

## Product Information

### Pyruvate Kinase M2, human

recombinant, expressed in *Escherichia coli*

Catalog Number **SAE0021**

Storage Temperature  $-20\text{ }^{\circ}\text{C}$

CAS RN 9001-59-6

EC 2.7.1.40

Synonyms: PKM2, Tumor M2-PK, OPA-interacting protein 3 (OIP-3), Pyruvate kinase 3 (PK3), Pyruvate kinase muscle isozyme, Cytosolic Thyroid hormone-binding protein (CTHBP)

### Product Description

Pyruvate kinase (PK) is an important glycolytic enzyme catalyzing the last step of glycolysis, transferring a phosphate group from phospho(enol)pyruvate to ADP to yield one molecule of ATP and one molecule of pyruvate. Human Pyruvate kinase appears in four major forms:

- L (found in liver)
- R (found in erythrocytes)
- M1 (found in muscle and brain tissues)
- M2 (the dominant isoform, found in proliferating tissues)

The M2 isoform (PKM2) is involved in the regulation of cell proliferation, cell size, and apoptosis.<sup>1</sup> PKM2 is predominantly found in many human cancers and in embryonic tissues.<sup>2</sup>

While all PK enzymes require potassium ions for their activity, PKM2 also requires fructose-1,6-bisphosphate (FBP) to stabilize its active tetrameric form.<sup>3</sup>

PKM2 functions as a cytosolic thyroid hormone binding protein (CTHBP)<sup>4</sup> and as a phosphotyrosine binding protein.<sup>5</sup> The binding of phosphotyrosine peptides to PKM2 results in the release of the allosteric activator FBP leading to inhibition of PKM2 activity. This regulation of PKM2 diverts glucose metabolites from energy production to anabolic processes when cells are stimulated by certain growth factors such as IGF.<sup>5</sup>

This recombinant human PKM2 (P14618) product is expressed in *E. coli*, with a predicted molecular mass of 58 kDa. The product is lyophilized from a buffered solution containing phosphate buffer, pH 7.5, NaCl, DTT, and a carbohydrate stabilizer. This product has been used as a standard for an activity assay for serum tumor PKM2.<sup>6</sup>

Unit definition: One unit will convert 1.0  $\mu\text{mole}$  of phospho(enol)pyruvate to pyruvate per minute at pH 7.6 at  $37\text{ }^{\circ}\text{C}$ , in the presence of 1 mM fructose-1,6-bisphosphate.

### Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

### Preparation Instructions

Reconstitute in 30% Glycerol or in 30 mM fructose-1,6-bisphosphate to a final concentration of 1–2 mg protein/mL.

### Storage/Stability

Store the product at  $-20\text{ }^{\circ}\text{C}$ .

After reconstitution, the product can be stored at  $2\text{--}8\text{ }^{\circ}\text{C}$  for at least 24 hours with minimal loss of activity or frozen in working aliquots at  $-20\text{ }^{\circ}\text{C}$ . Frozen aliquots can be kept for at least one month. Repeated freezing and thawing is not recommended. Do not store in a frost-free freezer.

### References

1. Spoden, G.A. *et al.*, *Exp. Cell Res.*, **315(16)**, 2765-2774 (2009).
2. Iqbal, M.A. *et al.*, *FEBS Lett.*, **588(16)**, 2685-2692 (2014).
3. Ashizawa, K. *et al.*, *Biochemistry*, **30(29)**, 7105-7111 (1991).
4. Kato, H. *et al.*, *Proc. Nat. Acad. Sci. USA*, **86(20)**, 7861-7865 (1989). (Correction: *Proc. Nat. Acad. Sci. USA*, **87(4)**, 1625 (1990).)
5. Christofk, H.R. *et al.*, *Nature*, **452(7184)**, 181-186 (2008).
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