SANTA CRUZ BIOTECHNOLOGY, INC.

ChREBP siRNA (h): sc-38617

BACKGROUND

ChREBP (for carbohydrate responsive binding protein, also designated Mlx inter-actor, WBSCR14 and MondoB) is a transcription factor that binds to the carbohydrate-responsive element of the L-type pyruvate kinase gene (L-PK). ChREBP is expressed specifically in liver and is activated by high glucose and inhibited by cAMP or a high fat diet. ChREBP is likely critical for the optimal long-term storage of excess carbohydrates as fats, and may contribute to the imbalance between nutrient utilization and storage, which is characteristic of obesity. ChREBP represses E-box-dependent transcription forms and forms hetero-dimers with Mlx to bind the DNA sequence CACGTG.ChREBP is encoded by the WBSCR14 gene, which is located within the Williams-Beuren syndrome (WBS) deletion at chromosome 7q11.23. WBS is a neuro-developmental disorder affecting several systems. Loss of the encoded transcription factor may contribute to the developmental symptoms found in WBS.

REFERENCES

1. de Luis, O., et al. 2000. WBSCR14, a putative transcription factor gene deleted in Williams-Beuren syndrome: complete characterisation of the human gene and the mouse ortholog. Eur. J. Hum. Genet. 8: 215-222.
2. Yamashita, H., et al. 2001. A glucose-responsive transcription factor that regulates carbohydrate metabolism in the liver. Proc. Natl. Acad. Sci. USA 98: 9116-9121.
3. Kawaguchi, T., et al. 2001. Glucose and cAMP regulate the L-type pyruvate kinase gene by phosphorylation/dephosphorylation of the carbohydrate response element binding protein. Proc. Natl. Acad. Sci. USA 98: 13710-13715.

CHROMOSOMAL LOCATION

Genetic locus: MLXIPL (human) mapping to 7q11.23.

PRODUCT

ChREBP 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 ChREBP shRNA Plasmid (h): sc-38617-SH and ChREBP shRNA (h) Lentiviral Particles: sc-38617-V as alternate gene silencing products.

For independent verification of ChREBP (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-38617A, sc-38617B and sc-38617C.

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

ChREBP siRNA (h) is recommended for the inhibition of ChREBP 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

ChREBP (G-12): sc-515922 is recommended as a control antibody for monitoring of ChREBP 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 ChREBP gene expression knockdown using RT-PCR Primer: ChREBP (h)-PR: sc-38617-PR (20 µl, 425 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Owczarek, A., et al. 2021. Transcription factor ChREBP mediates high glucose-evoked increase in HIF-1α content in epithelial cells of renal proximal tubules. Int. J. Mol. Sci. 22: 13299.
2. Seo, E., et al. 2022. Reactive oxygen species induce HNF-4α expression via the ASK1-CREB pathway, promoting ChREBP expression and lipogenesis in hepatocytes. Life Sci. 310: 121042.

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.