

BACKGROUND

NADK (NAD kinase) is a 446 amino acid protein that belongs to the NAD kinase family. Expressed at high levels in placenta and at moderate levels in colon, kidney, brain, heart, liver, spleen, lung, testis and stomach, NADK functions to catalyze the transfer of a phosphate group from ATP to NAD⁺, thereby generating NADP⁺. Once formed, NADP⁺ can be reduced to NADPH, which can subsequently act as an electron donor in biosynthetic reactions. Through its ability to catalyze the formation of NADP⁺, NADK is able to control the concentration of NADPH within the cell. NADK uses divalent metal cations (such as zinc and manganese) as cofactors and exhibits the highest rate of enzymatic activity at a pH of 7.5.

REFERENCES

- Lerner, F., et al. 2001. Structural and functional characterization of human NAD kinase. *Biochem. Biophys. Res. Commun.* 288: 69-74.
- Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 611616. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>
- Turner, W.L., et al. 2004. Cloning and characterization of two NAD kinases from *Arabidopsis* identification of a calmodulin binding isoform. *Plant Physiol.* 135: 1243-1255.

CHROMOSOMAL LOCATION

Genetic locus: NADK (human) mapping to 1p36.33; Nadk (mouse) mapping to 4 E2.

SOURCE

NADK (J-07) is a mouse monoclonal antibody raised against amino acids 1-447 representing full length NADK of human origin.

PRODUCT

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

APPLICATIONS

NADK (J-07) is recommended for detection of NADK of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)] and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

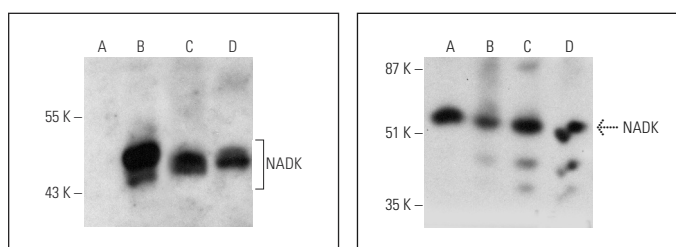
Suitable for use as control antibody for NADK siRNA (h): sc-88094, NADK siRNA (m): sc-106280, NADK shRNA Plasmid (h): sc-88094-SH, NADK shRNA Plasmid (m): sc-106280-SH, NADK shRNA (h) Lentiviral Particles: sc-88094-V and NADK shRNA (m) Lentiviral Particles: sc-106280-V.

Molecular Weight of NADK: 49 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, RAW 264.7 whole cell lysate: sc-2211 or NADK (m): 293T Lysate: sc-125682.

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).

DATA

NADK (J-07): sc-100347. Western blot analysis of NADK expression in non-transfected 293T: sc-117752 (A), mouse NADK transfected 293T: sc-125682 (B), NCI-H929 (C) and RAW 264.7 (D) whole cell lysates.

NADK (J-07): sc-100347. Western blot analysis of NADK expression in HeLa (A), Hep G2 (B), Jurkat (C) and C2C12 (D) whole cell lysates.

SELECT PRODUCT CITATIONS

- Cheng, M.L., et al. 2013. Effective NET formation in neutrophils from individuals with G6PD Taiwan-Hakka is associated with enhanced NADP⁺ biosynthesis. *Free Radic. Res.* 47: 699-709.
- Tsang, Y.H., et al. 2016. Functional annotation of rare gene aberration drivers of pancreatic cancer. *Nat. Commun.* 7: 10500.
- Tao, R., et al. 2017. Genetically encoded fluorescent sensors reveal dynamic regulation of NADPH metabolism. *Nat. Methods* 14: 720-728.
- Cheng, M.L., et al. 2019. Sedoheptulose-1,7-bisphosphate accumulation and metabolic anomalies in hepatoma cells exposed to oxidative stress. *Oxid. Med. Cell. Longev.* 2019: 5913635.
- Rabani, R., et al. 2020. Protein kinase C activates NAD kinase in human neutrophils. *Free Radic. Biol. Med.* 161: 50-59.
- Zhang, Y., et al. 2021. Upregulation of antioxidant capacity and nucleotide precursor availability suffices for oncogenic transformation. *Cell Metab.* 33: 94-109.e8.

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 for detailed protocols and support products.