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ProductInformation

Protein Kinase Cμ (PKCμ), Active
Human, recombinant, expressed in *E. coli*

Product Number **P 7748**
Storage Temperature: -70 °C

Product Description

Protein kinase Cμ (PKCμ) is a novel member of the PKC family that differs from the other isoenzymes in structural and enzymatic properties. It is characterized by the presence of a pleckstrin homology (PH) domain and an N-terminal hydrophobic region and has substrate specificity distinct from other PKC isoforms. PKCμ is a ubiquitous PKC isotype with the highest expression in the thymus, lung and peripheral blood mononuclear cells.[1]

PKCμ forms a complex in vivo with a phosphatidyl-inositol 4-kinase and a phosphatidylinositol-4-phosphate 5-kinase. A region of PKCμ between the N-terminal transmembrane domain and the PH domain is shown to be involved in association with lipid kinases.[2] PKCμ associates with the B cell receptor (BCR) complex and its activity is up-regulated after cross-linking the BCR and CD19 on B cells.[3] PKCμ co-precipitates with Syk and PLC-γ1/2. *In vitro* phosphorylation of fusion proteins showed that both Syk and PLC-γ1 are potential substrates of PKCμ *in vivo*. In addition, specific interaction of PKCμ and 14-3-3τ can be shown in Jurkat T cells.[4] 14-3-3τ is not a substrate of PKCμ and strongly down-regulates PKCμ kinase activity *in vitro*. Moreover, overexpression of 14-3-3τ significantly reduced phorbol ester-induced activation of PKCμ kinase activity in intact cells indicating that 14-3-3τ is a negative regulator of PKCμ in T cells. In response to various stimuli, PKCμ activates the mitogen-activated protein kinase (p42/ERK1 MAPK cascade) but does not affect the related c-jun N-terminal kinase nor p38 MAPK. [5]

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

Purity: ≥ 85% (SDS-PAGE)

Molecular weight: ~131 kDa

Specific Activity: ≥ 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 CREBtide substrate (KRREILSRRP-SYR) per minute at 30 °C at pH 7.2 using a final concentration of 50 μM [^{32}P] 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. Rennecke J, et. al., Immunological demonstration of protein kinase Cμ in murine tissues and various cell lines. Differential recognition of phosphorylated forms and lack of down-regulation upon 12-O-tetradecanoylphorphol-13-acetate treatment of cells., Eur. J. Biochem., **242**, 428-432 (1996).
2. Nishikawa K, et. al., Association of protein kinase Cμ with type II phosphatidylinositol 4-kinase and type I phosphatidylinositol-4-phosphate 5-kinase., J. Biol. Chem., **273**, 23126-23133 (1998).

3. Sidorenko SP, et. al., Protein kinase Cμ (PKCμ) associates with the B cell antigen receptor complex and regulates lymphocyte signaling., Immunity, **5**, 353-363 (1996).
4. Hausser A, et al., Protein kinase Cμ is negatively regulated by 14-3-3 signal transduction proteins., J. Biol. Chem. **274**, 9258-9264. (1999)
5. Hausser A. et al., Protein kinase Cμ selectively activates the mitogen-activated protein kinase (MAPK) p42 pathway., FEBS Lett**. 492**, 39-44 (2001).

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