

## Product Information

### **Protein Kinase G 1 $\alpha$** **from bovine lung**

Catalog Number **P3488**Storage Temperature  $-20^{\circ}\text{C}$ 

EC 2.7.1.37

Synonyms: cGK 1 $\alpha$ ; PKG 1 $\alpha$ ; cyclic Guanosine  
Monophosphate Protein Kinase I  $\alpha$ 

#### **Product Description**

Protein Kinase G 1 $\alpha$  is a native isoform of protein kinase G type I (cGK-I) isolated from bovine lung. It is a serine-threonine protein kinase found naturally in high concentrations in the cerebellar Purkinje cells, smooth muscle cells, and human platelets.<sup>1,2</sup>

There are two major signal transduction pathways, one based on NO production and the other based on small peptide hormones. The latter stimulates trans-membrane receptor guanylyl cyclases, elevates cGMP, and activates cGMP regulated channels, phosphodiesterases, and kinases.<sup>2</sup>

In general, protein kinases can control the growth, viability, and development of cells in response to extracellular signals such as hormones and growth factors. Vertebrate cGKs consist of the soluble isoforms 1 $\alpha$  and 1 $\beta$ , found predominantly in the cytosolic fractions of smooth muscle, lung, and cerebellum, and a membrane-bound protein kinase G type II (cGK-II). 1 $\alpha$  and 1 $\beta$  differ only in the 100 N-terminal amino acids; both are homodimers of 74 kDa subunits.<sup>3</sup> cGK-I is important for vascular relaxation;<sup>4</sup> whereas, cGK-II is an activator of chloride transport.<sup>5</sup> cGK-II, a membrane-associated 86 kDa homodimer, is found in pig intestine, mouse brain, lung, and kidney.<sup>3</sup>

Protein Kinase G 1 $\alpha$  is supplied as a solution in 10 mM phosphate buffer, pH 6.8, 1 mM EDTA, 15 mM  $\beta$ -mercaptoethanol, 10 units/ml aprotinin, and 50% glycerol.

Unit Definition: One unit will hydrolyze 1  $\mu$ mole of VASPTide (RRKVSKQE) substrate at pH 7.4 at  $30^{\circ}\text{C}$ .

#### **Precautions and Disclaimer**

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

#### **Storage/Stability**

The product ships on dry ice and storage at  $-20^{\circ}\text{C}$  is recommended. Protein Kinase G 1 $\alpha$  may be stored in frozen aliquots at  $-20^{\circ}\text{C}$ . Avoid freeze-thaw cycles.

#### **References**

1. Walter, U., et al., Immunological distinction between guanosine 3':5'-monophosphate-dependent and adenosine 3':5'-monophosphate-dependent protein kinases. *J. Biol. Chem.*, **255**, 3757 (1980).
2. Pohler, D., et al., Expression, purification, and characterization of the cGMP-dependent protein kinases I beta and II using the baculovirus system. *FEBS Lett.*, **374**, 419 (1995).
3. Gamm, D. M., et al., The type II Isoform of cGMP dependent protein Kinase Is Dimeric and Possesses Regulatory and Catalytic Properties Distinct from the type I isoforms. *J. Biol. Chem.*, **270**, 27380-27388 (1995).
4. Lin, C. S., et al., Age-related decrease of protein kinase G activation in vascular smooth muscle cells. *Biochem. Biophys. Res. Commun.*, **287**, 244-248 (2001).
5. French, P. J., et al., Isotype-specific activation of Cystic Fibrosis Transmembrane Conductance Regulator-chloride Channels by cGMP-dependent Protein Kinase II. *J. Biol. Chem.*, **270**, 26626-26631 (1995).

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