PDK2 siRNA – Pyruvate Dehydrogenase Kinase, Isozyme 2 Isoform 2 (Human)

PRODUCT OVERVIEW

Product Name	PDK2, siRNA
Full Product Name	PDK2 siRNA (Human)
Product Gene Name	PDK2 sirna
Product Synonym Names	PDHK2; [Pyruvate dehydrogenase; acetyl-transferring)] kinase isozyme 2 mitochondrial; Pyruvate dehydrogenase kinase isoform 2; PDH kinase 2; PDKII
Host	Synthetic
Species Reactivity	Human
Form/Format	Lyophilized powder
Purity/Purification	> 97%
Specificity	PDK2 siRNA (Human) is a target-specific 19-23 nt siRNA oligo duplexes designed to knock down gene expression.
Preparation and Storage	Shipped at 4 degree C. Store at -20 degree C for one year.
Molecular Weight	38,864 Da
OMIM	602525
3D Structure	ModBase 3D Structure for Q15119
Negative Control	siRNA Negative Control (Catalog# MBS8241404) is a non-targeting 21 nt siRNA recommended as a negative control for experiments using targeted siRNA transfection.
Quality Control	Oligonucleotide synthesis is monitored base by base through trityl analysis to ensure appropriate coupling efficiency. The oligo is subsequently purified by affinity-solid phase extraction. The annealed RNA duplex is further analyzed by mass spectrometry to verify the exact composition of the duplex. Each lot is compared to the previous lot by mass spectrometry to ensure maximum lot-to-lot consistency.
Directions for Use	We recommends transfection with 100 nM siRNA 48 to 72 hours prior to cell lysis. Before resuspending, briefly centrifuge the tube to ensure the lyophilized siRNA is at the bottom of the tube. Resuspend the siRNA oligos to an appropriate concentration with DEPC water. For each vial, suitable for 250 transfections in 24 well plate (20 pmol for each well).
Components	We offer pre-designed sets of 3 different target-specific siRNA oligo duplexes of human PDK2 gene. Each vial contains 5 nmol of lyophilized siRNA. The duplexes can be transfected individually or pooled together to achieve knockdown of the target gene, which is most commonly assessed by qPCR or western blot. Our siRNA oligos are also chemically modified (2'-OMe) at no extra charge for increased stability and enhanced knockdown in vitro and in vivo.
Applications Tested/Suitable for PDK2 sirna	RNA Interference (RNAi)
Related Product Information for PDK2 sirna	MBS8204962 is an siRNA targeting PDK2. Also known as PDK2 siRNA (Human). Reactive in Human. Host: Synthetic. siRNA to inhibit PDK2 expression using RNA interference
Other Notes	Small volumes of PDK2 sirna vial(s) may occasionally become entrapped in the seal of the product vial during shipment and storage. If necessary, briefly centrifuge the vial on a tabletop centrifuge to dislodge any liquid in the container`s cap. Certain products may require to ship with dry ice and additional dry ice fee may apply.

ADDITIONAL DETAILS

NCBI/Uniprot data below describe general gene information for PDK2. It may not necessarily be applicable to this product.

NCBI GI #	315630349
NCBI GeneID	5164
NCBI Accession #	NP_001186827.1
UniProt Primary Accession #	Q15119
UniProt Secondary Accession #	Q6P515; Q9BS05; A8K3A7; B3KNW0
UniProt Related Accession #	Q15119
GenBank Nucleotide #	NM_001199898.1
NCBI Official Full Name	pyruvate dehydrogenase kinase, isozyme 2 isoform 2
NCBI Official Synonym Full Names	pyruvate dehydrogenase kinase, isozyme 2
NCBI Official Symbol	PDK2
NCBI Official Synonym Symbols	PDHK2; PDKII
UniProt Protein Name	[Pyruvate dehydrogenase (acetyl-transferring)] kinase isozyme 2, mitochondrial
UniProt Synonym Protein Names	Pyruvate dehydrogenase kinase isoform 2; PDH kinase 2; PDKII
UniProt Gene Name	PDK2
UniProt Synonym Gene Names	PDHK2; PDH kinase 2; PDKII
UniProt Entry Name	PDK2_HUMAN
NCBI Protein Information	pyruvate dehydrogenase kinase, isozyme 2
NCBI Summary for PDK2	This gene encodes a member of the pyruvate dehydrogenase kinase family. The encoded protein phosphorylates pyruvate dehydrogenase, down-regulating the activity of the mitochondrial pyruvate dehydrogenase complex. Overexpression of this gene may play a role in both cancer and diabetes. Alternatively spliced transcript variants encoding multiple isoforms have been observed for this gene. [provided by RefSeq, Dec 2010]

