

BACKGROUND

Pyruvate kinase (EC:2.7.1.40) (PK) catalyses the final step in glycolysis, the conversion of phosphoenolpyruvate to pyruvate with concomitant phosphorylation of ADP to ATP:¹

"ADP + phosphoenolpyruvate = ATP + pyruvate"

The product pyruvate can be converted to acetyl CoA and can enter the TCA cycle. Under conditions where cells carry out anaerobic metabolism, the pyruvate is converted to lactate. It is now known that there are three isozymes of pyruvate kinase in human tissues. Isozyme I is found in erythrocytes and liver, isozyme II in kidney, and isozyme III in liver, kidney, leukocytes, skeletal muscle, and cardiac muscle.²

Pyruvate kinase is regulated indirectly by insulin and glucagon, which control a protein kinase. This protein kinase phosphorylates pyruvate kinase to inactivate it and dephosphorylates the enzyme to activate it. Glucagon signals fasting (no glucose available), and insulin signals the opposite. These two signaling molecules--in conjunction with the protein kinase--prevent pyruvate kinase from being active at the same time as the enzymes which catalyze the reverse reaction (pyruvate carboxylase and phosphoenolpyruvate carboxykinase), preventing a futile cycle.³ Pyruvate kinase also serves as a regulatory enzyme for gluconeogenesis, a biochemical pathway in which the liver generates glucose from pyruvate and other substrates. When pyruvate kinase is inhibited by phosphorylation (which occurs in the fasting state, via glucagon), phosphoenolpyruvate is prevented from conversion to pyruvate. Instead, it is converted to glucose in a series of gluconeogenesis reactions that are mostly (but not exactly) the reverse sequence of glycolysis. The glucose thus produced is expelled from the liver, providing energy for vital tissues in the fasting state.⁴

References:

1. Muirhead H: Biochem. Soc. Trans. 18:193, 1990.
2. Larsen T M et al: Biochemistry 33:6301, 1994.
3. Miyanaga, O et al: J. Biol. Chem. 257:10617, 1982.
4. Clifton D et al: Genetics. 88:1-11, 1978.

TECHNICAL INFORMATION

Source: Anti-Pyruvate kinase is a rabbit polyclonal antibody raised against E. coli-expressed protein containing N- & C-terminal sequences of human Pyruvate kinase.

Specificity and Sensitivity: This antibody specifically detects endogenous levels of Pyruvate kinase. The molecular weight of detected Pyruvate kinase is 62 kDa. This antibody does not cross-react with other proteins.

Storage Buffer: 0.1 M PBS (pH 7.2), 0.1% glycine, 0.1% sodium azide, 0.1% BSA, 50% glycerol.

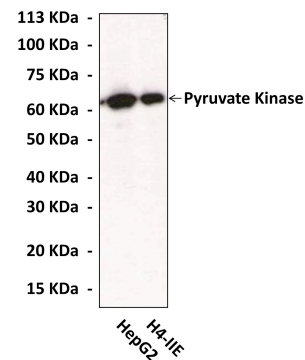
Storage: Store at -20°C, 4°C for frequent use. Avoid repeated freeze-thaw cycles.

APPLICATIONS

Application:	*Dilution:
WB	1:1000
IP	n/d
IHC	n/d
ICC	n/d
FACS	n/d

**Optimal dilutions must be determined by end user.*

QUALITY CONTROL DATA



Specific detection of Pyruvate Kinase proteins from HepG2 and H4-IIE cells in Western blot using Pyruvate Kinase Rabbit Polyclonal Antibody.

