SANTA CRUZ BIOTECHNOLOGY, INC.

G6PD siRNA (m): sc-60668

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Glucose-6-phosphate 1-dehydrogenase (G6PD) plays an important role in the pentose phosphate pathway. It is a member of the glucose-6-phosphate dehydrogenase family of proteins. G6PD is a ubiquitous enzyme that produces pentose sugars for nucleic acid synthesis, but is also involved in carbohydrate degradation, as it is one of the main producers of NADPH reducing power. G6PD has NADP as a co-factor and structural element. It can be found as a homodimer or homotetramer, and is primarily detected in lymphoblasts, granulocytes and sperm. Defects in G6PD can cause chronic non-spherocytic hemolytic anemia (CNSHA), especially in areas in which malaria is an epidemic. Individuals with a high level of G6PD-deficiency are at higher risk of acute hemolytic attacks.

REFERENCES

1. Persico, M.G., et al. 1986. Isolation of human glucose-6-phosphate dehydrogenase (G6PD) cDNA clones: primary structure of the protein and unusual 5' non-coding region. Nucleic Acids Res. 14: 2511-2522.
2. Martini, G., et al. 1986. Structural analysis of the X-linked gene encoding human glucose-6-phosphate dehydrogenase. EMBO J. 5: 1849-1855.
3. Kayser, L. and Thomsen, J. 2005. Glucose-6-phosphate dehydrogenase activity in monolayer cultures of thyroid epithelial cells: TSH and inhibition of nitrogen oxide synthase affect the enzyme activity and the oxygen sensitivity of the histochemical assay. Acta Histochem. 107: 31-41.
4. Huang, C.S., et al. 2005. Genetic factors related to unconjugated hyperbilirubinemia amongst adults. Pharmacogenet. Genomics 15: 43-50.
5. Kotaka, M., et al. 2005. Structural studies of glucose-6-phosphate and $NADP^+$ binding to human glucose-6-phosphate dehydrogenase. Acta Crystallogr. D Biol. Crystallogr. 61: 495-504.
6. Parekh, S., et al. 2005. Chronic parvovirus infection and G6PD deficiency masquerading as Diamond-Blackfan anemia. Am. J. Hematol. 79: 54-57.
7. Ganea, E. and Harding, J.J. 2005. Trehalose and 6-aminohexanoic acid stabilize and renature glucose-6-phosphate dehydrogenase inactivated by glycation and by guanidinium hydrochloride. Biol. Chem. 386: 269-278.

CHROMOSOMAL LOCATION

Genetic locus: G6pdx (mouse) mapping to X A7.3.

PRODUCT

G6PD 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 G6PD shRNA Plasmid (m): sc-60668-SH and G6PD shRNA (m) Lentiviral Particles: sc-60668-V as alternate gene silencing products.

For independent verification of G6PD (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-60668A, sc-60668B and sc-60668C.

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

G6PD siRNA (m) is recommended for the inhibition of G6PD 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.

GENE EXPRESSION MONITORING

G6PD (G-12): sc-373886 is recommended as a control antibody for monitoring of G6PD 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).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor G6PD gene expression knockdown using RT-PCR Primer: G6PD (m)-PR: sc-60668-PR (20 µl, 560 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Liu, L., et al. 2016. Malic enzyme tracers reveal hypoxia-induced switch in adipocyte NADPH pathway usage. Nat. Chem. Biol. 12: 345-352.

RESEARCH USE

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