

Product Information

Protein Kinase G 1 α from bovine lung

Catalog Number **P3488**

Storage Temperature –20 °C

EC 2.7.1.37

Synonyms: cGK 1 α ; PKG 1 α ; cyclic Guanosine Monophosphate Protein Kinase I α

Product Description

Protein Kinase G 1 α 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.^{1,2}

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

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 α and 1 β , found predominantly in the cytosolic fractions of smooth muscle, lung, and cerebellum, and a membrane-bound protein kinase G type II (cGK-II). 1 α and 1 β differ only in the 100 N-terminal amino acids; both are homodimers of 74 kDa subunits.³ cGK-I is important for vascular relaxation;⁴ whereas, cGK-II is an activator of chloride transport.⁵ cGK-II, a membrane-associated 86 kDa homodimer, is found in pig intestine, mouse brain, lung, and kidney.³

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

Unit Definition: One unit will hydrolyze 1 μ mole of VASPtide (RRKVKSKQE) substrate at pH 7.4 at 30 °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 °C is recommended. Protein Kinase G 1 α may be stored in frozen aliquots at –20 °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 β 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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