Hexokinase-2 (HK-2) Human Active Protein

PRODUCT OVERVIEW

Product Name	Hexokinase-2 (HK-2), Active Protein
Full Product Name	Recombinant Human Hexokinase-2
Product Gene Name	HK-2 active protein
Product Synonym Names	HK2 Human; Hexokinase-2 Human Recombinant; Hexokinase-2; EC 2.7.1.1; HK2; Hexokinase type II; HK II; Muscle form hexokinase; HXK2; DKFZp686M1669
Sequence	MGSSHHH HHH SSGLVPRGSH MIASHLLAYF FTELNHDQVQ KVDQYLYHMR LSDETLLEIS KRFRKEMEKG LGATTHPTAA VKMLPTFVRS TPDGTEHGEF LALDLGGTNF RVLWVKVTDN GLQKVEMENQ IYAIPEDIMR GSGTQLFDHI AECLANFMDK LQIKDKKLPL GFTFSFPCHQ TKLDESFLVS WTKGFKSSGV EGRDVVALIR KAIQRRGDFD IDIVAVVNDT VGTMMTCGYD DHNCEIGLIV GTGSNACYME EMRHIDMVEG DEGRMCINME WGAFGDDGSL NDIRTEFDQE IDMGSLNPGK QLFEKMISGM YMGELVRLIL VKMAKEELLF GGKLSPELLN TGRFETKDIS DIEGEKDGIR KAREVLMRLG LDPTQEDCVA THRICQIVST RSASLCAATL AAVLQRIKEN KGEERLRSTI GVDGSVYKKH PHFAKRLHKT VRRLVPGCDV RFLRSEDGSG KGAAMVTAVA YRLADQHRAR QKTLEHLQLS HDQLLEVKRR MKVEMERGLS KETHASAPVK MLPTYVCATP DGTEKGDFLA LDLGGTNFRV LLVRVRNGKW GGVEMHNKIY AIPQEVMHGT GDELFDHIVQ CIADFLEYMG MKGVSLPLGF TFSFPCQQNS LDESILLKWT KGFKASGCEG EDVVTLLKEA IHRREEFDLD VVAVVNDTVG TMMTCGFEDP HCEVGLIVGT GSNACYMEEM RNVELVEGEE GRMCVNMEWG AFGDNGCLDD FRTEFDVAVD ELSLNPGKQR FEKMISGMYL GEIVRNILID FTKRGLLFRG RISERLKTRG IFETKFLSQI ESDCLALLQV RAILQHLGLE STCDDSIIVK EVCTVVARRA AQLCGAGMAA VVDRIRENRG LDALKVTVGV DGTLYKLHPH FAKVMHETVK DLAPKCDVSF LQSEDGSGKG AALITAVACR IREAGQR
Host	E Coli
Form/Format	The protein (1mg/ml) contains 20mM Tris-HCl pH8.0 and 10% glycerol. Sterile filtered colorless solution.
Purity/Purification	Greater than 90.0% as determined by SDS-PAGE.
Preparation and Storage	Store at 4 degree C if entire vial will be used within 2-4 weeks.Store, frozen at -20 degree C for longer periods of time. For long term storage it is recommended to add a carrier protein (0.1% HSA or BSA). Please avoid freeze-thaw cycles.
Molecular Weight	102,380 Da
OMIM	601125
3D Structure	ModBase 3D Structure for P52789
Active Protein Note	Protein activity can be an ambiguous term. Please refer to the data sheet or inquire with Technical Support to determine the definition of activity for this product.
Biological Activity	Specific activity is 3-4 units/ml obtained by measuring the increase of NADPH in absorbance at 340 nm resulting from the reduction of NADP. In the coupled mode, one unit will produce 1.0 umole of NADPH per minute as glucose is phosphorylated by ATP at pH 7.4 at 30C.
Product Categories/Family for HK-2 active protein	Protein Kinases; Enzymes; Hexokinase

