SANTA CRUZ BIOTECHNOLOGY, INC.

BCKDK (E-12): sc-374425

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

BCKDK (branched chain ketoacid dehydrogenase kinase), also known as BCKDHKIN, is a 412 amino acid mitochondrial matrix protein that exists as a monomer and contains one histidine kinase domain. Expressed ubiquitously, BCKDK catalyzes the ATP-dependent phosphorylation and subsequent inactivation of the branched-chain α-ketoacid dehydrogenase (BCKD) complex, a regulatory enzyme complex that plays a crucial role in the catabolic pathways of valine, leucine and isoleucine. Specifically, the BCKD complex functions as the second enzyme in branched-chain amino acid (BCAA) catabolism, effectively catalyzing the irreversible oxidative decarboxylation of BCAAs. Due to the ability of BCKDK to regulate the activity of the BCKD complex, BCKDK plays an essential role in the catabolic pathways of branched-chain amino acid metabolism.

CHROMOSOMAL LOCATION

Genetic locus: BCKDK (human) mapping to 16p11.2.

SOURCE

BCKDK (E-12) is a mouse monoclonal antibody raised against amino acids 1-280 mapping at the N-terminus of BCKDK 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

BCKDK (E-12) is recommended for detection of BCKDK 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 BCKDK siRNA (h): sc-93313, BCKDK shRNA Plasmid (h): sc-93313-SH and BCKDK shRNA (h) Lentiviral Particles: sc-93313-V.

Molecular Weight of BCKDK: 46 kDa.

Positive Controls: BCKDK (h4): 293T Lysate: sc-158293.

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.

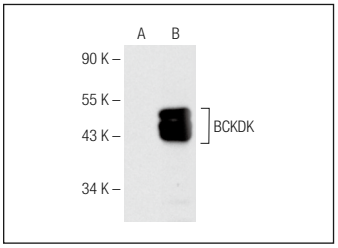
RESEARCH USE

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

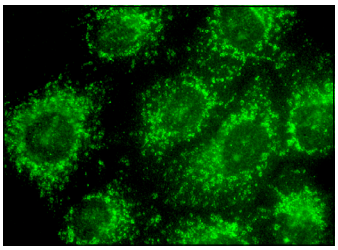
STORAGE

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

DATA



BCKDK (E-12): sc-374425. Western blot analysis of BCKDK expression in non-transfected: sc-117752 (**A**) and human BCKDK transfected: sc-158293 (**B**) 293T whole cell lysates.



BCKDK (E-12): sc-374425. Immunofluorescence staining of methanol-fixed HeLa cells showing mitochondrial localization.

SELECT PRODUCT CITATIONS

1. Xue, P., et al. 2017. BCKDK of BCAA catabolism cross-talking with the MAPK pathway promotes tumorigenesis of colorectal cancer. EBioMedicine 20: 50-60.
2. White, P.J., et al. 2018. The BCKDH kinase and phosphatase integrate BCAA and lipid metabolism via regulation of ATP-citrate lyase. Cell Metab. 27: 1281-1293.e7.
3. Tian, Q., et al. 2020. Phosphorylation of BCKDK of BCAA catabolism at Y246 by Src promotes metastasis of colorectal cancer. Oncogene 39: 3980-3996.
4. Li, H., et al. 2022. BCKDK promotes ovarian cancer proliferation and migration by activating the MEK/ERK signaling pathway. J. Oncol. 2022: 3691635.
5. Ogawa, T., et al. 2023. Downregulation of extramitochondrial BCKDH and its uncoupling from AMP deaminase in type 2 diabetic OLETF rat hearts. Physiol. Rep. 11: e15608.
6. Xu, C., et al. 2023. BCKDK regulates breast cancer cell adhesion and tumor metastasis by inhibiting TRIM21 ubiquitinate talin1. Cell Death Dis. 14: 445.
7. Yu, J.Y., et al. 2023. Cell-autonomous effect of cardiomyocyte branched-chain amino acid catabolism in heart failure in mice. Acta Pharmacol. Sin. 44: 1380-1390.
8. Zou, L., et al. 2024. FYN-mediated phosphorylation of BCKDK at Y151 promotes GBM proliferation by increasing the oncogenic metabolite N-acetyl-L-alanine. Heliyon 10: e33663.
9. Jishi, A., et al. 2024. BCKDK loss impairs mitochondrial complex I activity and drives α-synuclein aggregation in models of Parkinson's disease. Acta Neuropathol. Commun. 12: 198.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.