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ACC β shRNA (h) Lentiviral Particles: sc-43597-V

BACKGROUND

Acetyl-CoA carboxylase (ACC) is a complex multifunctional enzyme system which catalyzes the carboxylation of acetyl-CoA to malonyl-CoA, the rate-limiting step in fatty acid synthesis. Exercise diminishes the activity of acetyl-CoA carboxylase in human muscle. ACC α (ACC1) is the rate-limiting enzyme in the biogenesis of long-chain fatty acids, and ACC β (ACC2) is thought to control mitochondrial fatty acid oxidation. These two isoforms of ACC control the amount of fatty acids in the cells. ACC β is thought to control fatty acid oxidation by means of the ability of malonyl-CoA to inhibit carnitine-palmitoyl-CoA transferase I, the rate-limiting step in fatty acid uptake and oxidation by mitochondria. The gene encoding ACC β maps to human chromosome 12 and encodes a mitochondrial protein expressed in heart and skeletal muscle. The catalytic core of ACC β is homologous to that of ACC α , except for an additional peptide of about 150 amino acids at the N-terminus.

REFERENCES

1. Ha, J., et al. 1996. Cloning of human acetyl-CoA carboxylase β and its unique features. *Proc. Natl. Acad. Sci. USA* 93: 11466-11470.
2. Kim, K.H. 1997. Regulation of mammalian acetyl-coenzyme A carboxylase. *Annu. Rev. Nutr.* 17: 77-99.
3. Dean, D., et al. 2000. Exercise diminishes the activity of acetyl-CoA carboxylase in human muscle. *Diabetes* 49: 1295-1300.
4. Abu-Elheiga, L., et al. 2000. The subcellular localization of acetyl-CoA carboxylase 2. *Proc. Natl. Acad. Sci. USA* 97: 1444-1449.
5. Lee, J.J., et al. 2001. Cloning of human acetyl-CoA carboxylase β promoter and its regulation by muscle regulatory factors. *J. Biol. Chem.* 276: 2576-2585.
6. LocusLink Report (LocusID: 32). <http://www.ncbi.nlm.nih.gov/LocusLink/>

CHROMOSOMAL LOCATION

Genetic locus: ACACB (human) mapping to 12q24.11.

PRODUCT

ACC β shRNA (h) Lentiviral Particles is a pool of concentrated, transduction-ready viral particles containing 3 target-specific constructs that encode 19-25 nt (plus hairpin) shRNA designed to knock down gene expression. Each vial contains 200 μ l frozen stock containing 1.0×10^6 infectious units of virus (IFU) in Dulbecco's Modified Eagle's Medium with 25 mM HEPES pH 7.3. Suitable for 10-20 transductions. Also see ACC β siRNA (h): sc-43597 and ACC β shRNA Plasmid (h): sc-43597-SH as alternate gene silencing products.

STORAGE

Store lentiviral particles at -80° C. Stable for at least one year from the date of shipment. Once thawed, particles can be stored at 4° C for up to one week. Avoid repeated freeze thaw cycles.

PROTOCOLS

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

APPLICATIONS

ACC β shRNA (h) Lentiviral Particles is recommended for the inhibition of ACC β expression in human cells.

SUPPORT REAGENTS

Control shRNA Lentiviral Particles: sc-108080. Available as 200 μ l frozen viral stock containing 1.0×10^6 infectious units of virus (IFU); contains an shRNA construct encoding a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA.

GENE EXPRESSION MONITORING

ACC β (F-9): sc-377313 is recommended as a control antibody for monitoring of ACC β 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 (secondary) reagents are recommended: 1) Western Blotting: use goat anti-mouse IgG-HRP: sc-2005 (dilution range: 1:2000-1:32,000) or Cruz Marker[™] compatible goat anti-mouse IgG-HRP: sc-2031 (dilution range: 1:2000-1:5000), Cruz Marker[™] Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use goat anti-mouse IgG-FITC: sc-2010 (dilution range: 1:100-1:400) or goat anti-mouse IgG-TR: sc-2781 (dilution range: 1:100-1:400) with UltraCruz[™] Mounting Medium: sc-24941.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor ACC β gene expression knockdown using RT-PCR Primer: ACC β (h)-PR: sc-43597-PR (20 μ l, 571 bp). Annealing temperature for the primers should be $55-60^\circ$ C and the extension temperature should be $68-72^\circ$ C.

BIOSAFETY

Lentiviral particles can be employed in standard Biosafety Level 2 tissue culture facilities (and should be treated with the same level of caution as with any other potentially infectious reagent). Lentiviral particles are replication-incompetent and are designed to self-inactivate after transduction and integration of shRNA constructs into genomic DNA of target cells.

RESEARCH USE

The purchase of this product conveys to the buyer the nontransferable right to use the purchased amount of the product and all replicates and derivatives for research purposes conducted by the buyer in his laboratory only (whether the buyer is an academic or for-profit entity). The buyer cannot sell or otherwise transfer (a) this product (b) its components or (c) materials made using this product or its components to a third party, or otherwise use this product or its components or materials made using this product or its components for Commercial Purposes.