SANTA CRUZ BIOTECHNOLOGY, INC.

PDK4 (C-16): sc-14495

BACKGROUND

Pyruvate dehydrogenase kinase family members (PDK1, 2, 3 and 4) are Serine kinases that catalyze phosphorylation of the E1α subunit of the pyruvate dehydrogenase complex (PDC). PDC activity is controlled through phosphorylation and dephosphorylation of the E1α subunit, which leads to inactivation and reactivation, respectively. Upregulation of PDK isoenzymes occurs during starvation conditions, where acetyl-CoA is alternatively generated through fatty acid oxidation. PDKs contain five conserved regions and are mechanistically similar to bacterial His-kinases, since both require histidine residues for activity. In mammals, transcripts for PDK4 are most abundant in heart and skeletal muscle. PDK4 protein levels increase in starved or diabetic rat cardiac muscle and decrease upon re-feeding or Insulin exposure, suggesting that PDK4 protein levels are important for long-term regulation of PDC activity in heart.

REFERENCES

1. Gudi, R., et al. 1995. Diversity of the pyruvate dehydrogenase kinase gene family in humans. J. Biol. Chem. 270: 28989-28994.
2. 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.
3. Sugden, M.C., et al. 2000. Selective modification of the pyruvate dehydrogenase kinase isoform profile in skeletal muscle in hyperthyroidism: implications for the regulatory impact of glucose on fatty acid oxidation. J. Endocrinol. 167: 339-345.
4. Mooney, B.P., et al. 2000. Histidine modifying agents abolish pyruvate dehydrogenase kinase activity. Biochem. Biophys. Res. Commun. 267: 500-503.

CHROMOSOMAL LOCATION

Genetic locus: PDK4 (human) mapping to 7p21.3; Pdk4 (mouse) mapping to 6 A1.

SOURCE

PDK4 (C-16) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the C-terminus of PDK4 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-14495 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.

RESEARCH USE

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

APPLICATIONS

PDK4 (C-16) is recommended for detection of PDK4 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).

PDK4 (C-16) is also recommended for detection of PDK4 in additional species, including equine, canine, bovine and porcine.

Suitable for use as control antibody for PDK4 siRNA (h): sc-39030, PDK4 siRNA (m): sc-39031, PDK4 shRNA Plasmid (h): sc-39030-SH, PDK4 shRNA Plasmid (m): sc-39031-SH, PDK4 shRNA (h) Lentiviral Particles: sc-39030-V and PDK4 shRNA (m) Lentiviral Particles: sc-39031-V.

Molecular Weight of PDK4: 47 kDa.

Positive Controls: mouse skeletal muscle extract: sc-364250.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (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 donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

SELECT PRODUCT CITATIONS

1. Lei, B., et al. 2004. Paradoxical downregulation of the glucose oxidation pathway despite enhanced flux in severe heart failure. J. Mol. Cell. Cardiol. 36: 567-576.
2. Hsieh, M.C., et al. 2008. Regulation of the PDK4 isozyme by the Rb-E2F1 complex. J. Biol. Chem. 283: 27410-27417.
3. Lu, C.W., et al. 2008. Induction of pyruvate dehydrogenase kinase-3 by hypoxia-inducible factor-1 promotes metabolic switch and drug resistance. J. Biol. Chem. 283: 28106-28114.
4. Cadoudal, T., et al. 2008. Pyruvate dehydrogenase kinase 4: regulation by thiazolidinediones and implication in glyceroneogenesis in adipose tissue. Diabetes 57: 2272-2279.
5. Rodríguez-Penas, D., et al. 2011. Aliskiren affects fatty-acid uptake and lipid-related genes in rodent and human cardiomyocytes. Biochem. Pharmacol. 82: 491-504.
6. Nadal-Casellas, A., et al. 2012. Sex-dependent differences in rat hepatic lipid accumulation and insulin sensitivity in response to diet-induced obesity. Biochem. Cell Biol. 90: 164-172.

PROTOCOLS

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