomics 1: 49-61.

CHROMOSOMAL LOCATION

Genetic locus: INSR (human) mapping to 19p13.2.

PRODUCT

insulin R 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 insulin R shRNA Plasmid (h): sc-29370-SH and insulin R shRNA (h) Lentiviral Particles: sc-29370-V as alternate gene silencing products.

For independent verification of insulin R (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-29370A, sc-29370B and sc-29370C.

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

insulin R siRNA (h) is recommended for the inhibition of insulin R 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.

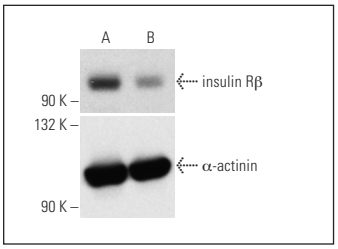
GENE EXPRESSION MONITORING

insulin Rβ (CT-3): sc-57342 is recommended as a control antibody for monitoring of insulin R 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 insulin R gene expression knockdown using RT-PCR Primer: insulin R (h)-PR: sc-29370-PR (20 µl, 566 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

DATA



insulin R siRNA (h): sc-29370. Western blot analysis of insulin Rβ expression in non-transfected control (**A**) and insulin R siRNA transfected (**B**) HeLa cells. Blot probed with insulin Rb (C-19): sc-711. α-actinin (H-2): sc-17829 used as specificity and loading control.

SELECT PRODUCT CITATIONS

1. Li, G., et al. 2009. Insulin and Insulin-like growth factor-I receptors differentially mediate Insulin-stimulated adhesion molecule production by endothelial cells. Endocrinology 150: 3475-3482.
2. Richardson, A.E., et al. 2011. Insulin-like growth factor-2 (IGF-2) activates estrogen receptor-α and -β via the IGF-1 and the Insulin receptors in breast cancer cells. Growth Factors 29: 82-93.
3. Youssef, A., et al. 2016. Low oxygen tension modulates the Insulin-like growth factor-1 or -2 signaling via both Insulin-like growth factor-1 receptor and Insulin receptor to maintain stem cell identity in placental mesenchymal stem cells. Endocrinology 157: 1163-1174.

RESEARCH USE

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