SANTA CRUZ BIOTECHNOLOGY, INC.

MMP-3 siRNA (r): sc-61874

BACKGROUND

The matrix metalloproteinases (MMP) are a family of peptidase enzymes responsible for the degradation of extracellular matrix components, including collagen, gelatin, Fibronectin, laminin and proteoglycan. Transcription of MMP genes is differentially activated by phorbol ester, lipopolysaccharide (LPS) or staphylococcal enterotoxin B (SEB). MMP catalysis requires both calcium and zinc. MMP-3, MMP-10 and MMP-11 (also designated stromelysin-1, -2 and -3 respectively) activate procollagenase. MMP-3 activation of procollagenase can occur via two pathways. Direct activation by MMP-3 is slow and activation by MMP-3 in conjunction with tissue or plasma proteinases is rapid. MMP-10 is expressed in small intestine, and at lower levels in lung and heart. MMP-11 is specifically expressed in stromal cells of breast carcinomas and contributes to epithelial cell malignancies.

REFERENCES

1. Saus, J., et al. 1988. The complete primary structure of human matrix metalloproteinase-3. Identity with stromelysin. J. Biol. Chem. 263: 6742-6745.
2. Suzuki, K., et al. 1990. Mechanisms of activation of tissue procollagenase by matrix metalloproteinase-3 (stromelysin). Biochemistry 29: 10261-10270.
3. Basset, P., et al. 1990. A novel metalloproteinase gene specifically expressed in stromal cells of breast carcinomas. Nature 348: 699-704.
4. Birkedal-Hansen, H., et al. 1993. Matrix metalloproteinases: a review. Crit. Rev. Oral Biol. Med. 4: 197-250.

CHROMOSOMAL LOCATION

Genetic locus: Mmp3 (rat) mapping to 8q11.

PRODUCT

MMP-3 siRNA (r) 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 MMP-3 shRNA Plasmid (r): sc-61874-SH and MMP-3 shRNA (r) Lentiviral Particles: sc-61874-V as alternate gene silencing products.

For independent verification of MMP-3 (r) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-61874A, sc-61874B and sc-61874C.

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

MMP-3 siRNA (r) is recommended for the inhibition of MMP-3 expression in rat 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

MMP-3 (1B4): sc-21732 is recommended as a control antibody for monitoring of MMP-3 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 MMP-3 gene expression knockdown using RT-PCR Primer: MMP-3 (r)-PR: sc-61874-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. Hiyama, T., et al. 2013. Matrix metalloproteinase-3 in odontoblastic cells derived from ips cells: unique proliferation response as odontoblastic cells derived from ES cells. PLoS ONE 8: e83563.
2. Ozeki, N., et al. 2014. Cytokines induce MMP-3-regulated proliferation of embryonic stem cell-derived odontoblast-like cells. Oral Dis. 20: 505-513.
3. Yamaguchi, H., et al. 2014. Proinflammatory cytokines induce stromelysin-1-mediated cell proliferation in dental pulp fibroblast-like cells. J. Endod. 40: 89-94.
4. Ozeki, N., et al. 2015. IL-1β-induced matrix metalloproteinase-3 regulates cell proliferation in rat dental pulp cells. Oral Dis. 21: 97-105.
5. Hiyama, T., et al. 2015. Polyphosphate-induced matrix metalloproteinase-3-mediated differentiation in rat dental pulp fibroblast-like cells. Biosci. Trends 9: 360-366.
6. Ozeki, N., et al. 2015. Polyphosphate-induced matrix metalloproteinase-3-mediated proliferation in rat dental pulp fibroblast-like cells is mediated by a Wnt5 signaling cascade. Biosci. Trends 9: 160-168.

RESEARCH USE

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