SANTA CRUZ BIOTECHNOLOGY, INC.

DGUOK (G-11): sc-398101

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The Power to Question

BACKGROUND

DGUOK (deoxyguanosine kinase), also known as DGK, is a 277 amino acid protein that localizes to mitochondria and exists as multiple alternatively spliced isoforms. Functioning as a homodimer and highly expressed in a variety of tissues, including liver, muscle and brain, DGUOK uses ATP to catalyze the conversion of deoxyguanosine to dGMP. Via its catalytic activity, DGUOK is essential for the phosphorylation of purine deoxyribonucleosides in the mitochondrial matrix and is an important antiviral and chemotherapeutic tool. Defects in the gene encoding DGUOK are the cause of hepatocerebral mitochondrial DNA depletion syndrome (MDS), a group of disorders that result in reduced mtDNA (mitochondrial DNA) copy number and are characterized by liver failure and neurologic abnormalities.

REFERENCES

1. Johansson, M. and Karlsson, A. 1996. Cloning and expression of human deoxyguanosine kinase cDNA. Proc. Natl. Acad. Sci. USA 93: 7258-7262.
2. Mandel, H., et al. 2001. The deoxyguanosine kinase gene is mutated in individuals with depleted hepatocerebral mitochondrial DNA. Nat. Genet. 29: 337-341.
3. Taanman, J.W., et al. 2002. A novel mutation in the deoxyguanosine kinase gene causing depletion of mitochondrial DNA. Ann. Neurol. 52: 237-239.
4. Salviati, L., et al. 2002. Mitochondrial DNA depletion and dGK gene mutations. Ann. Neurol. 52: 311-317.
5. Taanman, J.W., et al. 2003. Mitochondrial DNA depletion can be prevented by dGMP and dAMP supplementation in a resting culture of deoxyguanosine kinase-deficient fibroblasts. Hum. Mol. Genet. 12: 1839-1845.
6. Mancuso, M., et al. 2005. New DGK gene mutations in the hepatocerebral form of mitochondrial DNA depletion syndrome. Arch. Neurol. 62: 745-747.
7. Mousson de Camaret, B., et al. 2007. Kinetic properties of mutant deoxyguanosine kinase in a case of reversible hepatic mtDNA depletion. Biochem. J. 402: 377-385.
8. Online Mendelian Inheritance in Man, OMIM™. 2007. Johns Hopkins University, Baltimore, MD. MIM Number: 601465. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
9. Dimmock, D.P., et al. 2008. Clinical and molecular features of mitochondrial DNA depletion due to mutations in deoxyguanosine kinase. Hum. Mutat. 29: 330-331.

CHROMOSOMAL LOCATION

Genetic locus: DGUOK (human) mapping to 2p13.1.

SOURCE

DGUOK (G-11) is a mouse monoclonal antibody raised against amino acids 191-277 mapping at the C-terminus of DGUOK 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

DGUOK (G-11) is recommended for detection of DGUOK 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 DGUOK siRNA (h): sc-77139, DGUOK shRNA Plasmid (h): sc-77139-SH and DGUOK shRNA (h) Lentiviral Particles: sc-77139-V.

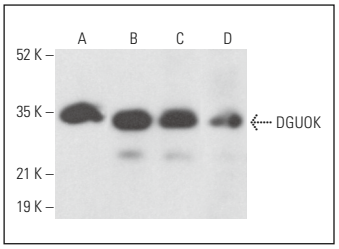
Molecular Weight of DGUOK: 28 kDa.

Positive Controls: U-87 MG cell lysate: sc-2411, K-562 whole cell lysate: sc-2203 or human kidney extract: sc-363764.

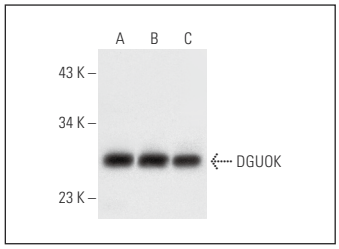
RECOMMENDED SUPPORT REAGENTS

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



DGUOK (G-11): sc-398101. Western blot analysis of DGUOK expression in K-562 (**A**), Hep G2 (**B**) and HL-60 (**C**) whole cell lysates and human kidney tissue extract (**D**).



DGUOK (G-11): sc-398101. Western blot analysis of DGUOK expression in U-87 MG (**A**) and K-562 (**B**) whole cell lysates and human kidney tissue extract (**C**).

SELECT PRODUCT CITATIONS

1. Lin, S., et al. 2019. The mitochondrial deoxyguanosine kinase is required for cancer cell stemness in lung adenocarcinoma. EMBO Mol. Med. 11: e10849.

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.