SANTA CRUZ BIOTECHNOLOGY, INC.

RARβ siRNA (h): sc-29466

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The Power to Question

BACKGROUND

Retinoids (RA) are metabolites of vitamin A (retinol) that are important signaling molecules during vertebrate development and tissue differentiation. RAs activate the retinoic acid receptor (RAR) and retinoid X receptor (RXR) nuclear transcription factor families and thus modulate the effects of RA on gene expression. Most retinoid forms (including all *trans* RA, 9-*cis* RA, 4oxo RA and 3,4 dihydro RA) activate RAR family members, whereas RXR family members are activated by 9-*cis*-RA only. RAR family members, which include RARα, RARβ and RARγ, belong to the same class of nuclear transcription factors as thyroid hormone receptors, vitamin D_3 receptor and ecdysone receptor. The human RARβ gene maps to chromosome 3p24.2 and encodes two isoforms, RARβ1 and RARβ2. The RARβ2 isoform may act as a tumor suppressor gene by inducing apoptosis. This role for RARβ2 may explain the chemopreventive and therapeutic effects of retinoids. RARβ2 expression is diminished or lost completely during breast cancer progression. RARβ expression also decreases in over 50 percent of oral and lung premalignant lesions; loss of RARβ expression may contribute to carcinogenesis.

CHROMOSOMAL LOCATION

Genetic locus: RARB (human) mapping to 3p24.2.

PRODUCT

RARβ 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 RARβ shRNA Plasmid (h): sc-29466-SH and RARβ shRNA (h) Lentiviral Particles: sc-29466-V as alternate gene silencing products.

For independent verification of RARβ (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-29466A, sc-29466B and sc-29466C.

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

RARβ siRNA (h) is recommended for the inhibition of RARβ expression in human cells.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.

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

RARβ2 (B-12): sc-514585 is recommended as a control antibody for monitoring of RARβ 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 RARβ gene expression knockdown using RT-PCR Primer: RARβ (h)-PR: sc-29466-PR (20 µl, 457 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Chang, Y.S., et al. 2006. 9-*cis* retinoic acid induces Insulin-like growth factor binding protein-3 through DR-8 retinoic acid responsive elements. Cancer Biol. Ther. 5: 586-592.
2. Dhandapani, L., et al. 2011. Retinoic acid enhances TRAIL induced apoptosis in cancer cells by upregulating TRAIL receptor 1 expression. Cancer Res. 71: 5245-5254.
3. Fernández-Martínez, A.B., et al. 2012. Intracrine prostaglandin E2 signalling regulates hypoxia-inducible factor-1α expression through retinoic acid receptor-β. Int. J. Biochem. Cell Biol. 44: 2185-2193.
4. Bengtsson, A.M., et al. 2013. The cysteinyl leukotriene 2 receptor contributes to all-*trans* retinoic acid-induced differentiation of colon cancer cells. BMC Cancer 13: 336.
5. Flamini, M.I., et al. 2014. Retinoic acid reduces migration of human breast cancer cells: role of retinoic acid receptor β. J. Cell. Mol. Med. 18: 1113-1123.
6. Sanchez, A.M., et al. 2016. Retinoic acid induces nuclear FAK translocation and reduces breast cancer cell adhesion through Moesin, FAK, and paxillin. Mol. Cell. Endocrinol. 430: 1-11.
7. Matellan, C., et al. 2023. Retinoic acid receptor β modulates mechanosensing and invasion in pancreatic cancer cells via myosin light chain 2. Oncogenesis 12: 23.

RESEARCH USE

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