

# Glucokinase (EC 2.7.1.2), *Escherichia coli*

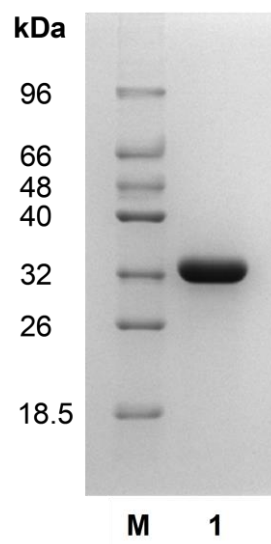
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|-------------------------|---------------------|
| <b>Catalogue number</b> | <b>Presentation</b> |
| AE00171                 | 1400 U (14.5 mL)    |

## Description

*Escherichia coli* glucokinase (EC 2.7.1.2) is an intracellular enzyme responsible for the phosphorylation of glucose to glucose-6-phosphate using ATP. In contrast to those of vertebrates, glucokinases from bacteria are functionally distinct from hexokinases (EC 2.7.1.1) with respect to their more absolute specificity for glucose. The crystal structure of *E. coli* glucokinase has been determined (PDB coordinates 1Q18 and 1S22), revealing a two domain architecture with the active site located in a deep cleft formed between the two domains. The enzyme reveals a dimeric structure and presents a similar fold to human and yeast hexokinases. The NZYtech enzyme is provided in 3.2 M ammonium sulphate. Swirl the enzyme mix immediately prior to use.

## Purity

Glucokinase has been determined to be >95% pure, according to –sodium dodecyl sulphate polyacrylamide gel electrophoresis (SDS-PAGE) followed by Coomassie blue staining (Figure 1).



**Figure 1.** SDS-PAGE analysis of *E. coli* glucokinase. Electrophoresis was performed using a 10% polyacrylamide gel. Lane M, molecular weight marker; Lane 1, purified glucokinase from *E. coli* K12 (35 kDa).

## Storage temperature

Glucokinase should be stored at 2 °C to 8 °C.

## Temperature and pH optimum

The optimum pH and temperature are 7.5 and 25 °C, respectively.

## Activity

100 U/ml

## Unit Definition

One unit is defined as the amount of enzyme required to produce 1  $\mu\text{mol}$  of NADPH per minute from  $\text{NADP}^+$  in a reaction mixture containing 0.2 M Imidazole, pH 7.6, 0.3 M glucose, 10 mM  $\text{MgCl}_2$ , 3 mM ATP, 2 U glucose-6-phosphate dehydrogenase and 1 mM  $\text{NADP}^+$ , at 25 °C.

## Substrate specificity

In contrast to the glucokinases of vertebrates, which are isoforms of hexokinases with a broad specificity for hexoses, this *E. coli* enzyme is very specific for glucose.

## References

Meyer et al. (1997) *Journal of Bacteriology* 179, 1298-1306. Lunin et al. (2004) *Journal of Bacteriology* 186, 6915-6927.

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