Related Product Information for HK-2 active protein	**Description:** HK2 Human Recombinant produced in E Coli is a single, non-glycosylated, polypeptide chain (aa 1-917) fused to a 20 His tag at the N-terminal encoding the sequence of 937 amino acids in total and having a molecular mass of 104.1 kDa.HXK2 is purified by proprietary chromatographic techniques. **Introduction:** Hexokinases phosphorylate glucose to produce glucose-6-phosphate, thus committing glucose to the glycolytic pathway. Hexokinase 2 is the predominant form found in skeletal muscle. It localizes to the outer membrane of mitochondria. Expression of this gene is insulin-responsive, and studies in rat suggest that it is involved in the increased rate of glycolysis seen in rapidly growing cancer cells.
Other Notes	Small volumes of HK-2 active protein 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.
Searchable Terms for HK-2 purchase	MBS142773 is an active protein targeting HK-2. Also known as Recombinant Human Hexokinase-2. Host: E Coli.

ADDITIONAL DETAILS

NCBI/Uniprot data below describe general gene information for HK-2. It may not necessarily be applicable to this product.

NCBI GI #	15553127
NCBI GeneID	3099
NCBI Accession #	NP_000180.2
UniProt Primary Accession #	P52789
UniProt Secondary Accession #	Q8WU87; Q9UN82; D6W5J2
UniProt Related Accession #	P52789
GenBank Nucleotide #	NM_000189.4
NCBI Official Full Name	hexokinase-2
NCBI Official Synonym Full Names	hexokinase 2
NCBI Official Symbol	HK2
NCBI Official Synonym Symbols	HKII; HXK2
UniProt Protein Name	Hexokinase-2
UniProt Synonym Protein Names	Hexokinase type II; HK II; Muscle form hexokinase
Protein Family	Hexokinase
UniProt Gene Name	HK2
UniProt Synonym Gene Names	HK II
UniProt Entry Name	HXK2_HUMAN
NCBI Protein Information	hexokinase-2; HK II; hexokinase type II; hexokinase-2, muscle; muscle form hexokinase
NCBI Summary for HK-2	Hexokinases phosphorylate glucose to produce glucose-6-phosphate, the first step in most glucose metabolism pathways. This gene encodes hexokinase 2, the predominant form found in skeletal muscle. It localizes to the outer membrane of mitochondria. Expression of this gene is insulin-responsive, and studies in rat suggest that it is involved in the increased rate of glycolysis seen in rapidly growing cancer cells. [provided by RefSeq, Apr 2009]

UniProt Comments for HK-2	HK2: a glycolytic enzyme that catalyzes the reaction ATP + D-hexose = ADP + D-hexose 6-phosphate. The first and rate-limiting step in glycosis, a pathway that produces energy in the form of ATP from glucose. An allosteric enzyme inhibited by its product glucose-6-phosphate (Glc-6-P). The predominant hexokinase isozyme expressed in insulin-responsive tissues such as skeletal muscle. Acts as a ""glucose sensor"" by trapping glucose inside the cell by catalyzing its phosphorylation to produce Glc-6-P. In vertebrates there are four major glucose-phosphorylating isoenzymes, designated hexokinase I, II, III and IV (glucokinase). Genetic variations of HK2 do not appear to contribute to NIDDM. Protein type: Carbohydrate Metabolism - galactose; Mitochondrial; EC 2.7.1.1; Carbohydrate Metabolism - fructose and mannose; Carbohydrate Metabolism - starch and sucrose; Carbohydrate Metabolism - glycolysis and gluconeogenesis; Kinase, other; Carbohydrate Metabolism - amino sugar and nucleotide sugar Chromosomal Location of Human Ortholog: 2p13 Cellular Component: mitochondrial outer membrane; membrane; cytosol Molecular Function: hexokinase activity; mannokinase activity; fructokinase activity; glucokinase activity; ATP binding; glucose binding Biological Process: lactation; apoptotic mitochondrial changes; glycolysis; hexose transport; glucose 6-phosphate metabolic process; carbohydrate metabolic process; carbohydrate phosphorylation; glucose metabolic process; cell glucose homeostasis; pathogenesis; regulation of glucose import; glucose transport; transmembrane transport
Research Articles on HK-2	**1.** High HK2 expression combined with low phosphorylated PDHA1 expression in the invasive front lesions of colorectal tumors is predictive of tumor aggressiveness and survival.
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