SANTA CRUZ BIOTECHNOLOGY, INC.

CYP2E1 siRNA (h): sc-105257

BACKGROUND

The cytochrome P450s are a large and diverse family of monooxygenase enzymes which catalyze many reactions involved in drug metabolism and synthesis of cholesterol, steroids and other lipids. P450 enzymes are classified into subfamilies, such as CYP1A and CYP2A, based on sequence similarities. Cytochrome P450 2E1 (CYP2E1) localizes to the endoplasmic reticulum and is induced by ethanol, the diabetic state and starvation. The enzyme metabolizes both endogenous substrates, such as ethanol, acetone and acetal, as well as exogenous substrates including benzene, carbon tetrachloride, ethylene glycol and nitrosamines which are premutagens found in cigarette smoke. CYP2E1 plays an important role in alcohol metabolism and participates in the metabolic activation of various carcinogens. Chronic ethanol consumption results in the induction of hepatic CYP2E1 in humans, which may play an important role in the pathogenesis of alcoholic liver disease. Due to its many substrates, this enzyme may be involved in such varied processes as gluconeogenesis, hepatic cirrhosis, diabetes and cancer.

REFERENCES

1. Itoga, S., et al. 1999. Mutations in the exons and exon-intron junction regions of human cytochrome P4502E1 gene and alcoholism. Alcohol. Clin. Exp. Res. 23: 13S-16S.
2. Li, Z., et al. 2000. Susceptibility to lung cancer in Chinese is associated with genetic polymorphism in cytochrome P4502E1. Zhonghua Zhong Liu Za Zhi 22: 5-7.
3. Meskar, A., et al. 2001. Alcohol-xenobiotic interactions. Role of cytochrome P4502E1. Pathol. Biol. 49: 696-702.
4. Oneta, C.M., et al. 2002. Dynamics of cytochrome P4502E1 activity in man: induction by ethanol and disappearance during withdrawal phase. J. Hepatol. 36: 47-52.
5. Itoga, S., et al. 2002. Tandem repeat polymorphism of the CYP2E1 gene: an association study with esophageal cancer and lung cancer. Alcohol. Clin. Exp. Res. 26: 15S-19S.

CHROMOSOMAL LOCATION

Genetic locus: CYP2E1 (human) mapping to 10q26.3.

PRODUCT

CYP2E1 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 CYP2E1 shRNA Plasmid (h): sc-105257-SH and CYP2E1 shRNA (h) Lentiviral Particles: sc-105257-V as alternate gene silencing products.

For independent verification of CYP2E1 (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-105257A, sc-105257B and sc-105257C.

PROTOCOLS

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

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

CYP2E1 siRNA (h) is recommended for the inhibition of CYP2E1 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 CYP2E1 gene expression knockdown using RT-PCR Primer: CYP2E1 (h)-PR: sc-105257-PR (20 µl, 439 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Seronello, S., et al. 2010. Ethanol enhances hepatitis C virus replication through lipid metabolism and elevated NADH/NAD+. J. Biol. Chem. 285: 845-854.
2. Son, B., et al. 2017. CYP2E1 regulates the development of radiation-induced pulmonary fibrosis via ER stress- and ROS-dependent mechanisms. Am. J. Physiol. Lung Cell Mol. Physiol. 313: L916-L929.

RESEARCH USE

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