SANTA CRUZ BIOTECHNOLOGY, INC.

VKORC1 siRNA (h): sc-106693

BACKGROUND

Vitamin K is a cofactor that is essential for the posttranslational γ-carboxylation of many blood coagulation factors. Vitamin K epoxide reductase (VKOR) is a small transmembrane protein complex located in the endoplasmic reticulum that catalyzes both the reduction of vitamin K epoxide to vitamin K, as well as the conversion of vitamin K to vitamin K hydroquinone. VKORC1 (vitamin K epoxide reductase complex, subunit 1), also known as VKOR, MST134, MST576, VKCFD2 or EDTP308, is a 163 amino acid multi-pass membrane protein belonging to the VKOR family. Localized to the endoplasmic reticulum and expressed at highest levels in fetal and adult liver, followed by fetal heart, kidney, and lung, adult heart, and pancreas, VKORC1 is a subunit of VKOR that increases the production of reduced vitamin K cofactor. VKORC1 is the rate limiting protein in vitamin K metabolism and, therefore, plays a significant role as a regulatory protein.

REFERENCES

1. Rost, S., et al. 2004. Mutations in VKORC1 cause warfarin resistance and multiple coagulation factor deficiency type 2. Nature 427: 537-541.
2. Li, T., et al. 2004. Identification of the gene for vitamin K epoxide reductase. Nature 427: 541-544.
3. Goodstadt, L. and Ponting, C.P. 2004. Vitamin K epoxide reductase: homology, active site and catalytic mechanism. Trends Biochem. Sci. 29: 289-292.
4. Tie, J.K., et al. 2005. Membrane topology mapping of vitamin K epoxide reductase by *in vitro* translation/cotranslocation. J. Biol. Chem. 280: 16410-16416.
5. Rost, S., et al. 2005. Site-directed mutagenesis of coumarin-type anticoagulant-sensitive VKORC1: evidence that highly conserved amino acids define structural requirements for enzymatic activity and inhibition by warfarin. Thromb. Haemost. 94: 780-786.
6. Oldenburg, J., et al. 2006. Vitamin K epoxide reductase complex subunit 1 (VKORC1): the key protein of the vitamin K cycle. Antioxid. Redox Signal. 8: 347-353.

CHROMOSOMAL LOCATION

Genetic locus: VKORC1 (human) mapping to 16p11.2.

PRODUCT

VKORC1 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 VKORC1 shRNA Plasmid (h): sc-106693-SH and VKORC1 shRNA (h) Lentiviral Particles: sc-106693-V as alternate gene silencing products.

For independent verification of VKORC1 (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-106693A, sc-106693B and sc-106693C.

RESEARCH USE

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

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

VKORC1 siRNA (h) is recommended for the inhibition of VKORC1 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 VKORC1 gene expression knockdown using RT-PCR Primer: VKORC1 (h)-PR: sc-106693-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

PROTOCOLS

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