SANTA CRUZ BIOTECHNOLOGY, INC.

CYP1B1 siRNA (h): sc-44546

BACKGROUND

Cytochrome P450 1B1 (CYP1B1) is a key enzyme involved in the production of potentially carcinogenic estrogen metabolites and the activation of environmental carcinogens and is the predominant member of the CYP1 family expressed in normal breast tissue and breast cancer. Estrogen has been proposed to trigger breast cancer development via an initiating mechanism involving its metabolite, catechol estrogen (CE). CYP1B1 catalyzes the conversion of 17-β-estradiol to the catechol estrogen metabolites 2-OH-E2 and 4-OH-E2 which have both been postulated to be involved in mammary carcinogenesis. Genetic polymorphisms in CYP1B1 may play an important role in human prostate carcinogenesis as well. Polymorphism of the CYP1B1 gene at codon 432 (Val→Leu) is associated with a change in catalytic function.

CHROMOSOMAL LOCATION

Genetic locus: CYP1B1 (human) mapping to 2p22.2.

PRODUCT

CYP1B1 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 CYP1B1 shRNA Plasmid (h): sc-44546-SH and CYP1B1 shRNA (h) Lentiviral Particles: sc-44546-V as alternate gene silencing products.

For independent verification of CYP1B1 (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-44546A, sc-44546B and sc-44546C.

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

CYP1B1 siRNA (h) is recommended for the inhibition of CYP1B1 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

CYP1B1 (G-4): sc-374228 is recommended as a control antibody for monitoring of CYP1B1 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).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor CYP1B1 gene expression knockdown using RT-PCR Primer: CYP1B1 (h)-PR: sc-44546-PR (20 µl, 559 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Das, D.N., et al. 2014. Prediction and validation of apoptosis through cytochrome P450 activation by benzo[a]pyrene. Chem. Biol. Interact. 208: 8-17.
2. Li, M.Y., et al. 2015. Estrogen receptor α promotes smoking-carcinogen-induced lung carcinogenesis via cytochrome P450 1B1. J. Mol. Med. 93: 1221-1233.
3. Das, D.N., et al. 2016. Mutagenic and genotoxic potential of native air borne particulate matter from industrial area of Rourkela city, Odisha, India. Environ. Toxicol. Pharmacol. 46: 131-139.
4. Das, D.N., et al. 2017. DNA damage by 2,3,7,8-tetrachlorodibenzo-p-dioxin-induced p53-mediated apoptosis through activation of cytochrome P450/aryl hydrocarbon receptor. Environ. Toxicol. Pharmacol. 55: 175-185.
5. Maayah, Z.H., et al. 2017. The role of cytochrome P450 1B1 and its associated mid-chain hydroxyeicosatetraenoic acid metabolites in the development of cardiac hypertrophy induced by isoproterenol. Mol. Cell. Biochem. 429: 151-165.
6. Das, D.N., et al. 2017. Elimination of dysfunctional mitochondria through mitophagy suppresses benzo[a]pyrene-induced apoptosis. Free Radic. Biol. Med. 112: 452-463.
7. Lee, S.C., et al. 2021. Curcumin suppresses the lipid accumulation and oxidative stress induced by benzo[a]pyrene toxicity in HepG2 cells. Antioxidants 10: 1314.

RESEARCH USE

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