



Product Information

PKD2, Active

Human, recombinant, expressed in *E. coli*

Product Number **P 7623**

Storage Temperature: -70 °C

Synonym: Protein Kinase D2

Product Description

PKD2 is a novel phorbol ester- and growth factor-stimulated serine/threonine kinase that contains two cysteine-rich motifs at the N terminus, a pleckstrin homology domain, and a catalytic domain.¹ It exhibits the strongest homology to the serine/threonine protein kinases PKD/PKC μ and PKC τ , particularly in the duplex zinc finger-like cysteine-rich motif, in the pleckstrin homology domain and in the protein kinase domain. The PKD family of enzymes have been implicated in very diverse cellular functions, including Golgi organization and plasma membrane directed transport, metastasis, immune responses, apoptosis and cell proliferation.²

PKD2 can be activated by phorbol esters both *in vivo* and *in vitro* but also by gastrin via the cholecystokinin/CCK(B) receptor in human gastric cancer cells stably transfected with the CCK(B)/gastrin receptor (AGS-B cells).³ Furthermore, PKD2 can be activated by classical and novel members of the protein kinase C (PKC) family such as PKC α , PKC ϵ , and PKC η implicating PKD2 to be a downstream target of specific PKCs upon the stimulation of AGS-B cells with gastrin. PKD2 is predominantly cytoplasmic and stimulation of cells with the G protein-coupled receptor agonist neurotensin induces a rapid and reversible plasma membrane translocation of PKD2 by a mechanism that requires PKC activity.⁴ In contrast to the other PKD isoenzymes, PKD2 activation does not induce its redistribution from the cytoplasm to the nucleus.

PKD2 mutations cause autosomal dominant polycystic kidney disease¹ (ADPKD). As in human ADPKD, formation of kidney cysts in adult *Pkd2*^{WS25/-} mice is associated with renal failure and early death (median survival, 65 weeks versus 94 weeks for controls).⁵

The product is active recombinant, full-length human PKD2 containing an N-terminal GST tag. It is supplied at a concentration of approximately 100 μ g/mL in 50 mM Tris-HCl, pH 7.5, 150 mM NaCl, 0.25 mM DTT, 0.1 mM EGTA and 30% glycerol.

Purity: \geq 70% (SDS-PAGE)

Molecular weight: ~140 kDa

Specific Activity: \geq 100 units/mg protein (Bradford). Please refer to the Certificate of Analysis for the lot-specific activity.

Unit Definition: One unit will incorporate one nanomole of phosphate into the CREBTIDE substrate (KRREILSRPSYR) per minute at 30 °C at pH 7.2 using a final concentration of 50 μ M [³²P] ATP.

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.

Preparation instructions

For maximum product recovery, after thawing, centrifuge the vial before removing the cap

Storage/Stability

Stable for at least 12 months when stored as undiluted stock at -70 °C. After initial thawing, store in smaller, working aliquots at -70 °C. Use the working aliquots immediately upon thawing. Avoid repeated freeze-thaw cycles to prevent denaturing of the protein. Do not store in a frost-free freezer.

References

1. Sturany S, et al., Molecular cloning and characterization of the human protein kinase D2. A novel member of the protein kinase D family of serine threonine kinases., *J. Biol. Chem.* **276**, 3310-3318 (2001).

2. Rykx A, et al., Protein kinase D: a family affair., FEBS Lett. **546**, 81-86 (2003).
3. Sturany S, et al., Mechanism of activation of protein kinase D2(PKD2) by the CCK(B)/gastrin receptor., J. Biol. Chem. **277**, 29431-29436 (2002).
4. Rey O, et al., Intracellular redistribution of protein kinase D2 in response to G-protein-coupled receptor agonists., Biochem. Biophys. Res. Commun. **302**, 817-824 (2003).
5. Wu, G. et al., Cardiac defects and renal failure in mice with targeted mutations in Pkd2., Nat. Genet., **24**, 75-78 (2000).

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