SANTA CRUZ BIOTECHNOLOGY, INC.

GCK (G-5): sc-55496

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Glucokinase (also designated hexokinase IV, HXKIV or GCK) plays a key role in the regulation of glucose-induced Insulin secretion. GCK is expressed in pancreatic beta cells where it functions as the major glucose sensor of the body, determining the "set point" for Insulin secretion. GCK is also expressed in the liver, where it catalyzes the first committed step in the disposal of glucose. Phosphorylation of glucose by glucokinase appears to be the rate-limiting step for glucose catabolism. A lack of glucokinase activity leads to reduced Insulin secretion and hyperglycemia, and has been implicated as a cause for maturity onset diabetes of the youth (MODY). In fact, heterozygous point mutations in the gene encoding GCK have been detected in individuals suffering from MODY.

REFERENCES

1. De Vos, A., et al. 1995. Human and rat β cells differ in glucose transporter but not in glucokinase gene expression. J. Clin. Invest. 96: 2489-2495.
2. Hosokawa, H., et al. 1995. Upregulated hexokinase activity in isolated islets from diabetic 90% pancreatectomized rats. Diabetes 44: 1328-1333.
3. Grupe, A., et al. 1995. Transgenic knockouts reveal a critical requirement for pancreatic β cell glucokinase in maintaining glucose homeostasis. Cell 83: 69-78.
4. Liang, Y., et al. 1995. Variable effects of maturity onset diabetes of youth (MODY)-associated glucokinase mutations on substrate interactions and stability of the enzyme. Biochem. J. 309: 167-173.
5. Bali, D., et al. 1995. Animal model for maturity onset diabetes of the young generated by disruption of the mouse glucokinase gene. J. Biol. Chem. 270: 21464-21467.
6. Tu, J., et al. 1996. Glucose regulates the maximal velocities of glucokinase and glucose utilization in the immature fetal rat pancreatic islet. Diabetes 45: 1068-1075.
7. Heimberg, H., et al. 1996. The glucose sensor protein glucokinase is expressed in glucagon-producing α cells. Proc. Natl. Acad. Sci. USA 93: 7036-7041.
8. Ferre, T., et al. 1996. Correction of diabetic alterations by glucokinase. Proc. Natl. Acad. Sci. USA 93: 7225-7230.

CHROMOSOMAL LOCATION

Genetic locus: GCK (human) mapping to 7p13.

SOURCE

GCK (G-5) is a mouse monoclonal antibody raised against amino acids 318-405 mapping near the C-terminus of GCK (glucokinase) of human origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

GCK (G-5) is recommended for detection of GCK of 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) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for GCK siRNA (h): sc-35458, GCK shRNA Plasmid (h): sc-35458-SH and GCK shRNA (h) Lentiviral Particles: sc-35458-V.

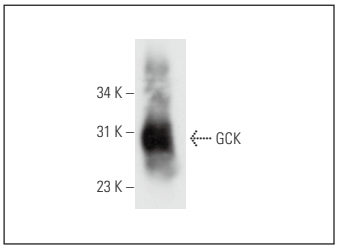
Molecular Weight of GCK: 50 kDa.

Positive Controls: Hep G2 cell lysate: sc-2227.

RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

DATA



GCK (G-5): sc-55496. Western blot analysis of human recombinant GCK protein.

SELECT PRODUCT CITATIONS

1. Dhanesha, N., et al. 2012. Inhibition of 11β-hydroxysteroid dehydrogenase 1 by carbenoxolone affects glucose homeostasis and obesity in db/db mice. Clin. Exp. Pharmacol. Physiol. 39: 69-77.

STORAGE

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

RESEARCH USE

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