10320 Camino Santa Fe, Suite G
San Diego, CA 92121
Tel: 858.875.1900 Fax: 858.875.1999

GCK Antibody (N-term)

Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AW5177

Product Information

Application	WB
Primary Accession	P35557
Reactivity	Mouse, Rat, Human
Host	Rabbit
Clonality	Polyclonal
Calculated MW	52191
Isotype	Rabbit IgG
Antigen Source	HUMAN

Additional Information

Gene ID	2645
Antigen Region	1-30
Other Names	GCK; Glucokinase; Hexokinase type IV; Hexokinase-4; Hexokinase-D
Dilution	WB~~1:1000
Target/Specificity	This GCK antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide between 1-30 amino acids from the N-terminal region of human GCK.
Format	Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is prepared by Saturated Ammonium Sulfate (SAS) precipitation followed by dialysis against PBS.
Storage	Maintain refrigerated at 2-8°C for up to 2 weeks. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
Precautions	GCK Antibody (N-term) is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	GCK {ECO:0000303|PubMed:17573900, ECO:0000312|HGNC:HGNC:4195}
Function	Catalyzes the phosphorylation of hexose, such as D-glucose, D-fructose and D-mannose, to hexose 6-phosphate (D-glucose 6-phosphate, D-fructose 6-phosphate and D-mannose 6-phosphate, respectively) (PubMed:11916951, PubMed:15277402, PubMed:17082186, PubMed:18322640,

PubMed:19146401, PubMed:25015100, PubMed:7742312, PubMed:8325892). Compared to other hexokinases, has a weak affinity for D-glucose, and is effective only when glucose is abundant (By similarity). Mainly expressed in pancreatic beta cells and the liver and constitutes a rate-limiting step in glucose metabolism in these tissues (PubMed:11916951, PubMed:15277402, PubMed:18322640, PubMed:25015100, PubMed:8325892). Since insulin secretion parallels glucose metabolism and the low glucose affinity of GCK ensures that it can change its enzymatic activity within the physiological range of glucose concentrations, GCK acts as a glucose sensor in the pancreatic beta cell (By similarity). In pancreas, plays an important role in modulating insulin secretion (By similarity). In liver, helps to facilitate the uptake and conversion of glucose by acting as an insulin-sensitive determinant of hepatic glucose usage (By similarity). Required to provide D-glucose 6-phosphate for the synthesis of glycogen (PubMed:8878425). Mediates the initial step of glycolysis by catalyzing phosphorylation of D-glucose to D-glucose 6-phosphate (PubMed:7742312).

Cellular Location

Cytoplasm. Nucleus. Mitochondrion {ECO:0000250|UniProtKB:P17712}. Note=Under low glucose concentrations, GCK associates with GCKR and the inactive complex is recruited to the hepatocyte nucleus.

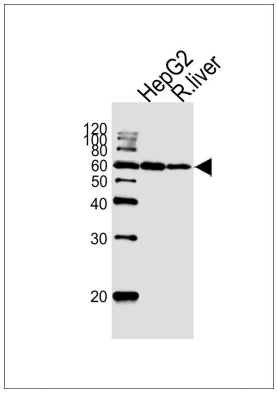
Background

Hexokinases phosphorylate glucose to produce glucose-6-phosphate, thus committing glucose to the glycolytic pathway. Alternative splicing of the gene for GCK results in three tissue-specific forms of glucokinase, one found in pancreatic islet beta cells and two found in liver. The protein localizes to the outer membrane of mitochondria. In contrast to other forms of hexokinase, this enzyme is not inhibited by its product glucose-6-phosphate but remains active while glucose is abundant. Mutations in the gene have been associated with non-insulin dependent diabetes mellitus (NIDDM), also called maturity onset diabetes of the young, type 2 (MODY2); mutations have also been associated with persistent hyperinsulinemic hypoglycemia of infancy (PHHI).

References

Gloyn, A.L., et al., Diabetes 52(9):2433-2440 (2003).
Pruhova, S., et al., Diabetologia 46(2):291-295 (2003).
Rizzo, M.A., et al., J. Biol. Chem. 277(37):34168-34175 (2002).
Cao, H., et al., Hum. Mutat. 20(6):478-479 (2002).
Barrio, R., et al., J. Clin. Endocrinol. Metab. 87(6):2532-2539 (2002).

Images



Western blot analysis of lysates from HepG2 cell line and rat liver tissue lysate(from left to right), using GCK Antibody (M1)(Cat. #AW5177). AW5177 was diluted at 1:1000 at each lane. A goat anti-rabbit IgG H&L(HRP) at 1:10000 dilution was used as the secondary antibody.