

NCB5OR (L-7): sc-100529

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

- Andersen, G., et al. 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., et al. 2004. NCB5OR is a novel soluble NAD(P)H reductase localized in the endoplasmic reticulum. *J. Biol. Chem.* 279: 30316-30325.
- Kurian, J.R., et al. 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., et al. 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., et al. 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., et al. 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 (L-7) is a mouse monoclonal antibody raised against recombinant NCB5OR of human origin.

PRODUCT

Each vial contains 100 μ g IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

STORAGE

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

APPLICATIONS

NCB5OR (L-7) is recommended for detection of NCB5OR of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 μ g per 100-500 μ g of total protein (1 ml of cell lysate)] 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.

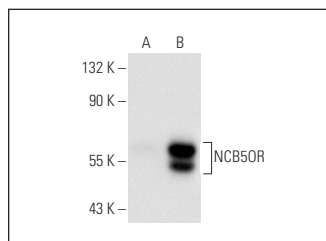
Molecular Weight of NCB5OR: 59 kDa.

Positive Controls: NCB5OR (h2): 293T Lysate: sc-173674 or HeLa whole cell lysate: sc-2200.

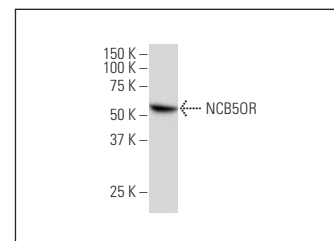
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG κ BP-HRP: sc-516102 or m-IgG κ 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).

DATA



NCB5OR (L-7): sc-100529. Western blot analysis of NCB5OR expression in non-transfected: sc-117752 (A) and human NCB5OR expression in HeLa whole cell lysates. sc-173674 (B) 293T whole cell lysates.



NCB5OR (L-7): sc-100529. Western blot analysis of NCB5OR expression in HeLa whole cell lysate.

SELECT PRODUCT CITATIONS

- Kálmán, F.S., et al. 2013. Natural mutations lead to enhanced proteasomal degradation of human NCB5OR, a novel flavoheme reductase. *Biochimie* 95: 1403-1410.
- Zámbó, V., et al. 2016. Cytosolic localization of NADH cytochrome b5 oxidoreductase (NCB5OR). *FEBS Lett.* 590: 661-671.
- Zámbó, V., et al. 2020. Investigation of the putative rate-limiting role of electron transfer in fatty acid desaturation using transfected HEK293T cells. *FEBS Lett.* 594: 530-539.
- Olivieri, M., et al. 2020. A genetic map of the response to DNA damage in human cells. *Cell* 182: 481-496.

RESEARCH USE

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