SANTA CRUZ BIOTECHNOLOGY, INC.

PPARα siRNA (h): sc-36307

BACKGROUND

Peroxisome proliferator-activated receptors (PPARs) are nuclear hormone receptors that can be activated by a variety of compounds including fibratus, thiazolidinediones, prostaglandins and fatty acids. Three PPAR subtypes, designated PPARα, PPARβ (also designated PPARδ) and PPARγ, have been described. PPARs promote transcription by forming heterodimers with members of the retinoid X receptor (RXR) family of steroid receptors and binding to specific DNA motifs termed PPAR-response elements (PPREs). PPARα is abundant in primary hepatocytes where it regulates the expression of proteins involved in fatty acid metabolism. Interestingly, both the orphan nuclear hormone receptor LXRα and thyroid receptor (TR) have been shown to act as antagonists of PPARα/RXRα binding to PPREs.

CHROMOSOMAL LOCATION

Genetic locus: PPARA (human) mapping to 22q13.31.

PRODUCT

PPARα 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 PPARα shRNA Plasmid (h): sc-36307-SH and PPARα shRNA (h) Lentiviral Particles: sc-36307-V as alternate gene silencing products.

For independent verification of PPARα (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-36307A, sc-36307B and sc-36307C.

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

PPARα siRNA (h) is recommended for the inhibition of PPARα 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

PPARα (H-2): sc-398394 is recommended as a control antibody for monitoring of PPARα 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 PPARα gene expression knockdown using RT-PCR Primer: PPARα (h)-PR: sc-36307-PR (20 µl, 413 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Ii, M., et al. 2009. Adrenal androgen dehydroepiandrosterone sulfate inhibits vascular remodeling following arterial injury. Atherosclerosis 206: 77-85.
2. Kovacs, D., et al. 2012. The eumelanin intermediate 5,6-dihydroxyindole-2-carboxylic acid is a messenger in the cross-talk among epidermal cells. J. Invest. Dermatol. 132: 1196-1205.
3. Hann, S.S., et al. 2013. Targeting 3-phosphoinositide-dependent protein kinase 1 by N-acetyl-cysteine through activation of peroxisome proliferators activated receptor α in human lung cancer cells, the role of p53 and p65. J. Exp. Clin. Cancer Res. 32: 43.
4. Hahn, S.S., et al. 2014. Repression of integrin-linked kinase by antidiabetes drugs through cross-talk of PPARγ- and AMPKα-dependent signaling: role of AP-2α and Sp1. Cell. Signal. 26: 639-647.
5. Manea, A., et al. 2015. High-glucose-increased expression and activation of NADPH oxidase in human vascular smooth muscle cells is mediated by 4-hydroxynonenal-activated PPARα and PPARβ/δ. Cell Tissue Res. 361: 593-604.
6. Qian, J., et al. 2016. Aleglitazar, a balanced dual PPARα and -γ agonist, protects the heart against ischemia-reperfusion injury. Cardiovasc. Drugs Ther. 30: 129-141.
7. Szychowski, K.A., et al. 2017. Anticancer properties of 4-thiazolidinone derivatives depend on peroxisome proliferator-activated receptor γ (PPARγ). Eur. J. Med. Chem. 141: 162-168.
8. Madak-Erdogan, Z., et al. 2019. Free fatty acids rewire cancer metabolism in obesity-associated breast cancer via estrogen receptor and mTOR signaling. Cancer Res. 79: 2494-2510.
9. Yamaguchi, R., et al. 2019. Di-(2-ethylhexyl) phthalate promotes release of tissue factor-bearing microparticles from macrophages via the TGFβ1/Smad/PAI-1 signaling pathway. Am. J. Med. Sci. 357: 492-506.
10. Huang, Y., et al. 2020. Resveratrol protects against nonalcoholic fatty liver disease by improving lipid metabolism and redox homeostasis via the PPARα pathway. Appl. Physiol. Nutr. Metab. 45: 227-239.

RESEARCH USE

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