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SANTA CRUZ BIOTECHNOLOGY, INC.

CYP2A13 siRNA (h): sc-41487

BACKGROUND

The cytochrome P450 proteins (CYPs) are monooxygenases that catalyze reactions involved in both drug metabolism and in the synthesis of cholesterol, steroids and other lipids. P450 enzymes are classified into subfamilies, such as CYP1A and CYP2A, based on their sequence similarities. CYP2A13 (cytochrome P450, family 2, subfamily A, polypeptide 13), also known as CPAD, is a 494 amino acid peripheral membrane protein that belongs to the CYP2A subfamily of cytochrome P450 proteins. Localized to the endoplasmic reticulum and expressed in brain, lung, trachea, testis, prostate, uterus and nasal mucosa, CYP2A13 functions as a hydroxylase that uses a heme group to catalyze the oxidation (and subsequent activation) of target flavoproteins. Specifically, CYP2A13 interacts with hexamethylphosphoramide, N-nitrosomethylphenylamine and 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone, a tobacco-specific carcinogen. Defects in the gene encoding CYP2A13 are associated with uterine leiomyoma, nasopharyngeal carcinoma and lung cancer.

REFERENCES

1. Fernandez-Salguero, P. and Gonzalez, F.J. 1995. The CYP2A gene subfamily: species differences, regulation, catalytic activities and role in chemical carcinogenesis. Pharmacogenetics 5: S123-S128.
2. Su, T., et al. 2000. Human cytochrome P450 CYP2A13: predominant expression in the respiratory tract and its high efficiency metabolic activation of a tobacco-specific carcinogen, 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone. Cancer Res. 60: 5074-5079.
3. Zhang, X., et al. 2002. Genetic polymorphisms of the human CYP2A13 gene: identification of single-nucleotide polymorphisms and functional characterization of an Arg 257 Cys variant. J. Pharmacol. Exp. Ther. 302: 416-423.
4. Wang, H., et al. 2003. Substantial reduction in risk of lung adenocarcinoma associated with genetic polymorphism in CYP2A13, the most active cytochrome P450 for the metabolic activation of tobacco-specific carcinogen NNK. Cancer Res. 63: 8057-8061.
5. Cauffiez, C., et al. 2004. Genetic polymorphism of the human cytochrome CYP2A13 in a French population: implication in lung cancer susceptibility. Biochem. Biophys. Res. Commun. 317: 662-669.

CHROMOSOMAL LOCATION

Genetic locus: CYP2A13 (human) mapping to 19q13.2.

PRODUCT

CYP2A13 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 CYP2A13 shRNA Plasmid (h): sc-41487-SH and CYP2A13 shRNA (h) Lentiviral Particles: sc-41487-V as alternate gene silencing products.

For independent verification of CYP2A13 (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-41487A, sc-41487B and sc-41487C.

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

CYP2A13 siRNA (h) is recommended for the inhibition of CYP2A13 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 CYP2A13 gene expression knockdown using RT-PCR Primer: CYP2A13 (h)-PR: sc-41487-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.