ProductInformation

Protein Kinase G II
Rat, recombinant
expressed in *Sf* 9 cells

Product Number **P 2363**
Storage Temperature –20 °C

Synonyms: cGK-II; 3':5'-Cyclic GMP dependent Protein Kinase; cGMP-dependent Protein Kinase II

Product Description
Protein Kinase G II (cGK-II) is a membrane-associated cGMP-dependent protein kinase found in rat intestine. This product is a recombinant rat isoform isolated from baculovirus-infected *Sf* 9 cells.[1]

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.[1]

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 of protein kinase G type I (cGK-I), 1α and 1β, found predominantly in the cytosolic fractions of smooth muscle, lung, and cerebellum, and a membrane-bound protein kinase G type II (cGK-II). 1α and 1β differ only in the 100 N-terminal amino acids; both are homodimers of 74 kDa subunits.[2] cGK-I is important for vascular relaxation,[3] whereas, cGK-II is an activator of chloride transport.[3,4]

cGK-II, which is a membrane-associated 86 kDa homodimer, has been found in pig intestine, mouse brain, lung, and kidney.[2] It is also associated with the membrane fraction of *Sf* 9 cell lysates, HEK 293, and rat intestine. The catalytic subunit has 66% amino acid identity with cGK-I and the cGMP binding domain has 45% identity.[2] cGK-II exhibits no preference between the substrates VASPtide and Kemptide. Rp-8-pCPT-cGMPS is a competitive inhibitor of purified recombinant cGK-II, cGK 1α, and cGK 1β.[1]

cGK-II is supplied as a solution in 20 mM Tris buffer, pH 7.4, 50% glycerol, 1 mM EDTA, 100 mM NaCl, 10 units/ml aprotinin, 5 mM β-mercaptoethanol, and 0.015% NP-40.

Unit definition: One unit will hydrolyze 1 micromole of VASPtide (RRKVSKQE) substrate per minute at pH 7.4 at 30 °C.

Precautions and Disclaimer
This product is for laboratory research use only. 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 II may be stored in frozen aliquots at –20 °C. Avoid freeze-thaw cycles.

References

1. Pohler, K., et al., Expression, purification, and characterization of the cGMP-dependent protein kinases Iβ and II using the baculovirus system. FEBS Lett., **374,** 419 (1995).
2. 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).
3. 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).
4. 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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