SANTA CRUZ BIOTECHNOLOGY, INC.

ND4 (A-16)-R: sc-20499-R

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

NADH:ubiquinone oxidoreductase (complex I) is an extremely 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 *trans*-location 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. NADH dehydrogenase subunit 4 (ND4) is most likely a component of the hydrophobic protein fragment of complex I. Mutations in the gene encodiing for ND4 are implicated in Leber hereditary optic neuropathy, a rare condition that can cause loss of central vision.

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 LOCATION

Genetic locus: ND4 (human) mapping to MT; Nd4 (mouse) mapping to mt.

SOURCE

ND4 (A-16)-R is an affinity purified rabbit polyclonal antibody raised against a peptide mapping within an internal region of ND4 of human origin.

PRODUCT

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

Blocking peptide available for competition studies, sc-20499 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

STORAGE

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

APPLICATIONS

ND4 (A-16)-R is recommended for detection of NADH-ubiquinone oxidoreducase chain 4 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).

Molecular Weight of ND4: 51 kDa.

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. Theas, M.S., et al. 2006. Death receptor and mitochondrial pathways are involved in germ cell apoptosis in an experimental model of autoimmune orchitis. Hum. Reprod. 21: 1734-1742.
2. Chang, C.W., et al. 2009. Increased ATP generation in the host cell is required for efficient vaccinia virus production. J. Biomed. Sci. 16: 80.
3. 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.