SANTA CRUZ BIOTECHNOLOGY, INC.

ND4L (H-94): sc-20665

BACKGROUND

NADH-ubiquinone oxidoreductase (complex I) is a complicated multiprotein complex located in the inner mitochondrial membrane. Human complex I is important for energy metabolism because its main function is to transport electrons from NADH to ubiquinone, which is accompanied by translocation of protons from the mitochondrial matrix to the intermembrane space. Human complex I appears to consist of 41 subunits. A small number of complex I subunits are the products of mitochondrial genes (subunits 1-7), while the remainder are nuclear encoded and imported from the cytoplasm. Various tissues from patients with neurodegenerative disease are frequently deficient in complex I. The transcript expresson of the complex I subunit 4 is significantly decreased in the cell models of Parkinson's disease (PD), suggesting that functional defects in complex I enzyme activity in PD may result from changes in mRNA levels. Complex I 24 kDa subunit is significantly reduced in occipital cortex and thalamus in patients with Down syndrome (DS) and temporal and occipital cortices in patients with Alzheimer's diseases (AD). Complex I-75 kDa subunit is significantly reduced in brain regions from patients with DS (temporal, occipital and caudate nucleus) and AD (parietal cortex). Thus, reductions of two subunits of complex I may lead to the impairment of energy metabolism and may result in neuronal cell death.

REFERENCES

1. Ton, C., et al. 1997. Identification and primary structure of five human NADH-ubiquinone oxidoreductase subunits. Biochem. Biophys. Res. Commun. 241: 589-594.
2. Loeffen, J.L., et al. 1998. cDNA of eight nuclear encoded subunits of NADH:ubiquinone oxidoreductase: human complex I cDNA characterization completed. Biochem. Biophys. Res. Commun. 253: 415-422.
3. Smeitink, J., et al. 1998. Molecular characterization and mutational analysis of the human B17 subunit of the mitochondrial respiratory chain complex I. Hum. Genet. 103: 245-250.
4. Conn, K.J., et al. 2001. Decreased expression of the NADH:ubiquinone oxidoreductase (complex I) subunit 4 in 1-methyl-4-phenylpyridinium-treated human neuroblastoma SH-SY5Y cells. Neurosci. Letts. 306: 145-148.
5. Kim, S.H., et al. 2001. The reduction of NADH ubiquinone oxidoreductase 24- and 75-kDa subunits in brains of patients with Down syndrome and Alzheimer's disease. Life Sci. 68: 2741-2750.

CHROMOSOMAL LOCATIONS

Genetic locus: ND4L (human) mapping to MT; ND4L (mouse) mapping to MT.

SOURCE

ND4L (H-94) is a rabbit polyclonal antibody raised against amino acids 3-97 of ND4L of human origin.

STORAGE

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

PRODUCT

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

APPLICATIONS

ND4L (H-94) is recommended for detection of ND4L 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).

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-rabbit IgG-HRP: sc-2004 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible goat anti-rabbit IgG-HRP: sc-2030 (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 goat anti-rabbit IgG-FITC: sc-2012 (dilution range: 1:100-1:400) or goat anti-rabbit IgG-TR: sc-2780 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

SELECT PRODUCT CITATIONS

1. Panfoli, I., et al. 2009. Evidence for aerobic metabolism in retinal rod outer segment disks. Int. J. Biochem. Cell Biol. 41: 2555-2565.
2. García-Ruiz, I., et al. 2010. Mitochondrial complex I subunits are decreased in murine nonalcoholic fatty liver disease: implication of peroxynitrite. J. Proteome Res. 9: 2450-2459.

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.