SANTA CRUZ BIOTECHNOLOGY, INC.

PAI-1 siRNA (m): sc-36180

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

PAI-1 and PAI-2 (for plasminogen activator inhibitor-1 and -2) are members of the serpin serine proteinase inhibitor family. PAI-1 and PAI-2 have been shown to regulate uPA (urokinase-type plasminogen activator) and tPA (tissue plasminogen activator), resulting in the inhibition of proteolytic activity. Members of the serpin family generally complex with their target proteinases, then disassociate slowly into cleaved species that fold into stable inactive forms. PAI-1 can fold into the inactive state without cleavage, resulting in the latent form of PAI-1. Activity can be restored to the latent form of PAI-1 through denaturation and renaturation. PAI-2 occurs in secreted and cytosolic forms through facultative polypeptide translocation. uPA is a serine proteinase that is a member of the trypsin family. It is responsible for the cleavage of plasminogen at the Arg-Val bond to produce plasmin. uPA consists of two chains designated A and B. The A chain can be cleaved, resulting in low and high molecular mass forms of uPA.

REFERENCES

1. Riccio, A., et al. 1985. The human urokinase-plasminogen activator gene and its promoter. Nucleic Acids Res. 13: 2759-2771.
2. Belin, D., et al. 1989. Facultative polypeptide translocation allows a single mRNA to encode the secreted and cytosolic forms of plasminogen activators inhibitor 2. EMBO J. 8: 3287-3294.
3. Schmitt, M., et al. 1991. Human tumor cell urokinase-type plasminogen activator (uPA): degradation of the proenzyme form (pro-uPA) by granulocyte elastase prevents subsequent activation by plasmin. Adv. Exp. Med. Biol. 297: 111-128.

CHROMOSOMAL LOCATION

Genetic locus: Serpine1 (mouse) mapping to 5 G2.

PRODUCT

PAI-1 siRNA (m) 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 PAI-1 shRNA Plasmid (m): sc-36180-SH and PAI-1 shRNA (m) Lentiviral Particles: sc-36180-V as alternate gene silencing products.

For independent verification of PAI-1 (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-36180A, sc-36180B and sc-36180C.

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

PAI-1 siRNA (m) is recommended for the inhibition of PAI-1 expression in mouse 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 PAI-1 gene expression knockdown using RT-PCR Primer: PAI-1 (m)-PR: sc-36180-PR (20 µl, 399 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Pedroja, B.S., et al. 2009. Plasminogen activator inhibitor-1 regulates Integrin $\alpha_v\beta_3$ expression and autocrine transforming growth factor β signaling. J. Biol. Chem. 284: 20708-20717.
2. Stepp, M.A., et al. 2010. Syndecan-1 regulates cell migration and Fibronectin fibril assembly. Exp. Cell Res. 316: 2322-2339.
3. Thapa, B., et al. 2012. Novel regulatory mechanism and functional implication of plasminogen activator inhibitor-1 (PAI-1) expression in CpG-ODN-stimulated macrophages. Mol. Immunol. 49: 572-581.
4. Thapa, B., et al. 2014. Plasminogen activator inhibitor-1 regulates infiltration of macrophages into melanoma via phosphorylation of FAK-Tyr^{925}. Biochem. Biophys. Res. Commun. 450: 1696-1701.
5. Tamura, Y., et al. 2018. Role of plasminogen activator inhibitor-1 in glucocorticoid-induced muscle change in mice. J. Bone Miner. Metab. 36: 148-156.
6. Takafuji, Y., et al. 2019. Plasminogen activator inhibitor-1 deficiency suppresses osteoblastic differentiation of mesenchymal stem cells in mice. J. Cell. Physiol. 234: 9687-9697.
7. Sun, H., et al. 2020. Sequential paracrine mechanisms are necessary for the therapeutic benefits of stem cell therapy. Am. J. Physiol., Cell Physiol. 319: C1141-C1150.
8. Park, J., et al. 2023. CO-Induced TTP activation alleviates cellular senescence and age-dependent hepatic steatosis via downregulation of PAI-1. aging dis. 14: 484-501.

RESEARCH USE

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