SANTA CRUZ BIOTECHNOLOGY, INC.

NCB5OR (D-4): sc-390570

BACKGROUND

NCB5OR, also referred to as CYB5R4 (cytochrome b5 reductase 4), is a flavohemoprotein that contains cytochrome b5 and chrome b5 reductase cytodomains. 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

1. 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.
2. 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.
3. 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.
4. 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.
5. 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.
6. 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.
7. 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.

SOURCE

NCB5OR (D-4) is a mouse monoclonal antibody raised against amino acids 331-521 mapping at the C-terminus of NCB5OR of human origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

NCB5OR (D-4) is recommended for detection of NCB5OR of human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], 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).

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

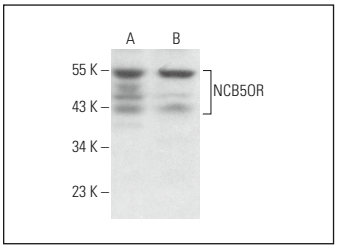
Molecular Weight of NCB5OR: 59 kDa.

Positive Controls: NCB5OR (h2): 293T Lysate: sc-173674, IMR-32 cell lysate: sc-2409 or U-251-MG whole cell lysate: sc-364176.

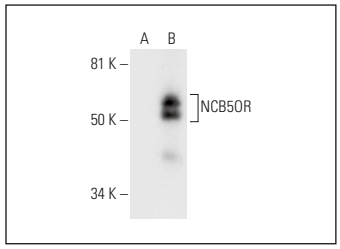
RECOMMENDED SUPPORT REAGENTS

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) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) 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.

DATA



NCB5OR (D-4): sc-390570. Western blot analysis of NCB5OR expression in IMR-32 (**A**) and U-251-MG (**B**) whole cell lysates.



NCB5OR (D-4): sc-390570. Western blot analysis of NCB5OR expression in non-transfected: sc-117752 (**A**) and human NCB5OR transfected: sc-173674 (**B**) 293T whole cell lysates.

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.