SANTA CRUZ BIOTECHNOLOGY, INC.

Calpain 2 siRNA (h): sc-41459

BACKGROUND

Calpain, an intracellular calcium-dependent protease that cleaves cytoskeletal and submembranous proteins, is thought to play a role in cytoskeletal reorganization and muscle protein degradation. Calpain exists as a heterodimer composed of a small regulatory subunit and one of three large catalytic subunits, designated Calpain 1, Calpain 2 and Calpain p94. Calpastatin regulates calpain by inhibiting both the proteolytic activity of calpain and its binding to membranes. Calpastatin exists in two types, tissue type and erythrocyte type, resulting from both alternative splicing and proteolytic processing.

CHROMOSOMAL LOCATION

Genetic locus: CAPN2 (human) mapping to 1q41.

PRODUCT

Calpain 2 siRNA (h) is a target-specific 19-25 nt siRNA 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 Calpain 2 shRNA Plasmid (h): sc-41459-SH and Calpain 2 shRNA (h) Lentiviral Particles: sc-41459-V as alternate gene silencing 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

Calpain 2 siRNA (h) is recommended for the inhibition of Calpain 2 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

Calpain 2 (E-10): sc-373966 is recommended as a control antibody for monitoring of Calpain 2 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).

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Calpain 2 gene expression knockdown using RT-PCR Primer: Calpain 2 (h)-PR: sc-41459-PR (20 µl, 500 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Sheu, M.L., et al. 2007. Honokiol induces Calpain-mediated glucose-regulated protein-94 cleavage and apoptosis in human gastric cancer cells and reduces tumor growth. PLoS ONE 2: e1096.
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4. Prangsaengtong, O., et al. 2012. Calpain 1 and -2 play opposite roles in cord formation of lymphatic endothelial cells via eNOS regulation. Hum. Cell 25: 36-44.
5. Hou, C.H., et al. 2014. Hyperthermia induces apoptosis through endoplasmic reticulum and reactive oxygen species in human osteosarcoma cells. Int. J. Mol. Sci. 15: 17380-17395.
6. Liu, S.H., et al. 2015. Honokiol confers immunogenicity by dictating calreticulin exposure, activating ER stress and inhibiting epithelial-to-mesenchymal transition. Mol. Oncol. 9: 834-849.
7. Chiu, C.S., et al. 2018. Exploiting honokiol-induced ER stress CHOP activation inhibits the growth and metastasis of melanoma by suppressing the MITF and β-catenin pathways. Cancer Lett. 442: 113-125.
8. Lee, C.W., et al. 2019. Artocarpin induces cell apoptosis in human osteosarcoma cells through endoplasmic reticulum stress and reactive oxygen species. J. Cell. Physiol. 234: 13157-13168.
9. Cai, Z., et al. 2019. Use of a mouse model and human umbilical vein endothelial cells to investigate the effect of arsenic exposure on vascular endothelial function and the associated role of calpains. Environ. Health Perspect. 127: 77003.
10. Shinkai-Ouchi, F., et al. 2020. Calpain-2 participates in the process of calpain-1 inactivation. Biosci. Rep. 40: BSR20200552.
11. Lee, W.J., et al. 2021. hnRNPK-regulated LINC00263 promotes malignant phenotypes through miR-147a/CAPN2. Cell Death Dis. 12: 290.
12. Sharma, J., et al. 2023. Calpain activity is negatively regulated by a KCTD7-Cullin-3 complex via non-degradative ubiquitination. Cell Discov. 9: 32.

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.