

## L-GLK

### Glucokinase, Isoform 3

human, recombinant, *E. coli*

Cat. No.	Amount
PR-855	10 µg

For *in vitro* use only  
Quality guaranteed for 12 months  
Store at -80°C

#### Avoid freeze / thaw cycles

#### Form

Liquid. Supplied in 20 mM Tris-Cl pH 8.0, 25% Glycerol, 100 mM KCl, 1 mM DTT, 0.2 mM EDTA.

#### Application

Maybe used for the phosphorylation of Glucose.

#### Activity

1 unit equals 1 nanogram (ng) of purified protein.

#### Purity

> 95% by SDS-PAGE

#### Description

The phosphorylation of glucose at the sixth carbon position is the first step in glycolysis. Glucokinase is a structurally and functionally unique member of the hexokinase family. Glucokinase is expressed only in mammalian liver and pancreatic islet beta cells.

Because of its unique functional characteristics, the enzyme plays an important regulatory role in glucose metabolism. Defects in the glucokinase gene have long been suspected contributors to the genetic susceptibility to noninsulin-dependent diabetes mellitus. It is suggested that mutant GCK leads to chronic hyperglycemia by raising the threshold of circulating glucose levels which induces insulin secretion. Given the central role of glucokinase in the regulation of insulin release, it is understandable that mutations in the GCK gene can cause both hyper- and hypoglycemia. Recently, a novel class of drugs that stimulate the GK molecule directly have been discovered, which offer a new principle for drug therapy of diabetes.

#### Selected References:

- Gloyn, A.L. et al. (2003) Glucokinase (GCK) mutations in hyper- and hypoglycemia: maturity-onset diabetes of the young, permanent neonatal diabetes, and hyperinsulinemia of infancy. *Hum. Mutat.* **22**:353-362.
- Shiota, M. et al. (2001) Glucokinase gene locus transgenic mice are resistant to the development of obesity-induced type 2 diabetes. *Diabetes* **50**:622-629.
- Matsutani, A. et al. (1992) A polymorphic (CA)<sub>n</sub> repeat element maps the human glucokinase gene (GCK) to chromosome 7p. *Genomics* **12**:319-325.
- Velho, G. et al. (1992) Primary pancreatic beta-cell secretory defect caused by mutations in glucokinase gene in kindreds of maturity onset diabetes of the young. *Lancet* **340**:444-448.