

PDK2 (S-15): sc-100534

BACKGROUND

Pyruvate dehydrogenase kinase family members (PDK1, 2, 3, 4) are serine kinases that catalyze the phosphorylation of the E1 α subunit of the pyruvate dehydrogenase complex (PDC). PDC activity is controlled through phosphorylation and dephosphorylation of the E1 α subunit, which leads to inactivation and reactivation, respectively. The core of PDC is composed of 60 dihydro-lipoyl acetyltransferase (E2) subunits that bind directly to PDK2 and enhance PDK2 kinase activity. Upregulation of PDK isoenzymes occurs during starvation conditions, rerouting acetyl-CoA generation by facilitating fatty acid oxidation. PDKs contain five conserved regions and are mechanistically similar to bacterial His-kinases, in that both require histidine residues for activity. In mammals, transcripts for PDK2 are ubiquitously expressed with high levels in heart and skeletal muscle and decreased levels in spleen and lung.

REFERENCES

- Gudi, R., et al. 1995. Diversity of the pyruvate dehydrogenase kinase gene family in humans. *J. Biol. Chem.* 270: 28989-28994.
- Bowker-Kinley, M.M., et al. 1998. Evidence for existence of tissue-specific regulation of the mammalian pyruvate dehydrogenase complex. *Biochem. J.* 329: 191-196.

CHROMOSOMAL LOCATION

Genetic locus: PDK2 (human) mapping to 17q21.33; Pdk2 (mouse) mapping to 11 D.

SOURCE

PDK2 (S-15) is a mouse monoclonal antibody raised against amino acids 187-276 of PDK2 of human origin.

PRODUCT

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

APPLICATIONS

PDK2 (S-15) is recommended for detection of PDK2 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 μ g per 100-500 μ g of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (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 PDK2 siRNA (h): sc-39027, PDK2 siRNA (m): sc-39028, PDK2 shRNA Plasmid (h): sc-39027-SH, PDK2 shRNA Plasmid (m): sc-39028-SH, PDK2 shRNA (h) Lentiviral Particles: sc-39027-V and PDK2 shRNA (m) Lentiviral Particles: sc-39028-V.

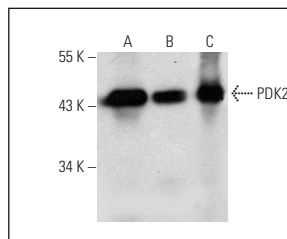
Molecular Weight of PDK2: 46 kDa.

Positive Controls: PDK2 (h): 293T Lysate: sc-158837, rat skeletal muscle extract: sc-364810 or mouse heart extract: sc-2254.

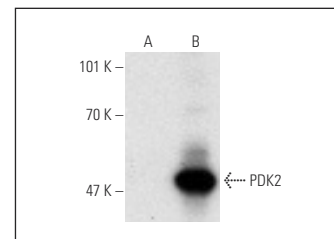
STORAGE

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

DATA



PDK2 (S-15): sc-100534. Western blot analysis of PDK2 expression in mouse heart (A), rat skeletal muscle (B) and rat heart (C) tissue extracts.



PDK2 (S-15): sc-100534. Western blot analysis of PDK2 expression in non-transfected: sc-117752 (A) and human PDK2 transfected: sc-158837 (B) 293T whole cell lysates.

SELECT PRODUCT CITATIONS

- Hwang, B., et al. 2012. Additive effects of clofibrate acid and pyruvate dehydrogenase kinase isoenzyme 4 (PDK4) deficiency on hepatic steatosis in mice fed a high saturated fat diet. *FEBS J.* 279: 1883-1893.
- Jeoung, N.H., et al. 2012. Fasting induces ketoacidosis and hypothermia in PDHK2/PDHK4-double-knockout mice. *Biochem. J.* 443: 829-839.
- Fukushima, A., et al. 2018. Acetylation contributes to hypertrophy-caused maturational delay of cardiac energy metabolism. *JCI Insight* 3: 99239.
- Collins, H.E., et al. 2019. Novel role of the ER/SR Ca²⁺ sensor, STIM1, in regulation of cardiac metabolism. *Am. J. Physiol. Heart Circ. Physiol.* 316: H1014-H1026.
- Liang, Y., et al. 2020. Dichloroacetate restores colorectal cancer chemosensitivity through the p53/miR-149-3p/PDK2-mediated glucose metabolic pathway. *Oncogene* 39: 469-485.
- Lee, J.M., et al. 2021. PDK2 deficiency prevents ovariectomy-induced bone loss in mice by regulating the RANKL-NFATc1 pathway during osteoclastogenesis. *J. Bone Miner. Res.* 36: 553-566.
- Kang, H.J., et al. 2021. Pyruvate dehydrogenase kinase 1 and 2 deficiency reduces high-fat diet-induced hypertrophic obesity and inhibits the differentiation of preadipocytes into mature adipocytes. *Exp. Mol. Med.* 53: 1390-1401.
- Lee, H., et al. 2022. Inhibition of pyruvate dehydrogenase kinase 4 in CD4⁺ T cells ameliorates intestinal inflammation. *Cell. Mol. Gastroenterol. Hepatol.* E-published.

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.