SANTA CRUZ BIOTECHNOLOGY, INC.

COQ5 siRNA (h): sc-96054

BACKGROUND

Coenzyme Q (CoQ), also referred to as ubiquinone, is a fat-soluble component of the electron transport chain that participates in aerobic cellular respiration within mitochondria and is essential for ATP-dependent energy production. CoQ consists of a hydrophobic isoprenoid tail, which anchors it to the membrane, and a quinone head group, which is responsible for the activity of CoQ in the respiratory chain. CoQ biosynthesis requires the formation of a multisubunit enzyme complex, composed of COQ1 through COQ10, which is highly characterized in yeast. COQ5 (coenzyme Q5 homolog, methyltransferase) is a 327 amino acid mitochondrial protein that belongs to the methyltransferase superfamily and the UbiE family. Existing as two alternatively spliced isoforms, COQ5 converts DDMQH2 into DMQH2 and is involved in ubiquinone biosynthesis.

REFERENCES

1. Lenaz, G., et al. 1994. An updating of the biochemical function of coenzyme Q in mitochondria. Mol. Aspects Med. 15: s29-s36.
2. Barkovich, R.J., et al. 1997. Characterization of the COQ5 gene from *Saccharomyces cerevisiae*. Evidence for a C-methyltransferase in ubiquinone biosynthesis. J. Biol. Chem. 272: 9182-9188.
3. Hagerman, R.A., et al. 2002. The yeast gene COQ5 is differentially regulated by Mig1p, Rtg3p and Hap2p. Biochim. Biophys. Acta 1578: 51-58.
4. Hagerman, R.A., et al. 2002. The regulation of COQ5 gene expression by energy source. Free Radic. Res. 36: 485-490.
5. Baba, S.W., et al. 2004. Yeast COQ5 C-methyltransferase is required for stability of other polypeptides involved in coenzyme Q biosynthesis. J. Biol. Chem. 279: 10052-10059.
6. Marbois, B., et al. 2009. The yeast Coq4 polypeptide organizes a mitochondrial protein complex essential for coenzyme Q biosynthesis. Biochim. Biophys. Acta 1791: 69-75.
7. Kawamukai, M. 2009. Biosynthesis and bioproduction of coenzyme Q10 by yeasts and other organisms. Biotechnol. Appl. Biochem. 53: 217-226.
8. Padilla, S., et al. 2009. Hydroxylation of demethoxy-Q6 constitutes a control point in yeast coenzyme Q6 biosynthesis. Cell. Mol. Life Sci. 66: 173-186.

CHROMOSOMAL LOCATION

Genetic locus: COQ5 (human) mapping to 12q24.31.

PRODUCT

COQ5 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 COQ5 shRNA Plasmid (h): sc-96054-SH and COQ5 shRNA (h) Lentiviral Particles: sc-96054-V as alternate gene silencing products.

For independent verification of COQ5 (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-96054A, sc-96054B and sc-96054C.

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

COQ5 siRNA (h) is recommended for the inhibition of COQ5 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 COQ5 gene expression knockdown using RT-PCR Primer: COQ5 (h)-PR: sc-96054-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Chen, S.W., et al. 2013. Detection of suppressed maturation of the human COQ5 protein in the mitochondria following mitochondrial uncoupling by an antibody recognizing both precursor and mature forms of COQ5. Mitochondrion 13: 143-152.
2. Yen, H.C., et al. 2016. Disruption of the human COQ5-containing protein complex is associated with diminished coenzyme Q10 levels under two different conditions of mitochondrial energy deficiency. Biochim. Biophys. Acta 1860: 1864-1876.
3. Yen, H.C., et al. 2020. Characterization of human mitochondrial PDSS and COQ proteins and their roles in maintaining coenzyme Q10 levels and each other's stability. Biochim. Biophys. Acta Bioenerg. E-published.

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.