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SANTA CRUZ BIOTECHNOLOGY, INC.

CYP11A1 siRNA (h): sc-41496

BACKGROUND

CYP11A1, also known as cytochrome P450C11A1, cytochrome P450scc and cytochrome P450, subfamily XIA, is an enzyme that catalyzes the first step of steroid biosynthesis under the modulation of cAMP signal. CYP11A1 in steroidogenic cells converts cholesterol to pregnenolone, which is determined by hormonal control of cholesterol availability. Expression of the CYP11A1 gene is controlled by the transcription factor SF-1, and the upstream SF-1 binding site in the CYP11A1 gene is required for hormonal stimulation. c-Jun and SF-1 may act synergistically to activate CYP11A1 gene expression. Both Forskolin and 8-Br-cAMPS elevate CYP11A1 mRNA levels in the interstitial cell monolayer, which has a fully functional adenylate cyclase. The CYP11A1 protein is coexpressed with 3β-HSD2 in the rat hippocampus, dentate dyrus, cerebellar granular layer and Purkinje cells, indicating that neurosteriods are synthesized in a region-specific manner in the brain. CYP11A1 interacts with its physiological partner, adrenodoxin, by electrostatic interaction.

REFERENCES

1. Kim, Y.C., et al. 1997. Control of cholesterol access to cytochrome P450scc in rat adrenal cells mediated by regulation of the steroidogenic acute regulatory protein. Steroids 62: 10-20.
2. Furukawa, A., et al. 1998. Sterodogenic acute regulatory protein (StAR) transcripts constitutively expressed in the adult rat central nervous system: colocalization of StAR, cytochrome P450scc (CYP XIA1), and 3β-hydroxy-steroid dehydrogenase in the rat brain. J. Neurochem. 71: 2231-2238.
3. Lepesheva, G.I., et al. 2000. Site-directed mutagenesis of cytochrome P450scc (CYP11A1). Effect of lysine residue substitution on its structural and functional properties. Biochemistry 65: 1409-1418.
4. Chen, C., et al. 2000. Effect of cAMP on protein binding activities of three elements in upstream promoter of human CYP11A1 gene. Life Sci. 67: 2045-2049.
5. Schwartz, J.R., et al. 2000. Expression of P450 side-chain cleavage (CYP11A1) and P450 17α-hydroxylase-17/20 lyase (CYP17) messager ribonucleic acid in hamster primary interstitial cells *in vitro:* differential regulation of steroidogenesis by cyclic adenosine monophosphate. Biol. Reprod. 63: 503-507.

CHROMOSOMAL LOCATION

Genetic locus: CYP11A1 (human) mapping to 15q24.1.

PRODUCT

CYP11A1 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 CYP11A1 shRNA Plasmid (h): sc-41496-SH and CYP11A1 shRNA (h) Lentiviral Particles: sc-41496-V as alternate gene silencing products.

For independent verification of CYP11A1 (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-41496A, sc-41496B and sc-41496C.

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

CYP11A1 siRNA (h) is recommended for the inhibition of CYP11A1 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor CYP11A1 gene expression knockdown using RT-PCR Primer: CYP11A1 (h)-PR: sc-41496-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

RESEARCH USE

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

PROTOCOLS

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