

NCB5OR (V-14): sc-68686

BACKGROUND

NCB5OR, also referred to as CYB5R4 (cytochrome b5 reductase 4), is a flavohemoprotein that contains cytochrome b5 and chrome b5 reductase cytochromes. A member of the flavoprotein pyridine nucleotide cytochrome reductase family, NCB5OR is widely expressed and colocalizes with calreticulin to the endoplasmic reticulum (ER). NCB5OR has a cytochrome b5 heme-binding domain as well as one CS domain, two FAD and two iron binding motifs. NCB5OR reduces cytochrome c, methemoglobin, ferricyanide and molecular oxygen *in vitro*. NCB5OR is involved in the ER stress response pathway and plays a critical role in protecting pancreatic β -cells against oxidative stress by preventing excess buildup of reactive oxygen species (ROS). The absence of NCB5OR may cause insulin-deficient diabetes.

REFERENCES

- Andersen, G., Wegner, L., Rose, C.S., Xie, J., Zhu, H., Larade, K., Johansen, A., Ek, J., Lauenborg, J., Drivsholm, T., Borch-Johnsen, K., Damm, P., Hansen, T., Bunn, H.F. and Pedersen, O. 2004. Variation in NCB5OR: studies of relationships to type 2 diabetes, maturity-onset diabetes of the young, and gestational diabetes mellitus. *Diabetes* 53: 2992-2997.
- Zhu, H., Larade, K., Jackson, T.A., Xie, J., Ladoux, A., Acker, H., Berchner-Pfannschmidt, U., Fandrey, J., Cross, A.R., Lukat-Rodgers, G.S., Rodgers, K.R. and Bunn, H.F. 2004. NCB5OR is a novel soluble NAD(P)H reductase localized in the endoplasmic reticulum. *J. Biol. Chem.* 279: 30316-30325.
- Kurian, J.R., Bajad, S.U., Miller, J.L., Chin, N.A. and Trepanier, L.A. 2004. NADH cytochrome b5 reductase and cytochrome b5 catalyze the microsomal reduction of xenobiotic hydroxylamines and amidoximes in humans. *J. Pharmacol. Exp. Ther.* 311: 1171-1178.
- Xie, J., Zhu, H., Larade, K., Ladoux, A., Seguritan, A., Chu, M., Ito, S., Bronson, R.T., Leiter, E.H., Zhang, C.Y., Rosen, E.D. and Bunn, H.F. 2004. Absence of a reductase, NCB5OR, causes Insulin-deficient diabetes. *Proc. Natl. Acad. Sci. USA* 101: 10750-10755.
- Larade, K. and Bunn, H.F. 2006. Promoter characterization and transcriptional regulation of NCB5OR, a novel reductase necessary for pancreatic β cell maintenance. *Biochim. Biophys. Acta* 1759: 257-262.
- Larade, K., Jiang, Z.G., Dejam, A., Zhu, H. and Bunn, H.F. 2007. The reductase NCB5OR is responsive to the redox status in β cells and is not involved in the ER stress response. *Biochem. J.* 404: 467-476.
- Kurian, J.R., Longlais, B.J. and Trepanier, L.A. 2007. Discovery and characterization of a cytochrome b5 variant in humans with impaired hydroxylamine reduction capacity. *Pharmacogenet. Genomics* 17: 597-603.

CHROMOSOMAL LOCATION

Genetic locus: CYB5R4 (human) mapping to 6q14.2; Cyb5r4 (mouse) mapping to 9 E3.1.

SOURCE

NCB5OR (V-14) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of NCB5OR of human origin.

PRODUCT

Each vial contains 200 μ g IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-68686 P, (100 μ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

NCB5OR (V-14) is recommended for detection of NCB5OR of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

NCB5OR (V-14) is also recommended for detection of NCB5OR in additional species, including equine, canine, bovine and porcine.

Suitable for use as control antibody for NCB5OR siRNA (h): sc-75883, NCB5OR siRNA (m): sc-63269, NCB5OR shRNA Plasmid (h): sc-75883-SH, NCB5OR shRNA Plasmid (m): sc-63269-SH, NCB5OR shRNA (h) Lentiviral Particles: sc-75883-V and NCB5OR shRNA (m) Lentiviral Particles: sc-63269-V.

Molecular Weight of NCB5OR: 59 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

RESEARCH USE

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

PROTOCOLS

See our web site at www.scbt.com or our catalog for detailed protocols and support products.