SANTA CRUZ BIOTECHNOLOGY, INC.

PDH-E1α (D-6): sc-377092

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

The pyruvate dehydrogenase (PDH) complex is a nuclear-encoded mitochondrial matrix enzyme complex that functions as the primary link between glycolysis and the tricarboxylic acid (TCA) cycle by catalyzing the irreversible conversion of pyruvate into acetyl-CoA. The E1 enzyme of the PDH complex is made up of a heterotetramer of two α and two β subunits. The E1-α subunit (PDH-E1α) contains the E1 active site and plays a key role in the function of the PDH complex. The PDH complex is regulated by phosphorylation and dephosphorylation of PDH-E1α. The gene encoding for PDH-E1α maps to chromosome Xp22.12, and a 20-bp deletion in the last exon of this gene is sufficient to cause PDH deficiency, which causes a broad range of symptoms including the development of seizures, mental retardation and spasticity, as well as intermittent episodes of lactic acidosis associated with cerebellar ataxia.

CHROMOSOMAL LOCATION

Genetic locus: PDHA1 (human) mapping to Xp22.12; Pdha1 (mouse) mapping to X F4.

SOURCE

PDH-E1α (D-6) is a mouse monoclonal antibody raised against amino acids 31-161 mapping near the N-terminus of PDH-E1α of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

PDH-E1α (D-6) is available conjugated to agarose (sc-377092 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-377092 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-377092 PE), fluorescein (sc-377092 FITC), Alexa Fluor® 488 (sc-377092 AF488), Alexa Fluor® 546 (sc-377092 AF546), Alexa Fluor® 594 (sc-377092 AF594) or Alexa Fluor® 647 (sc-377092 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-377092 AF680) or Alexa Fluor® 790 (sc-377092 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

PDH-E1α (D-6) is recommended for detection of PDH-E1α of mouse, rat and 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), 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).

PDH-E1α (D-6) is also recommended for detection of PDH-E1α in additional species, including bovine and porcine.

Suitable for use as control antibody for PDH-E1α siRNA (h): sc-91064, PDH-E1α siRNA (m): sc-77407, PDH-E1α shRNA Plasmid (h): sc-91064-SH, PDH-E1α shRNA Plasmid (m): sc-77407-SH, PDH-E1α shRNA (h) Lentiviral Particles: sc-91064-V and PDH-E1α shRNA (m) Lentiviral Particles: sc-77407-V.

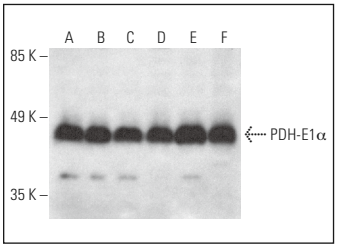
Molecular Weight of PDH-E1α: 43 kDa.

Positive Controls: Hep G2 cell lysate: sc-2227 or Sol8 cell lysate: sc-2249.

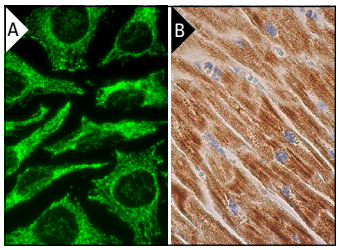
STORAGE

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

DATA



PDH-E1α (D-6) HRP: sc-377092 HRP. Direct western blot analysis of PDH-E1α expression in Hep G2 (**A**), HeLa (**B**), HeLa + Calyculin (**C**), Sol8 (**D**), C2C12 (**E**) and L8 (**F**) whole cell lysates.



PDH-E1α (D-6): sc-377092. Immunofluorescence staining of methanol-fixed HeLa cells showing mitochondrial localization (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human heart muscle tissue showing cytoplasmic staining of myocytes (**B**).

SELECT PRODUCT CITATIONS

1. Qin, X.Y., et al. 2013. The effect of acyclic retinoid on the metabolomic profiles of hepatocytes and hepatocellular carcinoma cells. PLoS ONE 8: e82860.
2. Blanquer-Rosselló, Mdel M., et al. 2016. Leptin regulates energy metabolism in MCF-7 breast cancer cells. Int. J. Biochem. Cell Biol. 72: 18-26.
3. Xiao, Z.D., et al. 2017. Energy stress-induced lncRNA FILNC1 represses c-Myc-mediated energy metabolism and inhibits renal tumor development. Nat. Commun. 8: 783.
4. Filadi, R., et al. 2018. TOM70 sustains cell bioenergetics by promoting IP3R3-mediated ER to mitochondria Ca^{2+} transfer. Curr. Biol. 28: 369-382.e6.
5. Kwak, C.H., et al. 2019. Huzhangoside A suppresses tumor growth through inhibition of pyruvate dehydrogenase kinase activity. Cancers 11: 712.
6. Li, S.Y., et al. 2020. Aldosterone from endometrial glands is benefit for human decidualization. Cell Death Dis. 11: 679.
7. Prasad, P., et al. 2021. Glutamine deficiency promotes stemness and chemoresistance in tumor cells through DRP1-induced mitochondrial fragmentation. Cell. Mol. Life Sci. 78: 4821-4845.
8. Tsai, C.W., et al. 2022. Mechanisms and significance of tissue-specific MICU regulation of the mitochondrial calcium uniporter complex. Mol. Cell 82: 3661-3676.e8.
9. Yang, E.S., et al. 2023. Andrographolide suppresses aerobic glycolysis and induces apoptotic cell death by inhibiting pyruvate dehydrogenase kinase 1 expression. Oncol. Rep. 49: 72.

RESEARCH USE

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