UniProt Comments for PDK2	PDHK2: an atypical protein kinase associated with the mitochondrial matrix. The PDHKs play crucial roles in switching metabolic flux from oxidative phosphorylation towards glycolysis. PDHK2 is expressed in all tissues. Contains a HATPase_c catalytic domain, found in several ATP-binding proteins including protein histidine kinases (PHKs), PHDKs, DNA gyrase B, topoisomerases, heat shock proteins, and DNA mismatch repair proteins. PDHK regulates glucose oxidation through inhibitory phosphorylation of the E1 alpha subunit of the mitochondrial pyruvate dehydrogenase complex (PDHC) at any one of 3 inhibitory serine residues. Inhibitory sites 1, 2, and 3 correspond to S293, S300, and S232 in human PDHA1, respectively. Four PDHK isoenzymes have been described, each with different site specificity: all four phosphorylate sites 1 and 2 but at different rates; for site 1 PDHK2 >PDHK4 >PDHK1 >PDHK3; for site 2, PDHK3> PDHK4 > PDHK2 > PDHK1. Only PDHK1 phosphorylates site 3. PDHKs are recruited to the PDHC by binding to a lipoyl group covalently attached to the inner lipoyl domain of the E2 component. PDHA1 deficiency is the most common enzyme defect in patients with primary lactic acidosis. Suppression of PDH by PDHK inhibits the conversion of pyruvate to acetyl-CoA, attenuates mitochondrial respiration, and may contribute to the increased lactate production observed in many tumors. The PDH pathway is repressed in a majority of non-small cell lung carcinomas. Inhibited by AZD7545, dichloroacetate (DCA), and radicicol. Radicicol inhibits kinase activity by binding directly to the ATP-binding pocket of PDHK, similar to HSP90 from the same ATPase/kinase superfamily. Protein type: Mitochondrial; Protein kinase, atypical; EC 2.7.11.2; Kinase, protein; ATYPICAL group; PDHK family; PDHK subfamily Chromosomal Location of Human Ortholog: 17q21.33 Cellular Component: nucleoplasm; mitochondrion; mitochondrial matrix; cytoplasm; mitochondrial pyruvate dehydrogenase complex Molecular Function: protein homodimerization activity; pyruvate dehydrogenase (acetyl-transferring) kinase activity; ATP binding; protein kinase activity Biological Process: cellular metabolic process; insulin receptor signaling pathway; regulation of pH; glucose metabolic process; regulation of gluconeogenesis; cellular response to nutrient; regulation of acetyl-CoA biosynthetic process from pyruvate; glucose homeostasis; pyruvate metabolic process; protein amino acid phosphorylation
Research Articles on PDK2	**1.** The final compound of this series, 2-[(2,4-dihydroxyphenyl)sulfonyl]isoindoline-4,6-diol, designated PS10, inhibits all four PDK isoforms with IC50 = 0.8 muM for PDK2.
Precautions	All of MyBioSource's Products are for scientific laboratory research purposes and are not for diagnostic, therapeutics, prophylactic or in vivo use. Through your purchase, you expressly represent and warrant to MyBioSource that you will properly test and use any Products purchased from MyBioSource in accordance with industry standards. MyBioSource and its authorized distributors reserve the right to refuse to process any order where we reasonably believe that the intended use will fall outside of our acceptable guidelines.
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